

# Book of Abstracts

**UMAC** ICOM  
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for university museums  
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UNIVERSITY MUSEUMS AS ACTORS  
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**UMAC**  
**2026**

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Science and Technology Museum  
of the University of Patras, Greece  
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# Keynote

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## **From Emotional Engagement to Justice-Led Design:**

### **University Museums as Actors for Participatory Digital Heritage and Sustainable Development**

As the opening keynote of UMAC 2026, this paper sets an agenda for critical reflection on what it means for university museums to act — genuinely and responsibly — for Sustainable Development. Universities worldwide are positioning their museums as strategic contributors to the SDGs, yet the ethical dimensions of this role remain underexamined. This paper argues that the difference between performing and genuinely advancing Sustainable Development commitments lies not in what university museums hold, but in *how* they engage: with communities, with difficult heritage, and with the interpretive and digital tools they increasingly deploy. Drawing on two major research initiatives conducted from a university museum context — the EMOTIVE EU Horizon 2020 project, which developed emotionally resonant, participatory methodologies for heritage interpretation at The Hunterian, University of Glasgow, and *Nobody's Listening*, a trauma-informed immersive project co-designed with Yazidi communities to document endangered cultural heritage in Iraqi Kurdistan — the paper proposes a framework for justice-led digital heritage practice. It examines what ethically grounded, co-designed engagement demands of university museums when communities are vulnerable, histories are contested, and heritage is at risk. The paper organises its argument around four interconnected questions of broad relevance to the international university museum community: (a) Whose voices are centred in the interpretation of contested and difficult heritage, and on whose terms? (b) What does meaningful participation and consent look like with vulnerable or at-risk communities? (c) What critical questions does the turn toward immersive technologies and AI in heritage interpretation raise (around consent, representation, and the ownership of culturally sensitive data)? (d) And how do justice-led approaches critically test, rather than simply illustrate, the university's broader SDG commitments around inclusion, human rights and community wellbeing? Addressed to an international community of university museum professionals navigating these tensions across diverse institutional, geographic and political contexts, the paper closes by proposing that university museums are uniquely positioned not only to contribute to Sustainable Development, but to model the ethical rigour that such a contribution demands.

## **Short Bio:**

*Maria Economou is Professor of Digital Cultural Heritage at the University of Glasgow, jointly appointed between Information Studies and The Hunterian, the university*

*museum. She holds a British Academy/Wolfson Research Professorship (2022–2026) investigating emotional engagement with museum collections through digital storytelling and participatory approaches. She is founding Co-Director of Glasgow's Digital Cultural Heritage Arts Lab and served as Vice-President of the UNIVERSEUM Board (2017–2024). Her research focuses on digital technologies, visitor studies and ethical engagement in cultural heritage. Recent projects include EMOTIVE (EC Horizon 2020), POEM (EC Horizon 2020), Museums in the Metaverse (Innovate UK) and Nobody's Listening, a trauma-informed immersive project documenting Yazidi heritage in Iraqi Kurdistan.*

# **Paper Presentations**

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### **Empowering Sustainability through AI: A Four-Dimensional Closed-Loop Practice in University Museums**

University museums advance the Sustainable Development Goals (SDGs), but growing collections and increasing audience demands overload their traditional manual workflows and isolated data systems. While artificial intelligence (AI) offers tremendous potential to overcome these limitations, a key challenge is how to transition AI from a novel concept into a stable, sustainable tool for university museums. Here, we present a four-dimensional AI closed-loop system used at the Electronic Science and Technology Museum (ESTM), which aims to support sustainable museum management and education. The system integrates four modules: a YOLOv8-based automated collection classification, a Large Language Model (LLM)-driven Knowledge Graph, an on-premises Hybrid RAG AI teaching platform, and a CNN-based audience micro-expression evaluation system (SMEM). The collection classification system and the Knowledge Graph work together to address the issues of heavy manual cataloguing and isolated knowledge. The local AI teaching platform ensures data security while supporting personalized learning. Additionally, capturing visitors' micro-expressions provides objective data to evaluate exhibition effects, which can effectively replace traditional questionnaires. Practical experience shows that linking these four AI modules creates an automated feedback loop. This continuous process spans from collection preservation to audience engagement, helping to increase the museum's working efficiency and educational output. This closed-loop model can also offer a practical reference for other academic museums. By applying AI to everyday work, university museums can better handle resource limits, improve education, and support global sustainable development.

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### **Interdisciplinary collection: Significant support from the Ministry**

The University of Warsaw Museum is implementing the project “Interdisciplinary Collection: The Janusz Fiszer Collection.” The project involves scholarly research and the study of selected objects from the collection of Janusz Fiszer, an eminent lawyer and collector. In October 2020, a collection comprising nearly 18,000 objects and half a million postage stamps was donated to the University of Warsaw Museum. This legacy includes previously unpublished items—unique on both a national and global scale—of unquestionable scholarly and artistic value. The project is

addressed to all those interested in Polish collecting and museology, both in Poland and abroad. An important aim of the project is to respond to the need to disseminate Fiszer's achievements, highlight his contribution to the development of Polish collecting, and raise awareness of the country's cultural heritage, which should be nurtured from an early age. Built up over many years, Fiszer's collection includes objects from around the world and is likely one of the largest collections of its kind in Europe, as well as globally. Its uniqueness lies not only in the number of items gathered, but also in its thematic coherence and originality. Fiszer's collection consists of items of undeniable scholarly value, enabling future generations of students, doctoral candidates, and researchers to expand our knowledge of the past. The significance of the collection and the need to make it accessible are further evidenced by the funding granted for its development by the Ministry of Science and Higher Education. It is particularly noteworthy that the Ministry has awarded a grant to an academic institution, which reflects the Minister of Science's recognition of the value of academic collections and holdings. The University of Warsaw Museum is implementing the project "Interdisciplinary Collection: The Janusz Fiszer Collection." The project involves scholarly research and the study of selected objects from the collection of Janusz Fiszer, an eminent lawyer and collector. In October 2020, a collection comprising nearly 18,000 objects and half a million postage stamps was donated to the University of Warsaw Museum. This legacy includes previously unpublished items—unique on both a national and global scale—of unquestionable scholarly and artistic value. The project is addressed to all those interested in Polish collecting and museology, both in Poland and abroad. An important aim of the project is to respond to the need to disseminate Fiszer's achievements, highlight his contribution to the development of Polish collecting, and raise awareness of the country's cultural heritage, which should be nurtured from an early age. Built up over many years, Fiszer's collection includes objects from around the world and is likely one of the largest collections of its kind in Europe, as well as globally. Its uniqueness lies not only in the number of items gathered, but also in its thematic coherence and originality. Fiszer's collection consists of items of undeniable scholarly value, enabling future generations of students, doctoral candidates, and researchers to expand our knowledge of the past. The significance of the collection and the need to make it accessible are further evidenced by the funding granted for its development by the Ministry of Science and Higher Education. It is particularly noteworthy that the Ministry has awarded a grant to an academic institution, which reflects the Minister of Science's recognition of the value of academic collections and holdings.

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### **Temporary Exhibitions for the SDGs: Activating University Archival Collections at Politecnico di Milano**

University collections are increasingly recognized as strategic resources for advancing the Sustainable Development Goals (SDGs), particularly in relation to quality education, inclusive societies, and cultural sustainability. Within this framework, temporary exhibitions play a key role in activating archival heritage and making it accessible to broader audiences. This paper presents the case of the Politecnico di Milano, where a system of temporary exhibitions has been developed based on the holdings of its Historical Archives. Drawings, documents, models, and artifacts are reinterpreted through exhibition design as dynamic narrative devices, capable of translating complex academic knowledge into accessible and engaging experiences. The contribution argues that exhibitions operate as mediating platforms between research and society, contributing to SDG 4 (Quality Education) by fostering informal learning, to SDG 11 (Sustainable Cities and Communities) by enhancing cultural heritage, and to SDG 16 (Peace, Justice and Strong Institutions) by promoting access to knowledge and public engagement. The paper identifies five recurring thematic approaches: the archive as an active narrative space; the connection between historical heritage and ongoing research; a multidisciplinary perspective linking architecture, design, and engineering; biographical narratives focused on key individuals; and the relationship between the university and society, fostering collaborations and public engagement. Through spatial, visual, and narrative strategies, exhibition design enables multiple levels of interpretation, addressing diverse audiences and encouraging active participation. In this perspective, exhibitions are not only outputs of research but also research practices in themselves, capable of generating new knowledge through curatorial and design processes. The Politecnico's experience highlights how temporary exhibitions based on university archives can support the social and cultural sustainability of academic institutions, strengthening their third mission and positioning universities as open, inclusive, and responsible actors within contemporary society.

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### **The University of Barcelona Virtual Museum: A sustainable initiative for the documentation of university heritage**

Sustainability in the daily documentation and management of university heritage collections is a central challenge for universities with decentralized structures, where collections largely depend on academic staff who must balance teaching, research, and management duties with

responsibilities for conservation, documentation, and dissemination. In the absence of full-time technical staff, ensuring adequate information quality and viable long-term management of the objects requires the use of sustainable conceptual and technological tools. At the University of Barcelona, this need guided the design of the new virtual museum, drawing on the lessons learned from the first project, which was abandoned due to the excessive complexity of its documentation requirements. The new model is based on a deliberate simplification, compatible with the real workflows of collection managers and aligned with current trends such as the semantic web and artificial intelligence. Key decisions include: (a) the adoption of Dublin Core as the basic metadata schema for cultural heritage objects, the study of an adaptation of Darwin Core for natural heritage, and the development of a proposal based on Wikidata properties for human heritage; (b) the reduction of the CIDOC CRM conceptual model to a minimal set of management needs; (c) the simplification of controlled vocabularies through reduced term lists to facilitate data ingestion; (d) the selection of software with a low learning curve, Omeka S, with a front end developed in WordPress; and (e) flexibility allowing collections either to continue working in their usual systems through data mappings or to work directly within the shared system. After five years of operation, the system has enabled the integration of new collections developed directly in Omeka, as well as large-scale collections managed through ingestions from proprietary systems, confirming that simplification and flexibility are key factors for the sustainability of documentation in university heritage.

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### **University Collections as Strategic Resources for Sustainable Development: The Case of the Jagiellonian University**

Although the Sustainable Development Goals (SDGs) are becoming an increasingly important reference point in higher education, the role of university collections in their implementation remains insufficiently theoretically addressed. The article proposes a reinterpretation of university collections as forms of strategic cultural capital and epistemic infrastructure, arguing that they constitute an underestimated link between global sustainability agendas and local academic practices. On the example of the Jagiellonian University, it was analysed how diverse academic collections — including, m.in example, natural collections, scientific instruments and cultural heritage — produce situated forms of knowledge that make abstract challenges of sustainable development more tangible both cognitively and materially. In this view, collections are not merely repositories of objects, but relational arrangements (assemblages), enabling the translation of global policy frameworks into didactics, research and social engagement. Methodologically, the study is based on a qualitative case study, combining conceptual analysis with a review of institutional documents and organizational practices. Particular attention was paid to selected implementation paths, including Excellence Initiative (IDUB) initiatives,

participation in international collaborative networks and the use of digital infrastructures such as the Lab3D laboratory. These examples are analysed as spaces where collections function as platforms for knowledge co-creation, interdisciplinary exchange and public activities related to the SDGs. The results indicate a structural discrepancy between the potential of collections and their marginal position in sustainability management at the university level. In response, the article proposes an inclusive framework that assumes the inclusion of collections in sustainability strategies, strengthening their role in cross-sectoral knowledge production, and developing their digital and epistemic accessibility. Situating university collections at the intersection of heritage studies, museology and sustainability sciences, the article contributes to the debates on the institutional transformation of universities in the face of global challenges. At the same time, it proposes a theoretically well-established model for reinterpreting academic heritage as an active factor in sustainable development.

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#### **Digital afterlives of collections and democratising access: Sustainable futures for southern African university museum collections**

This paper investigates the sustainable collection practices at the University of Pretoria (UP) Museums in South Africa, focusing on how digital transformation can enhance sustainability, accessibility, and social impact while furthering the United Nations Sustainable Development Goals (SDGs) in an African context. It addresses the many collection challenges faced by most African museums, particularly limited funding, staff shortages, storage crises, and inadequate climate control, and explores the use of digital platforms and technologies to enhance education and the dissemination of cultural heritage. Despite a barrage of challenges, how does a small university museum (with limited staff and a small budget) achieve this shift? Key findings suggest that museums can successfully integrate sustainable practices by amplifying conservation efforts, aligning collections with the institutional digital transformation strategy, and impacting select SDGs—even if this change is incremental. Digital initiatives, such as curated project photography and online stories via Google Arts & Culture, have significantly increased global accessibility to these South African collections, while still reducing their environmental impact. The implementation of basic AI-assisted tools has improved access to research, promoting sustainable practices in higher education. Collaborative efforts with GLAM partners within the university have also fostered innovative transdisciplinary approaches to collections sustainability and are now incorporated into most curatorial programmes. By combining digital curation with sustainability-oriented outreach, the UP Museums preserve and democratise access to their cultural collections. Basic digital platforms are used to educate, amplify and advocate for the SDGs, fostering a renewed curatorial approach in which cultural heritage supports social, environmental, and educational development. Overall, these efforts are gaining momentum,

evidenced by ever-expanding museum visitor numbers, both in person and online. The outcomes and impacts of multiple approaches to sustainable collection practices exemplify the potential for university museums to act as catalysts for academic transformation, democratising research knowledge through collections while prioritising sustainability.

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### **Nothing About Us Without Us: Inclusive Object-Based Learning at Keio Museum Commons as community engagement for the SDGs**

This paper explores how Keio Museum Commons (KeMCo), a university museum in Tokyo, Japan, utilises its collections and Object-Based Learning (OBL) expertise to promote wellbeing and inclusive community engagement. It demonstrates how university museums can serve as active agents in advancing the United Nations Sustainable Development Goals, specifically SDG 3 (Good Health and Well-being), SDG 10 (Reduced Inequalities), and SDG 11 (Sustainable Cities and Communities). In 2023, KeMCo collaborated with Keio University Art Centre's (another art museum in Keio University) "Cultural Narrative of a City" project, a long-running initiative connecting and visualising local cultural resources, which has been developing research and practice around inclusive cultural experiences since 2021. Drawing on both institutions' expertise, a pilot wellbeing and inclusive access themed OBL workshop was developed and facilitated within KeMCo. Following the principle of "nothing about us without us," visually impaired community members were involved from the earliest stages of the workshop's design, pairing them together with sighted participants in a collaborative learning environment. This pilot workshop, from design to execution, was the first of its kind conducted in Japan. The co-design process resulted in meaningful adjustments to the facilitation model, including greater scaffolding by facilitators and intentional structures for collaborative support among participants. A particularly generative outcome was a series of exchanges around the perception of colour, initiated by visually impaired participants. As sighted participants responded and both groups reflected together, it became clear that pairing communities with different lived experiences does not merely accommodate difference, it expands the dimensions of knowing beyond visual experience, introducing new possibilities for how museums engage with their collections. This paper argues that addressing the mismatch between museum design and community needs is fundamental to inclusive practice, and that university museums, carrying both academic credibility and community trust, are uniquely positioned to lead this contribution to sustainable development.

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**MuDiB: the distributed museum and the impact of exhibition spaces for the University of Milan – Bicocca**

The main campus of the University of Milan-Bicocca is situated on the northern outskirts of Milan, on a site that was formerly industrial and was redeveloped during the 1990s. Although the area set aside for the campus is very extensive, there is little scope for further development in the surrounding area, as the neighbourhood has a high density of residential buildings, as well as factories and office and commercial buildings. Since its inauguration, the university has expanded significantly in terms of departments, its academic programmes and research, reaching a point where available space is fully utilised. The decision to establish a university museum was therefore constrained from the outset by the lack of a suitable, dedicated permanent exhibition space. The choice to opt for a 'diffused' museum, meeting the Museum's various needs, was based on principles of sustainability, including from the perspective of space efficiency. From the very outset, the participatory process of creating this MuDiB 'spread-out' museum has involved ongoing engagement with students, lecturers, university staff and members of the public. The collaborative steps taken over time have included: the design of the logo; the identification of the most suitable spaces for permanent and temporary exhibitions; the selection of objects to be displayed; and the methods for presenting the chosen content. The work on the spaces has made it possible to enhance certain areas previously used merely as thoroughfares (lobbies, corridors, communal spaces), thereby mapping the campus itself in ever-greater detail. The presentation will illustrate how the museum has worked with shared spaces, interstitial areas and spaces unsuitable for other functions, as well as spaces used by the university community.

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### **University of Santo Tomas Museum and the L.O.T.U.S. Project: Curatorial and Educational Practice for SDG-Oriented Engagement**

The University of Santo Tomas Museum (UST Museum) serves not only as a venue but also as a curatorial and pedagogical structure that mediates socially engaged art within the UST L.O.T.U.S. Project. This project, aligned with Sustainable Development Goals 3, 4, 10, and 17, represents a collaboration among the UST College of Fine Arts and Design (CFAD)-Community Development, UST SIMBAHAYAN, and UST Museum, with the children in vulnerable conditions under the care of the Heart of Mary Villa of the Our Lady of Charity of the Good Shepherd as the beneficiary. This triadic engagement, manifesting the university's virtues of Hope, Faith, and Love, serves as a foundation for putting teachings into practice. With this partnership, the UST L.O.T.U.S. Project constitutes an art-based, institution-supported social initiative. This study examines how museum-based programs promote engagement, learning, and social connection. The UST L.O.T.U.S. model (Learn, Observe, Teach, Understand, See) structures a sequence of interventions, with the UST Museum actively mediating the Observe and See components. The Observe component showcases clay tile works created by CFAD academic and support staff, encouraging reflection and social responsibility. The See component immerses children in campus life, allowing them to engage with the university environment, and culminates in a museum tour and an art workshop. Initial evaluations indicate that the museum's curatorial and educational strategies generate affective engagement, institutional belonging, and continuing partnerships. This study asserts that institutionalized art-led practices reposition the university museum as an agent of socially engaged, Sustainable Development Goal-driven transformation.

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### **The mobile cabinet of curiosities: activating university collections to think about sustainability**

At a time when cultural and scientific institutions are being called upon to strengthen their role in sustainable development, university museums possess a unique lever: their collections. Often dispersed and difficult to access, these nonetheless constitute an exceptional material heritage, bearing witness to the long history of knowledge. This talk explores the potential of mobile cabinets of curiosities as mediation devices capable of transforming these collections into tools

for inclusion, critical reflection, and sensory experience, particularly in the field of environmental education. Developed at the University of Liège, this project is based on a simple hypothesis: in an age of digitization and algorithmic personalization, audiences are increasingly distanced from direct encounters with otherness, whether material, intellectual, or sensory. The mobile cabinet addresses this challenge by reaching out to audiences who are distant from cultural institutions (schools, rural areas, underprivileged communities, or people with disabilities), offering an experience grounded in the handling of objects from scientific and educational collections. By rehabilitating touch, it introduces a more embodied relationship to knowledge, in which the body fully participates in understanding. The objects, drawn from palaeontology, medicine, botany, and archaeology, are conceived as mediators. They provide access to the processes through which knowledge is produced and invite audiences to question their uses, contexts, and meanings. It also makes it possible to shift perspectives on these issues. Through paleontological objects, questions of sustainable development can be approached via paleoclimatic dynamics or major past extinctions. Understanding these ancient transformations thus becomes a means of shedding light on present-day changes: the objects give access to deep timescales, allowing phenomena to be situated within the long history of life and the Earth. This detour through deep time does not dilute the sense of urgency; rather, it reconfigures it. It provides reference points for thinking about continuities, ruptures, and capacities for adaptation, while opening up broader and less immediate frameworks of understanding.

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### **From immersion to reuse: Re-purposing a VR experience of a scientific instrument for multimodal museum engagement**

University museums increasingly employ immersive technologies to communicate complex scientific concepts and historical narratives. However, fully immersive Virtual Reality (VR) experiences are often resource-intensive, limiting their scalability and long-term reuse. This paper positions re-purposing not as a secondary adaptation but as a core design strategy for extending the lifespan and impact of immersive digital heritage applications. We present a case study from the History Museum of the National and Kapodistrian University of Athens, focusing on a late 19th-century carbon arc lamp projector. The experience was developed in immersive VR in the context of the RPGs4Museums project, which focused on digitally-enhanced, tabletop

role-playing games as hybrid museum kits. The projector was a key object in the game adventure. The experience enables users to explore the instrument's operation and its various uses, including the Colladon experiment demonstrating light guidance through a water jet. Building on this prototype, in the context of the UNICHE project (<https://uniche-eccch.eu/>), we systematically reconfigure the experience into a multimodal ecosystem including 360° images, 360° video, and a storytelling application based on conventional audiovisual material. Rather than simplifying the original experience, this process preserves and redistributes its narrative, visual, and educational components across formats with different levels of immersion, cost, and accessibility. The resulting materials support multiple interpretations of the carbon arc lamp projector as a scientific instrument, teaching aid, and entertainment device, and enable facilitated group activities where participants engage with distinct narrative perspectives. The study demonstrates how designing for re-use can support flexible deployment, sustainability, and richer interpretive practices in university museum contexts.

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### **Safeguarding Intangible Heritage: Craft Practices and Sustainable Development at National College of Arts, Tollinton Block, Lahore**

The National College of Arts (NCA) in Lahore, Pakistan—a federally chartered institute—inherits its pedagogical commitment to craft from the Mayo School of Art and Crafts (1875), an institution renowned for integrating traditional craftsmanship into formal art education. In 2019, NCA acquired the historic Tollinton Market building (1864), originally a colonial exhibition hall, later a public craft market, and now functioning as the Tollinton Block of NCA. This layered history as both exhibition hall and craft bazaar makes the building uniquely suited for safeguarding intangible heritage. This paper examines how the NCA Triennale 2025 activated Tollinton Block as a site for intangible cultural heritage transmission through workshops led by master artisans, thereby embedding craft practices within sustainable development frameworks. Using a qualitative case study methodology grounded in archival documents and workshop records, the research finds that this university museum model contributes to three Sustainable Development Goals: SDG 4.7 (education for sustainable development), SDG 11.4 (cultural heritage protection), and SDG 8.3 (artisan livelihoods). The paper directly addresses the UMAC 2026 sub-theme—University museums and collections engaging the educational community and the public for the SDGs—by demonstrating how heritage buildings managed by art institutions can engage both educational communities and the wider public in sustainable development through craft-based, intangible heritage safeguarding.

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**The museum as a space for sharing, safety, and better-being: An emotion-focused program for Patients at Musée L**

In a context marked by accelerating lifestyles, overconsumption, fragmented attention spans, and deteriorating mental health challenges aligned with the Sustainable Development Goals (SDG 3, 11, 12), university museums, such as Musée L (Musée Universitaire de Louvain, Belgium), are being called upon to redefine their role. Faced with current health, social, and environmental challenges, museums must not only act as social and local actors but also reinvent how they engage with artworks. Indeed, reconnecting with one's inner self through a bodily and sensory experience of art—mobilizing the body, emotions, sensations, and imagination—enables an embodied and ecological experience of the museum. Furthermore, sensory mediation promotes well-being (SDG 3), inclusion (SDG 10), and responsible cultural consumption (SDG 12), positioning itself as a concrete and innovative response. Since 2023, a PhD candidate in art history and sensory mediation at UCLouvain and a psychologist, supported by Musée L and a local Belgian mental health centre, have developed a process-based therapeutic program for patients with anxiety disorders. Structured as a 6-session process that takes place in the Musée L, the program focuses on emotion management. It emphasizes cultivating awareness of emotions and sensations, teaching participants about the nature of emotions, and providing practical coping strategies. Each session includes two components: practical exercises in front of the artwork and group discussions. Sensory mediation relies on tools such as conscious breathing, attentive observation, and an open-minded attitude to foster a unique, intimate emotional, sensory, and bodily experience. This contribution demonstrates how a university museum can act as a lever for mental health (SDG 3) through partnerships with local stakeholders (SDG 17) and how museum collections can be mobilized to support vulnerable audiences (SDG 10) via this pilot project. It also highlights the museum's contribution to a "sensory ecology" (SDG 12) through a sustainable and reflective approach to culture. Finally, the paper underscores the benefits of a program co-developed by researchers and healthcare professionals, while emphasizing the role of university museums as laboratories for social innovation in service of the SDGs.

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### **Toy-stories: Creating a University Collection Promoting Sustainable Development through Participatory Processes**

The aim of this paper is to present and discuss the efforts to create a university collection at the Department of History-Archaeology, University of Patras, Greece. The majority of the items in the collection are handmade reconstructions of toys from natural and/or recycled materials, illustrating children's play and playthings between the 1940s and 2010 from the prefecture of Aetoloakarnania, Western Greece, while during consecutive years of research, the collection has expanded to other areas of Greece and more recent periods. The scope of the project is manifold. It is seen as an opportunity to create a platform for collaboration between different disciplines represented in the department, to offer training to students, to raise awareness about issues of protection of contemporary cultural heritage at the local level, and as a means to promote sustainable development. Embracing a participatory approach, students and the local community have been engaged in all stages of the process, from acquisition, research, cataloguing and documentation to presentation. Acknowledging the difficulties and challenges that such a project entails, we hope to expose the benefits of interdisciplinarity and participatory research with students and communities by focusing especially on intergenerational research as a means for the enhancement of environmental awareness and knowledge regarding the properties of different materials and traditional techniques involved in toy-making processes.

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### **Bridging campus and community: Evaluating sustainable open services in science and technology university museums**

University museums serve as critical interfaces between academic institutions and society. However, science and technology university museums face unique challenges in balancing their dual identity as both "academic territory" and "public cultural space" due to the specialized nature of their collections and the high knowledge barriers associated with technical disciplines. From the perspective of open services, this study analyzes the methodology behind the revised definition of museums by the International Council of Museums. By integrating China's museum accessibility standards with the unique characteristics of science and technology university museums, it proposes a comprehensive open services evaluation system consisting of six major

dimensions and thirty sub-indicators. Weights are assigned to each indicator, rendering it an empirically applicable index system. The evaluation system exhibits two distinguishing features: (1) Systemic integration, which assesses open services not as isolated visitor reception but as interconnected museum operations spanning collection management, research, exhibition, and education; (2) Value orientation, which prioritizes inclusivity and accessibility as higher-level goals beyond basic open services provision. This study contributes a replicable evaluation instrument for science and technology university museums, addressing the longstanding tension between academic rigor and public accessibility while enabling evidence-based strategic planning and sustainable community engagement. Guided by this evaluation system, the Electronic Science and Technology Museum conducted empirical research comprising 200 visitor surveys and 25 semi-structured interviews. Results demonstrate that strategic interventions in three dimensions, namely Object/Subject, Target and Relationship, and Social Values are critical for advancing the museum's open services.

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### **National Cheng Kung University (NCKU) USR project: Heritage and community identity in Nanmei Village**

Taiwan's University Social Responsibility (USR) projects align higher education with the SDGs through local engagement. The National Cheng Kung University (NCKU) USR team has been active in Tainan's Nanmei Village since 2020. Initially focused on elderly care, the project's principal investigator recognized the untapped potential of the area's cultural resources and, in 2023, invited the NCKU Museum to collaborate on creating human-centric spaces based on the Eco-Museum Concept. A key cultural asset in Nanmei Village is the Taiwan Circuit Magistrate's Yamun (Taiwan Bingbeidao) archaeological site at Yongfu Elementary School, the highest Qing dynasty (1683-1894) civil office in Taiwan. However, the museum team found that historical ruptures from the Japanese colonial period (1895-1945) left many residents unfamiliar with this history. Critically, this led to local misinformation, including inaccuracies within the existing interpretive displays at Yongfu Elementary School that required correction. To address this, the museum led a graduate initiative to analyze historical data, revealing that more significant remains likely lie beneath the school. Through poster presentations, students from NCKU shared these findings with Yongfu's teachers and local residents to correct the historical record. While these efforts have already strengthened regional identity and provided a foundation for heritage preservation, the long-term impact on broader community development remains to be observed as the project evolves. Taiwan's University Social Responsibility (USR) projects align higher education with the SDGs through local engagement. The National Cheng Kung University (NCKU) USR team has been active in Tainan's Nanmei Village since 2020. Initially focused on elderly care, the project's principal investigator recognized the untapped potential of the area's cultural resources and, in

2023, invited the NCKU Museum to collaborate on creating human-centric spaces based on the Eco-Museum Concept. A key cultural asset in Nanmei Village is the Taiwan Circuit Magistrate's Yamun (Taiwan Bingbeidao) archaeological site at Yongfu Elementary School, the highest Qing dynasty (1683-1894) civil office in Taiwan. However, the museum team found that historical ruptures from the Japanese colonial period (1895-1945) left many residents unfamiliar with this history. Critically, this led to local misinformation, including inaccuracies within the existing interpretive displays at Yongfu Elementary School that required correction. To address this, the museum led a graduate initiative to analyze historical data, revealing that more significant remains likely lie beneath the school. Through poster presentations, students from NCKU shared these findings with Yongfu's teachers and local residents to correct the historical record. While these efforts have already strengthened regional identity and provided a foundation for heritage preservation, the long-term impact on broader community development remains to be observed as the project evolves.

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#### **Promoting sustainable development education through mobile science exhibitions: Experiences from a science museum in the global south**

The universities and science museums can contribute greatly to the development of the United Nations Sustainable Development Goals (SDGs) through scientific literacy, community awareness and involvement with the community. In the global south, where access and resources are always limited, museums can become transformational sources of sustainability education. The current paper discusses the National Museum of Science and Technology in Bangladesh, its permanent exhibits and the mobile science exhibition program. In the last 3 years, the museum has hosted over 120,000 visitors annually and has made over 250 mobile exhibitions annually, including schools, colleges, universities and remote communities. The program increases access to science education through hands-on activities, interactive demonstrations and workshops on renewable energy, climate change and environmental sustainability, all of which are offered to people outside the museum. In the program, the effects were measured using participant observation, feedback surveys and working with educational institutions. The results show increased levels of scientific literacy and awareness of sustainability and increased engagement with communities, particularly in underserved communities. The project is a contribution towards SDG 4 (Quality Education), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). In spite of the difficulties, including financial limitations and logistics, the study indicates the potential of mobile science exhibits as a valuable outreach resource to sustainability education and provides a model that can be scaled and replicated by university museums in the Global South.

### **NIGEL BOND<sup>1</sup>, MADELEINE HARVEY<sup>2</sup> & JACOB POWELL<sup>2</sup>**

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#### **Curating spaces: Showcasing indigenous identity through collaborative art practices at a university campus**

There is a growing body of evidence which shows that embedding cultural elements within student experience is a key contribution to the educational success and well-being of Māori and Pasifika students. This paper describes how the University of Auckland Art curators collaborate with Indigenous artists and communities to curate spaces across campuses that align with, and foster a sense of, Te Ao Māori – or Māori worldview. We describe how the curation of art aligns

with the University's commitment to Te Tiriti o Waitangi and its core aim to protect and enhance the dignity, well-being and mana of students.

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**Sympoiesis: Co-Creating Sense of Place — University museum partnerships for environmental understanding and community engagement**

This presentation examines Sympoiesis: Co-Creating Sense of Place, an exhibition project at the University of Wyoming Art Museum, USA, as a model for how university museums can engage educational communities and public audiences in advancing Sustainable Development Goals (SDGs). Grounded in the concept of “Sympoiesis”—making-with—the exhibition brings together seven contemporary art installations that explore environment, place, and interdependence through collaborative artistic practices. Extending beyond the gallery, the project activated the museum as a participatory, inclusive learning hub through artist residencies, public programs, and cross-disciplinary exchange. Nine artists engaged directly with students, faculty, and community members through hands-on workshops, artist talks, and panel discussions. These programs addressed topics such as art's role in responding to environmental crises, intersections of artistic and scientific fieldwork, ecological materials in creative practice, and cultural dimensions of placemaking, including memory and nostalgia. By translating complex environmental and social issues into accessible, experiential formats, the exhibition fostered critical reflection and action-oriented learning aligned with SDG 4 (Quality Education), SDG 3 (Well-being), and SDG 13 (Climate Action). The integration of faculty from diverse disciplines further positioned the museum as a bridge between academic research and public understanding. This case study demonstrates how university museums can function as trusted civic spaces that cultivate dialogue, empower communities, and connect knowledge to lived experience. It argues that collaborative, interdisciplinary exhibition-making can deepen public engagement with sustainability while positioning the university as an active contributor to the 2030 Agenda for Sustainable Development.

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**Climate change and geological time: An educational museum kit for Sustainable Development Goal 13**

Geosciences are directly linked to the 17 Sustainable Development Goals, as they play a crucial role in understanding the complex processes of the Earth system. Numerous studies highlight

their interdisciplinary nature and their contribution to addressing contemporary environmental challenges. In this context, university museums of Natural History, Geology, paleontology, and related scientific fields constitute dynamic learning environments capable of supporting the education and awareness of students and the wider public on sustainability issues. This paper presents an educational program/museum kit designed for the Museum of Geology and Palaeontology of the National and Kapodistrian University of Athens, with a central focus on geological time and an emphasis on climate change. The diachronic study of climate change over the 4.6 billion years of Earth's history provides a strong scientific framework for interpreting contemporary climate change and its consequences, clarifying both natural and anthropogenic causes, and contributing to Goal 4 (Quality Education) and, more specifically, Goal 13 (Climate Action). The aim of the museum kit was to help students in compulsory education understand, on the one hand, the concept of geological time and, on the other, climate variations throughout Earth's history, with particular emphasis on the current climate crisis and its future implications. The program employed experiential and inquiry-based learning methods, combining museum exhibits, fossil replicas, and original visual representations in order to enhance students' active participation and the development of their critical thinking. The results of its implementation indicate that university museums can function as effective agents of non-formal education, promoting scientific literacy and environmental responsibility, and contributing substantially to the achievement of the Sustainable Development Goals.

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### **Shaping attitudes and values for the protection of urban avifauna in early childhood: The case of educational material from the Zoological Museum of the University of Patras in a Montessori School for Children Aged 3–6**

Museum collections and their associated tanks of knowledge have the potential to function not only as public spaces for reflection and research but also as hubs of social cohesion, bridging generational divides. University museums are now called upon to broaden their target audiences, to transform disciplinary knowledge, and to foster mutually beneficial, bidirectional communication. However, is it feasible to convey scientific knowledge to very young children? The present study examines the methods of adaptation and the benefits of integrating specially designed educational material from the Zoological Museum of the University of Patras into a Montessori school setting for children aged 3–6. This implementation not only expands and strengthens the museum–school nexus but also aligns with the objectives of the 2030 Agenda regarding quality education, climate action, and sustainable cities. It has already been established that early childhood is a critical period for the development of pro-environmental attitudes. The selection of 20 bird species from the urban avifauna of Greek cities such as Patras and Athens, along with the development of printed materials, cards, and an observation recording sheet, was

carried out by the interdisciplinary team of the University's Zoological Museum, with the aim of making these resources available to school communities throughout Greece. The recording and analysis of qualitative data collected through participatory observation in the present case study, involving children aged 3–6 in a Montessori school in Attica, demonstrated that the integration of appropriate materials and the introduction of transformed disciplinary knowledge create the conditions for fostering pro-environmental behaviour. The findings are consistent with the Montessori approach: within a carefully prepared environment, the child progresses from spontaneous observation to meaningful engagement.

**LANA KARAIA**

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**Reframing a university art museum in development as a platform for sustainable development:  
The case of Apollon Kutateladze Tbilisi State Academy of Art**

The role of university museums in advancing the United Nations Sustainable Development Goals (SDGs) is often examined through established institutional practices and public programming. However, less attention is given to museums undergoing structural and conceptual transformation, particularly in contexts shaped by limited resources and evolving institutional frameworks. This paper explores how a university museum in development can become an active platform for sustainable development through an emerging strategic framework. Focusing on the University Museum of Apollon Kutateladze Tbilisi State Academy of Arts, the study presents an institution defined by a dual heritage: a 19th-century historic architectural palace and a collection of 20th-century Georgian fine and applied arts, largely composed of student works since the Academy's foundation in 1922. While the museum currently lacks a permanent exhibition, it is in the process of being restructured according to contemporary university museum standards. A key dimension of this transformation is the large-scale rehabilitation of the historic palace (2017–2021), carried out through conservation, restoration, and research processes led entirely by the Academy's professors, lecturers, and MA students, whose participation was integrated into their academic training and resulted in defended MA diploma projects. This internally driven initiative demonstrates an embedded model of education, research, and heritage preservation. The paper analyses an emerging development concept that repositions the museum as an integrated academic platform rather than solely an exhibition-based space. The proposed strategy emphasizes collection-based learning (object-based learning), interdisciplinary collaboration across five faculties, and the strengthening of student practice and research. It also prioritizes the digital transformation of collections and the development of public and educational programs. The study argues that sustainability in university museums should be understood as a systemic and institutional process, encompassing governance, education, and infrastructure, rather than only thematic programming. In this context, the museum contributes to SDG 4 (Quality Education), SDG 11 (Sustainable Cities and Communities), and SDG 9 (Innovation and

Infrastructure). By critically reflecting on ongoing challenges, including limited financial and infrastructural resources, the absence of a permanent exhibition, and the need for deeper institutional integration, the paper highlights how such constraints actively shape the museum's strategic direction. It suggests that the developmental phase of university museums offers a crucial opportunity to embed sustainability principles at the core of their mission. Ultimately, the paper proposes that transformation processes, even under constrained conditions, can position university museums as dynamic actors linking academic knowledge, cultural heritage, and societal engagement.

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**University museums as storytelling spaces: Experiential guided tours at the Mendel Museum supporting public engagement with sustainable development**

University museums play an important role in connecting academic knowledge with the wider public and in contributing to the goals of sustainable development through educational practices. This paper presents the example of experiential and interactive guided tours developed at the Mendel Museum of Masaryk University as a tool for engaging visitors with history through storytelling-based interpretation. Rather than presenting historical facts as isolated information, the museum's guided tours invite visitors to "travel to the past" through narrative immersion, personal stories, and interactive interpretation strategies. These approaches help visitors understand the history of the museum site and the scientific legacy of Gregor Mendel within their broader historical, cultural, and social context, while also presenting the rich musical life of the Augustinian monastery, including the formative period of Leoš Janáček, who studied there and later served as the director of the monastery choir. The tours are designed for diverse audiences, including school groups, families, and international visitors, and aim to transform the museum visit into a reflective and memorable learning experience. The contribution discusses how storytelling-based interpretation in university museums can function as an effective strategy for communicating complex knowledge, fostering public trust in science, and strengthening the role of university museums as active actors in sustainable development.

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**Advancing Sustainable Development through education and exhibition: The case of the Benilde Fashion Museum**

The Benilde Fashion Museum of De La Salle-College of Saint Benilde offers a model for how university museums can operate as active agents of sustainable development. Established in 2024, the museum is dedicated to the preservation, study, and public presentation of twentieth-

century Philippine fashion. It advances the position that fashion heritage, when conserved and meaningfully integrated into education and public engagement, can contribute to broader sustainability goals. Aligned with the United Nations Sustainable Development Goals, the museum situates its work within the frameworks of inclusive and equitable quality education, gender equality, and sustainable cities and communities through the safeguarding of cultural heritage. Its growing collection, now numbering close to a thousand garments, includes significant works by mid-century designers. These garments function as cultural documents, containing layered narratives that reflect pivotal moments in Philippine history, particularly in the post-war period following independence. The museum foregrounds garments worn by women who have played important roles in society, positioning clothing as a vehicle for recognition while emphasizing their contributions to nation-building. By integrating the collection into the college's fashion design program, students are given direct access to historical pieces, fostering a deeper understanding of design, material culture, and conservation. Open to the public, the museum also serves as a resource for researchers and lifelong learners. Housed in a pre-war structure, an architectural rarity in Manila, the museum further embodies sustainability through adaptive reuse, demonstrating how the preservation of both built and material heritage can inform contemporary cultural practice.

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### **From research to inclusive education: a digital platform for university museums supporting the achievement of the SDGs**

University museums and academic collections are often dispersed across institutional spaces, which limits their accessibility and reduces their potential as educational resources for diverse communities. This paper presents the development of an integrated digital platform for the Museum Collections of the Ionian University, combining the outcomes of two complementary, EU funded, research initiatives: The Digital Platform of the Cultural Depository of the Museum Collections of the Ionian University project focuses on the holistic digitization, documentation and digital preservation of the university's teaching and research collections, creating a digital cultural repository that highlights the cultural heritage of Corfu from the late nineteenth century onwards. Through digitization, metadata documentation and the development of a digital repository interoperable with national and European infrastructures, the project establishes a sustainable digital infrastructure for academic heritage. Building upon this digital foundation, the Cultural Information Organisation & Dissemination platform with XR project develops an ICT system that enables the organisation and dissemination of cultural information through multi-channel technologies and extended reality (XR) environments. By combining digital storytelling,

gamification techniques and interactive educational tools, the platform supports participatory and immersive engagement with university museum collections. The integration of these two projects results in a dynamic digital ecosystem that connects digitized heritage, educational applications and interactive interpretation tools. We discuss the conceptual framework, technological components and educational potential of the platform, highlighting how university museums can function as active actors for cultural education, open access to knowledge and community engagement in line with the Sustainable Development Goals.

### **MARGHERITA BONGIOVANNI<sup>1</sup> AND ELISA VANIN<sup>2</sup>**

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#### **Collections for the future: The Geo-Mineralogical Museum of Politecnico di Torino between climate transition and society**

The Geo-Mineralogical Museum of the Politecnico di Torino is a significant example of how university collections can support the Sustainable Development Goals (SDGs). Developed within the outreach mission activities of the Department of Environment, Land and Infrastructure Engineering (DIATI), the museum makes accessible a historical-scientific heritage of over 170 years, turning it into a resource for education, research, and public engagement. Its collections of minerals, rocks, meteorites, models, and scientific instruments highlight the role of research in innovation and development, while linking academic heritage to contemporary sustainability challenges. Through exhibitions and outreach activities, the museum raises awareness of issues such as the sustainable use of resources, the energy transition, and climate change. As an interdisciplinary and inclusive learning environment, it strengthens the role of university museums in education for sustainable development and reinforces the contribution of universities as bridges between academic knowledge and society.

### **ANNE COLLA<sup>1</sup> AND MARINO FICCO<sup>1</sup>**

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#### **The L Museum and sustainable development: Critical perspectives, actions, and challenges surrounding a fundamental question**

In 2026, Musée L, the university museum of UCLouvain, launched its new five-year strategic plan, focused in particular on deconstruction, decolonization, and inclusivity. These guiding principles inform all our actions and fuel a reflection on the cultural, social, and environmental responsibility of a university museum in the 21st century. Through our initiatives, we aim to encourage a critical examination of the economic, social, and environmental models that shape our society and influence our imaginations. We will present our priority focus regarding sustainability while offering a critical perspective on the concept of “sustainable development.” We will then present the opportunities and challenges the museum faces in realizing its ambition to become a catalyst for civic engagement, in line with the UCLouvain Transition Plan 2025 and the ICOM 2030 program. We will address, in particular, the paradox facing our museums—between declining subsidies and the demand for profitability—as well as the conditions necessary for profound change, based on a collective project and on the involvement,

motivation, and awareness of all teams. To conclude, we will present a few practical examples drawn from our real-world experience with transition, including a concrete example of the eco-friendly choices we have made in designing our exhibitions and, more specifically, an exhibition planned for 2027.

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**Inclusion of people with disabilities in practice: The case of Vilnius University's Observatory of Ideas**

Vilnius University's Observatory of Ideas opened its doors in 2023 in an interwar-period observatory building. The new museum seeks to establish itself as a space accessible to everyone, with particular attention to visitors with disabilities. Museum accessibility is part of sustainable development, ensuring equitable education and promoting universal social inclusion. However, ensuring accessibility doesn't come without challenges. First, direct engagement with communities representing people with disabilities has revealed the complexity of adapting a museum to the needs of diverse groups. As a result, it becomes challenging to find universal solutions. Accessibility is further complicated by the building's status as a historic heritage site and its technical characteristics. It becomes clear that, despite the museum's role in building a sustainable community by including people with disabilities, the process of adapting accessibility measures is complex and has its boundaries. In this presentation, the speakers address the following question: What practical solutions can be found to address emerging challenges?

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**Wonder / Wander: The Glucksman's creative engagement for University College Cork's Green Campus**

The Glucksman is a contemporary art museum that fosters open enquiry and exploratory risk in the gallery environment, and actively engages diverse communities of interest and place through off-site projects that enable transformational art experiences for all ages and abilities. Climate Action and Sustainability is a priority strand for the Glucksman's curatorial programme, informing exhibition practice and themes, educational outreach and collaborative commissioning for the University art collection to ensure that pioneering climate research achieves public awareness and engagement. The University College Cork (UCC) is ranked 2nd in the global UI Green Metric rankings, which measures the advancement of sustainability in 1745 institutions across 105 countries, and was the first university in the world to be awarded a Green Flag from the Foundation for Environmental Education. Through its Green Campus programme, UCC works to

embed sustainability across operations, teaching, research and outreach. The Glucksman has partnered with the Green Campus to devise and present creative projects that explore environmental issues through creative methodologies in a museum context. The Glucksman is currently part of a Horizon Europe-funded project that brings together universities (UCC, Wageningen, Università degli Studi di Salerno) and civil society organisations to address disaster preparedness through artistic, creative, and cultural engagement. This presentation will focus on how the museum has developed collaborative commissioning practices that enable artists, scientists and communities to co-create new works of art that reflect on and explore environmental research while embedding sustainability across its own operations and practices. Reflecting on the learning of projects such as Radical Archaeologies: Unearthing Landscape in Contemporary Irish art, Groundwork: Climate Awareness in the UCC Art Collection and Parklife: Biodiversity in Contemporary Irish Art, this presentation will provide insight into the potential for University Art Museums to promote research-led climate action projects that provide embodied learning and creative agency for people experiencing ecological grief.

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**Reuniting the past, reframing the future: University museums as participatory platforms of cultural diplomacy**

This paper examines the ‘nostos’ initiative of the Michael C. Carlos Museum (Emory University) in dialogue with the participatory program “Cultural Diplomacy in Action: Reuniting the Past, Reframing the Future” at the Archaeological Museum of Patras, proposing a new framework for museums as active agents of sustainable development, cultural diplomacy, and public awareness. The paper argues that universities and public museums can function as Cultural Intelligence hubs, integrating research, policy, and society. By bridging international restitution with local participation, the case reveals how museums operate simultaneously as diplomatic actors, educational institutions, and civic platforms. Through exhibitions such as “Stolen Past – Lost Future” and participatory activities, the museum fosters public dialogue, cultural responsibility, and collective memory. Ultimately, the study proposes a paradigm shift: repatriation is not just an ethical act but a catalyst for participatory cultural diplomacy, social engagement, and sustainable cultural futures. By fostering ethical awareness, intercultural understanding, and democratic participation, such initiatives contribute directly to the UN Sustainable Development Goals. Through interactive discussions, thematic exhibition tours, and a “Museum Hub” co-creation lab, participants critically engage with issues of illicit trafficking, cultural destruction, and heritage recovery while proposing solutions for future policy and practice. This approach repositions the museum as a civic laboratory, where citizens become active contributors to cultural governance.

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### **Heritage and sustainability: different perspectives?**

By 2026, the issue of sustainability is, in principle, a cross-cutting concern affecting all institutional policies implemented by a university. The Université Libre de Bruxelles (ULB) has fully grasped this: since 2020, it has been working to strengthen its contribution to the Sustainable Development Goals (SDGs), prioritising strong sustainability, according to which economic prosperity and social progress can only be achieved by respecting planetary boundaries. The renovation of a building on the University's historic campus offers the opportunity to incorporate a space dedicated to academic heritage. Rather than imposing a project and decisions, the authorities have chosen to involve practitioners on the ground. Having been meeting as a working group since spring 2025, these architects, mediators and, above all, collections managers are preparing a strategic brief with a view to organising this 'museum space'. The challenge facing this working group is to integrate, into the organisation and management of this heritage facility, the six pillars of sustainability defined by the ULB in the areas of teaching, research, campus management, community, society and governance. This paper will analyse the consistency between the strategic sustainability objectives, on the one hand, and the difficulties encountered in their implementation, on the other.

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### **Exploring the sustainable education practice model of museum-school-community collaboration**

Against the backdrop that Education for Sustainable Development (ESD) urgently needs diversified, grounded and collaborative implementation paths, this paper explores ESD practice through museum-school-community collaboration. It takes the University of Electronic Science and Technology of China (UESTC) Children's Summer Camp, which is a featured activity of the UESTC Electronic Science and Technology Museum, as a case study. The activity targets primary school students from Grades 1 to 6. Following the concept of "Technology as the Core, Diversified Empowerment", it integrates ESD goals into advanced electronic technology-themed activity planning, activity content design for different age groups, and interactive experiential activities. The activity has established an innovative museum-school-community collaboration model. This model focuses on resource integration, relies on complementary advantages, and advances collaborative education centered on ESD. It fully leverages the summer vacation as a unique advantage. The camp has run six sessions to date, attracting a total of over 2,300 young

participants. With a growing number of camp participants each year, the program has received coverage from national media and gained widespread social recognition. This paper summarizes the key elements of the ESD practice carried out by the Electronic Science and Technology Museum through a variety of categorized featured activities, covering clear brand positioning centered on ESD, content innovation for different age groups, professional team support, and effective publicity strategies. This paper further proposes future development pathways including expanding ESD coverage for disadvantaged groups, developing AI-powered digital science popularization resources, optimizing team building, and establishing a diversified brand matrix. This study provides practical references for university science and technology museums to deliver high-quality ESD through museum-school cooperation, and foster young people's ESD literacy through electronic science popularization.

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#### **The Low-Tech Studio: Experimentation of university museums without collections**

Contemporary ecological challenges require a transition toward a more sustainable society. This transition cannot rely solely on individual lifestyle changes; it also calls for structural, cultural, and technical transformations that enable us to inhabit a rapidly changing world. In this context, the Low-Tech Studio developed by the network of university museums at the University of Liège offers a space for experimentation and critical reflection on our modes of production, consumption, and knowledge transmission. Initially conceived as the reproduction of an apartment designed within planetary boundaries, the studio translates the commitments of the Paris Agreement into practical solutions for everyday life. Visitors can observe and test low-tech installations and devices in a quasi-real setting, promoting a sober, accessible, and replicable approach to technological innovation. However, the project quickly goes beyond the framework of a conventional exhibition: it unfolds as a social laboratory where scientific mediation, technical experimentation, and civic reflection on the habitability of tomorrow's world intersect. Located in the heart of a working-class neighbourhood, the space hosts workshops, meetings, and everyday micro-laboratories. It operates as a platform for local empowerment, encouraging co-creation, the exchange of practical knowledge, and the visibility of situated forms of expertise. The aim is to transform a living space into a genuine experimentarium of everyday life, where technical gestures and domestic experiments become supports for the production and circulation of knowledge. This experience also invites us to question the very notion of a university museum without a collection. The field being explored—contemporary low-tech practices—does not yet possess stabilized heritage traces. Rather than musealizing objects, the working hypothesis is to document practices, processes, and know-how (protocols, experimental narratives, living archives, and traces of fabrication). In this way, technical heritage gradually emerges through use and transmission. From this perspective, the museum shifts its focus: it no longer limits itself to conserving objects but seeks to activate practices and situated knowledge through a methodology based on accessibility, sobriety, and participation. The Low-Tech Studio thus offers a reproducible model for universities wishing to play an active role in the ecological transition. Ultimately, the project aims to foster a dynamic rooted in its territory, producing knowledge with and for the community while gradually consolidating the traces that will allow for a heritage in the making.

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**Governing the City of Science: University museums as institutional leaders for sustainable multi-stakeholder partnerships**

University museums are increasingly called upon to act as active agents of sustainable urban development, yet the governance architectures needed to sustain multi-stakeholder partnerships around shared territorial visions remain largely underdeveloped. This paper addresses this gap through the case of Padova, Italy, where the University of Padova's Museum Centre (CAM) has organically assumed an institutional leadership role in building a "City of Science" network connecting university, municipal, and private museums around a shared scientific heritage identity. Drawing on doctoral research mapping 33 museums in Padova's historic centre — including GIS spatial analysis, institutional profiling, and assessment of existing coordination mechanisms — the paper documents both the richness of Padova's scientific heritage ecosystem and its current governance fragility. Despite concrete initiatives including the Grand Tour of Science (2022), new museum openings, and a joint science itineraries pilot involving UNIPD, the Comune di Padova, and the private museum MUSME, coordination currently rests on social mechanisms and a temporary agreement, without a formalized governance architecture. To diagnose this gap and propose design solutions, the paper applies an inter-organizational coordination framework grounded in organizational theory and established in cultural heritage and museum network management, identifying the nature of interdependencies, interest structures, and complexity levels among the three institutional partners. The analysis reveals a foundation-logic interest structure requiring a bureaucratic network form with structured coordination mechanisms — currently absent. The paper argues that formalizing UNIPD's emerging leadership role through appropriate governance design would transform Padova's museum network into a replicable model of university museum-led urban sustainability partnership, with direct contributions to SDG 4, SDG 11, and SDG 16. Further expansion of this coordinating role into the broader Padova territory can be envisaged as a natural next step.

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**Documentation of archival material for the sustainability of collections and the preservation of the history of university museums. The case of the Museum of Mineralogy and Petrology of the National and Kapodistrian University of Athens**

University museums, responding both to long-standing needs in research and education and to key demands for outreach, collaboration, and the popularization of academic knowledge, must play a central role in university sustainability strategies. Through decisive initiatives, they can lay innovative foundations that influence these strategies through collaborations among members of the academic community. This paper analyses the methodology for cataloguing and documenting paper-based archival material from the collection of the Museum of Mineralogy and Petrology of the National and Kapodistrian University of Athens, within the framework of the protection of cultural and natural heritage (SDG 11, 12). The material consists specifically of handwritten letters in Greek, German, French, and Italian concerning the addition of objects to the collections, whose documentation was based on national and international standards (ICOM, ICCROM, EKT). The concern for the preservation of cultural heritage ensures the sustainability of the collections themselves, as well as the Museum's adaptability and resilience towards current and future challenges. The documentation was conducted as part of the Museum's collaboration with the Master's Program "Museum Studies," developing research partnerships within the university, and is linked to the protection of cultural heritage, as it highlights the following: a) the need for care in the preservation of documents, b) the importance of the archival collection's metadata, which enriches the knowledge regarding the collection's objects, and c) the potential for multi-level public engagement, utilizing knowledge acquired from the archive, within the context of quality education (SDG 4), bridging the gap between the university and society.

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**University museums and sustainable development: Restoration and accessibility strategies for the scientific museums of Federico II**

In the contemporary context, university museums are increasingly taking shape as strategic actors in sustainable development, capable of combining conservation, innovation, and social responsibility. This paper analyzes the restoration, enhancement, and accessibility project of the Center for Museums of Natural and Physical Sciences at the University of Naples Federico II, interpreting it as an emblematic case study of integration between historical heritage and new forms of accessibility. The project engages with the complexity of a stratified architectural palimpsest, where historical transformations have generated critical issues related to access and

circulation. Within this framework, accessibility is reinterpreted as both an ethical and operational principle, capable of guiding design choices and redefining the relationship between the building, its collections, and the public. The adopted strategy integrates architectural interventions, technological devices, and museographic solutions, shaping a new infrastructure of knowledge. Through this approach, the university museum emerges as a device of social sustainability, promoting inclusion and equity in access to culture, and as an agent of cultural sustainability, capable of preserving and critically reinterpreting historical memory. The introduction of digital technologies and new spaces for education further strengthens its educational dimension, fostering participatory and interdisciplinary forms of learning. Finally, the case of the Federico II museums highlights the role of university museums as open cultural infrastructures, capable of activating relationships between the university, the city, and the community. The restoration project thus takes on the character of a transformative practice, contributing to the goals of sustainable development and redefining the museum as an inclusive and participatory space serving contemporary society.

## **HERVÉ CAPS**

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### **From fluid dynamics to urban planning: when museum outreach becomes a tool for raising awareness**

In July 2021, the Liège area suffered severe flooding (39 deaths). This disaster could have been prevented through better river management, a better understanding of the impact of urbanization, and, above all, the consequences of climate change on rivers. Yet research is being conducted at the university to simulate and prevent flooding. Yet, stakeholders on the ground are conducting monitoring efforts. Despite all this, the collective consciousness has not fully grasped the scale of climate challenges. As a “simple” university science museum, what can we do? At the House of Science from the Liège University, our philosophy is to create educational tools that enable people to acquire skills, avoiding a one-way transmission of knowledge. We try to start from the public’s lived experiences to create tools that build confidence without feeling uneducated. In the particular case of flooding, we started from a simple sandbox. In partnership with local stakeholders and research laboratories, we designed an interactive educational tool and developed an awareness-raising activity. The augmented reality sandbox allows users to model a city’s topography and then simulate water flows (rain, rivers, etc.). By placing houses and other buildings or by altering the rainfall cycle, users can explore the impact of decisions or sudden climate changes on the sustainability of the modelled area. A total of 13 units has been created, and they are now circulated among municipalities to engage officials and local administrators. At the museum, a sandbox is open to the public and offers standard challenges (e.g., “Protect Your City”). Museum educators help in guiding visitors through these challenges. In this project, we adapted a mediation tool—originally developed for the museum and based on

scientific research—into a concrete initiative serving society. We have adapted it into an “outreach” awareness-raising tool to engage not only the large audience but also policymakers and urban planners. This educational initiative serves to foster civic education and raise awareness of our impact on the environment.

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### **Climate change, collections, and environmental education: Policies and challenges in conservation at the Coimbra Observatory**

This paper examines the challenges involved in managing an institution that is primarily oriented towards scientific research, while also being responsible for curating a significant scientific collection and maintaining an extensive natural area comprising several hectares of woodland (<https://www.uc.pt/ogauc/>). It focuses on the environmental pressures arising from climate change, as reflected in collection management and educational policies, but most acutely in the surrounding natural environment, where the impacts of environmental change are most immediately evident. The analysis highlights the role of the asset manager within the broader framework of university policies, as well as the need for responsive, short-term actions to address the consequences of climate change. These challenges demand a management approach that might be described as ‘navigating by sight,’ since the evolving nature of environmental pressures and resource constraints often precludes the development of fully structured, long-term strategies. Such challenges operate at several levels: coordination with the university, which involves a UNESCO World Heritage Site (although the observatory itself lies outside the classified area); strategic management, which seeks to balance the demands of scientific research with the promotion of historical heritage while prioritising scientific activity; and day-to-day operations, which require ongoing dialogue with key stakeholders, including researchers, museologists, educators, the local community, and the wider public. The case of the University of Coimbra Geophysical and Astronomical Observatory, with its scientific collection spanning more than two and a half centuries and buildings set within a natural landscape, serves as a valuable example of the difficulties faced by similar institutions. These include balancing collection conservation with public engagement, community outreach, and the stewardship of a woodland environment. The observatory's own research in astronomy and geophysics, particularly in the study of the Sun and the solar system, alongside the collection of meteorological, magnetic and seismic data, provides an ideal framework for addressing climate-related issues and developing programmes that interpret environmental changes observed directly on-site.

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**Pavilion as a living laboratory: Sustainable material, well-being, and interdisciplinary practice in a university museum context**

This paper examines the Pavilion of Contemplation project developed by Hanyang University Museum as a case study of how university museums can integrate sustainability and well-being through spatial practice, material experimentation, and interdisciplinary collaboration. The project was conceived in response to the 2023 International Museum Day theme, “Museums, Sustainability and Well-being,” and involved collaborations across architecture, dance, and the arts within the university. The study focuses on the pavilion as a form of temporary architecture constructed using Cross-Laminated Timber (CLT), a low-carbon material that allows modular assembly, disassembly, and reuse. The project incorporated sustainable design strategies, including the reuse of residual wooden panels generated during construction, embedding material circulation within the exhibition environment. In this sense, the pavilion functioned not only as a display structure but also as a demonstrative model of sustainable architectural practice. Beyond its material and architectural aspects, the pavilion operated as a sensory and participatory environment that encouraged embodied visitor experiences. Open spatial configurations, performative programs, and areas for rest invited visitors to engage actively with the space, positioning the museum as a site for emotional and social well-being. This expanded role reflects a shift from knowledge transmission toward experiential and affective engagement within university museums. The paper argues that such spatial interventions enable university museums to act as infrastructural platforms linking academic research, public engagement, and sustainability practices. By situating the pavilion within the broader framework of the Sustainable Development Goals, particularly SDG 11 (Sustainable Cities and Communities) and SDG 3 (Good Health and Well-being), the study highlights the potential of university museums to operate as experimental sites for sustainable and socially responsive practices.

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**Creating Impactful Environmental Exhibitions: Experiences from the University of Tartu Natural History Museum**

This presentation explores the experiences from the University of Tartu Natural History Museum on how to engage the public in biodiversity conservation and climate change issues through exhibitions. According to the Estonian Environmental Awareness Survey, people’s environmentally friendly behaviour can likely be linked to their sense that environmentalism is not something imposed on them, but rather a self-determined choice that is personally

meaningful (Ministry of Climate, 2024). Museums have the capacity to help people to connect with environmental issues through exhibitions by offering meaningful visits, creating space for education and fostering interaction between visitors themselves. The analysed three distinctive exhibition projects are from 2025–2026: 1) the exhibition on climate change and the societal and personal choices related to it; 2) the exhibition on the importance of wetlands—and particularly Estonian mires—as valuable habitats for species and on the role of mires as carbon sinks; 3) an art exhibition on the importance of mires. The concluded experiences include the following: international cooperation for knowledge transfer between universities and museums, which in our case involved the Climate House at the University of Oslo’s Natural History Museum and collaboration between the University of Tartu and Tallinn University; the integration of interdisciplinary scientific expertise, where educational psychology and the know-how of science communication can be applied to the traditional natural science content of a natural history museum exhibition; incorporating a cultural perspective alongside natural science information; adopting a social science approach in teaching. The presentation also addresses challenges to the museum that require attention, for example, the need to continually refine experimental solutions and the need for sustained support from the exhibition team throughout the exhibition period.

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### **Preserving technological memory: North-South cooperation for audiovisual heritage between Spain and Colombia**

Historically, technological heritage has been sidelined in global preservation agendas compared to fine arts or archaeology. Today, its conservation is a critical priority to prevent the irreversible loss of our industrial memory. In the Global South, this challenge is compounded by structural constraints, making international collaboration essential for sustainable development in the museum sector. This paper presents a collaborative case study between the Art and Heritage Fund and the Telecommunications Museum of the Universitat Politècnica de València (Spain) and the Universidad Nacional de Colombia. The partnership focuses on joint actions to preserve audiovisual and telecommunication technological heritage in Colombia, bridging the gap between European institutional experience and Latin American academic contexts. A central element of this cooperation is the educational initiative "LAS MÁQUINAS CUENTAN" (The Machines Tell the Story). This program serves as a platform for raising awareness about the cultural and historical value of industrial and technological assets within the audiovisual sphere. By sharing methodologies for documentation, restoration, and digital curation, the project strengthens the capacity of university museums to act as agents for the UN Sustainable Development Goals (SDGs). The results demonstrate that North-South cooperation not only safeguards physical artifacts but also fosters technical sovereignty and historical identity. This experience provides a replicable model for university museums seeking to implement sustainable heritage strategies through cross-continental knowledge exchange.

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### **Change is a constant—Sustaining collections risk management at University of Alberta Museums**

The University of Alberta Museums' 2012 Christmas in July event - when bright red collection disaster preparedness bins brimming with tools and supplies were distributed across all of its then 29 collections - marked a major milestone for collections risk management at the University of Alberta. In the 14 years since, the need for collection emergency preparedness has only

increased. Resource strains from shrinking budgets, aging facilities and climate change can severely impact perceived value, public trust, and wellness and equity both within and outside of the institution. Amidst constraints and change, the ability to prioritize and adapt is important to sustaining the health of staff and the public it serves. This session demonstrates how University of Alberta collection risk management is adapting through an iterative process, shaped both by past experience and forecasts for the future. It also demonstrates how responses to undesirable events may be leveraged to strengthen relationships and broaden community.

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**Translating tacit knowledge for public engagement: Curation as embodied practice in the Taiwan–Japan exhibition “Kata: Mind–Body Unity”**

University museums are increasingly expected to translate academic knowledge into forms that foster public engagement and sustainable development. Yet highly abstract philosophical concepts and tacit knowledge remain difficult to communicate through text-heavy displays. This paper examines a curatorial model developed for the 2025 Taiwan–Japan collaborative exhibition, *Kata: Mind–Body Unity*, organised by the National Cheng Kung University Museum and the University of Tsukuba. Treating curation as a research method, the project drew on East Asian ideas of mind–body unity and the embodied practice of *kata*. The exhibition combined interdisciplinary research, participatory interpretation, and audience-informed redesign. It highlights three core strategies: (1) translating philosophical and tacit knowledge into embodied, interactive experiences through collaboration across bioscience, sports science, and philosophy; (2) engaging martial arts and dance student clubs as co-creators and cultural mediators, expanding the museum’s educational role through youth participation; and (3) creating a dialogic Taiwan–Japan framework that juxtaposed distinct bodily practices to encourage cross-cultural reflection. Analysis of exhibition formats and audience feedback suggests three key findings: everyday bodily experience lowers barriers to engaging with complex concepts; heavy reliance on text limits accessibility; and embodied practices create more inclusive learning opportunities. The case demonstrates how university museums can contribute to Quality Education (SDG 4), Good Health and Well-Being (SDG 3), and Partnerships for the Goals (SDG 17). It offers a transferable framework for translating culturally embedded tacit knowledge into public learning and dialogue.

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**Folklore Museum, University of Ioannina: How it can contribute to the sustainability of the "poorest region of Europe"**

According to available statistics, Epirus is one of the poorest regions not only in Greece but also in the European Union. The UN's Sustainable Development Goals include both the elimination of inequalities and the sustainability of cities and communities. At the same time, in recent years, public debate has grown in Greece regarding the content and direction of development policies, their sustainability, and, above all, their compatibility with the right of local communities to preserve and/or reclaim their cultural and natural heritage (knowledge and practices, land resources and productive identities, landscapes, etc.). The paper will attempt to explore the opportunities available to a university museum, specifically the Folklore Museum of the Faculty of Philosophy at the University of Ioannina, in order to actively participate in the design and implementation of democratic and participatory policies regarding the promotion of cultural heritage—both tangible and intangible. Particular emphasis will be placed on the potential of the Folklore University Museum to highlight the importance of diverse systems of “local knowledge” (e.g., in the field of agri-food practices) within the framework of alternative strategies for the sustainability of border and mountain communities in Epirus.

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**Museums as social laboratories: Bridging research and practice for climate resilience**

Climate change poses an escalating and systemic threat to museums, affecting collections, infrastructures, and institutional practices. Addressing these risks is essential not only for safeguarding cultural heritage but also for enabling museums to fulfil their societal role as educators and contributors to sustainable development. However, integrating climate-responsive strategies into museum operations remains challenging, particularly for small and medium-sized institutions with limited resources and expertise. At the same time, meaningful public education on climate change requires prior institutional preparedness: museums must first assess and address their own climate vulnerabilities to act as credible agents of sustainability. In this context, collaboration with academia offers a critical pathway for bridging research and practice, with university museums possessing a unique competitive advantage in bridging scientific research and practical institutional application. This presentation introduces ClimAid, an interdisciplinary project in Cyprus that exemplifies this synergy. ClimAid aims to develop a holistic operational framework and decision-support tool tailored to Cyprus and the Mediterranean context, enabling museums to assess climate-related risk exposure and

implement mitigation and adaptation measures. Central to the project is a participatory, values-based approach, aiming to incorporate the perspectives and heritage values of museum professionals alongside academic expertise to ensure that risk assessments are culturally sensitive and operationally grounded. By involving four pilot museums in the co-design of this values-based framework, the project transforms museums into "social laboratories" where academic research is translated into actionable knowledge. By presenting ClimAid as a model of academia–museum collaboration, this paper argues that university museums are particularly well-positioned to replicate such co-design processes due to their embeddedness within a broader university ecosystem. As a result, university museums can act as incubators of climate-resilient practices, which can empower museums to navigate the climate crisis, translating research into actionable strategies and strengthening their contribution to sustainable development and climate resilience.

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### **Diagnosing for sustainability: A governance tool for university collections in the Brazilian Amazon UFPA Network**

University museums and collections are increasingly recognized as strategic actors in advancing Sustainable Development within higher education institutions. However, their contribution often remains constrained by weak governance structures, uneven resource distribution, and limited institutional visibility. This paper examines the diagnostic assessment developed by the UFPA Network of Collections and Museums in the Brazilian Amazon as a governance-based tool for strengthening the sustainability of university collections. Drawing on a structured methodological framework that combines questionnaires, documentary analysis, and on-site observation, the study evaluates core dimensions of collection management, including governance, staffing, storage conditions, environmental risks, documentation, access, and outreach. The resulting indicators and maturity levels make it possible to identify vulnerabilities, establish priorities, and support phased action planning across urgent, short-term, and medium-term horizons. The paper argues that diagnostic assessment should be understood not merely as a technical instrument for collection control, but as a strategic mechanism for institutional decision-making, preventive conservation, and accountable resource allocation. Particular attention is given to the challenges posed by tropical climate conditions and compound risks in the Amazonian context, highlighting the need for adaptable and context-sensitive approaches to sustainability. The UFPA case further demonstrates how diagnostic practice can be integrated into teaching, research, and extension, thereby reinforcing its role in professional training and institutional capacity-building. By showing the transferability of a low-cost and scalable framework, this study contributes to current debates on sustainability, governance, and the future of university heritage management.

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### **University Museums as Institutions of Sustainable Development**

University museums are important venues for informal learning, bridging the gap between academic knowledge and society. In this context, the collections of the Geology and Paleontology museums offer a particularly powerful tool for understanding the concept of 'deep time' (deep time thinking), enabling the public to engage with the Earth's long-term history and the major environmental changes that have shaped it. Through this temporal perspective, these collections can make a substantial contribution to understanding contemporary environmental issues and serve as a tool for engaging with the Sustainable Development Goals (SDGs), particularly SDGs 13 (Climate Action), 15 (Life on Land) and 12 (Responsible Consumption and Production). This paper presents an educational programme carried out at the Museum of Geology and Paleontology of the National and Kapodistrian University of Athens, entitled 'Learning about Mass Extinctions and Contemporary Biodiversity'. The programme is aimed at primary and secondary school pupils and encourages them to explore mass extinction events through the study of fossils, linking these to the contemporary challenges of the climate crisis. The aim of the initiative is not only to impart scientific knowledge, but also to foster critical thinking, environmental awareness and a sense of responsibility regarding human impacts on the environment. To assess the educational impact, a pre- and post-visit questionnaire is used, based on a Likert scale (1–5), which assesses understanding of human-induced climate change, a sense of environmental responsibility and the development of systems thinking regarding how ecosystems interact and are interdependent. At the same time, students are encouraged to propose sustainability actions inspired by historical examples of extinctions. The paper will present the results of the pre- and post-educational visit questionnaires, which are still being collected and analysed. The study highlights the role of university geological collections as active learning spaces that link an understanding of the past with the development of sustainable attitudes and practices for the future."

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### **Socio-technical approach to green campus implementation: GLAM-based digital archiving in the UM Corner Initiative by the University of Bhayangkara Jakarta Raya, Indonesia**

This article proposes a socio-technical analysis of Green Campus implementation through a GLAM-based framework (Gallery, Library, Archives, and Museum), drawing on the theoretical lens of the Social Construction of Technology to examine the interplay between digital infrastructures, institutional practices, and meaning-making processes. The case under study is

UM Corner, a documentary platform developed through a decade-long collaboration between the University of Mindanao (Philippines) and Universitas Bhayangkara Jakarta Raya (Indonesia), framed within the initiative “Fostering Friendship & Knowledge. UM Corner is conceptualized as a hybrid knowledge mediation space that integrates communicational, curatorial, archival, and informational functions. Grounded in GLAM principles, the platform facilitates the documentation, structuring, and circulation of heterogeneous collections, including archives, artifacts, audiovisual materials, and scholarly outputs, while simultaneously constructing a transnational institutional memory. The analysis highlights that the value of these archives lies not merely in their technical dimension, but in the social, organizational, and symbolic processes that shape their use and meaning. Since 2016, a structured digital infrastructure has been developed, incorporating barcode-based access systems and user-oriented interfaces to support mobile, participatory, and efficient access practices. From a sustainability perspective, UM Corner implements a paperless model based on standardized digital repositories, ensuring accessibility, long-term preservation, and knowledge dissemination. This configuration demonstrates how digital archiving, as a socio-technical construct, contributes to the reconfiguration of documentary practices and knowledge governance within the university context. The findings indicate that the integration of GLAM and digital technologies enhances not only informational efficiency but also the development of a sustainable knowledge ecosystem. This model supports the achievement of the Sustainable Development Goals, particularly SDG 4 (Quality Education), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 12 (Responsible Consumption and Production), positioning digital archiving as a strategic driver in transforming campuses into sustainable, connected, and knowledge-based environments.

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### **Amplifying UNESCO SDGs through Collaborative Online International Learning (COIL) with shared university museums and collections**

This presentation shares a case study of a new and innovative intercultural learning experience combining Object-Based Learning (OBL) and Collaborative Online International Learning (COIL) to enhance tertiary students’ Global Competence (GC) within a framework of education around UNESCO’s Sustainable Development Goals. 1-4. Our curriculum, the Intercultural Heritage Global Classroom (IHGC), was developed by academics and museum professionals across Tecnológico de Monterrey (Mexico), the University of Melbourne (Australia), and the University of Hong Kong.

By creating an experiential environment in which students engaged with curated digitised cultural resources from participating universities, the IHGC enables international students to engage critically with cross-cultural perspectives on contemporary issues aligned with the SDGs. Intended learning outcomes include improved communication and teamwork across diverse disciplines and cultures and a deeper understanding of global perspectives necessary for advancing the SDGs. Thirty-two students in the first iteration co-created a public online exhibition as their shared outcome. The project integrates Scholarship of Teaching and Learning (SoTL) to evaluate how the COIL curriculum meets course ILOs and how students perceive intercultural opportunities arising from collaborative co-curation of shared digital museum collections. Analysis shows the IHGC prompted personal growth, enhanced intercultural skills, leadership and pragmatic curatorial learning. Students reported increased confidence, trust-building, capacity to manage uncertainty, and learning in digital curation ethics and project management, hinging around SDG amplification. One student noted, “I discovered that curating can be a point of intersection between education and art” (P11). This presentation shares interdisciplinary, international perspectives on the development and delivery of the curriculum, including technological, practical, and ethical factors, and on the methodology’s transferability across disciplinary contexts.

# Flash talks

## **SILVIA CARRASQUERO**

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### **The care of the geological collections of the Museum of La Plata, Argentina as a form of learning in the social sustainability of natural resources**

This presentation describes a course, "Management of Geological Collections in a Museum," offered at the Faculty of Natural Sciences and Museum, National University of La Plata, Argentina, for students in their final years of geology and palaeontology programmes. The course introduces students to the conservation of geological collections. The institution comprises the faculty and the Museum of Natural Sciences (Museo de La Plata), with approximately 3,000 undergraduate students. The museum's collections include some 3,750,000 objects related to Biology, Geology, Paleontology, Archaeology, and Ethnography. When students take field trips as part of their studies, they usually collect rocks, minerals, and sometimes fossils. These activities are usually intended to preserve a memory of that trip, but some teachers do not instruct them on how to preserve them, and over time, the students throw away these samples, leave them abandoned in the hallways, or keep them, but without proper identification. The course taught by this author, in addition to learning about the conservation of collections, aims to reflect on the taking of unnecessary samples, to contribute to the sustainability of natural resources, academic sustainability that becomes social sustainability, ensuring that students transmit this knowledge to their environment.

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### **From laboratory instruments to heritage collections**

Within universities, many scientific instruments remain scattered throughout laboratories, often unrecognized as cultural heritage and excluded from institutional sustainability strategies. This presentation introduces an ongoing pilot project at the École Polytechnique de Bruxelles (ULB), which aims to transform these invisible objects into structured collections and shared resources. Initiated as part of a laboratory relocation, this initiative develops a methodological framework for the preservation of scientific instruments based on four stages: selection, identification, conservation, and promotion. Attention is given to establishing an adaptable inventory system that incorporates metadata specific to scientific and technical objects, as well as classification and documentation processes. This approach seeks to address a central challenge: how to assign heritage value to objects that were not originally intended for a museum setting. The project has already identified more than 300 instruments (ca. 1850–1990), revealing the richness of this largely hidden heritage. It also explores various ways of promoting these collections, such as

making them available online, designing physical and virtual exhibitions, and developing forms of outreach tailored to scientific environments. By promoting reuse over disposal and extending the life cycle of the instruments, the project is part of a broader effort to foster more responsible material practices within the university. Furthermore, by repositioning laboratory objects as educational and cultural resources, this initiative supports active and interdisciplinary forms of learning, contributes to the preservation of scientific heritage, and opens up opportunities for better integration of these collections into the university's missions.

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### **Between tangible and intangible heritage: identity and history of the University of Modena and Reggio Emilia**

The relevance of the intangible heritage of universities, which is essential for rebuilding their deep-rooted connection with the communities they belong to and represent, becomes even more significant in cases where the history spans several centuries, such as that of the University of Modena, which last year celebrated the 850th anniversary of its foundation. The study of the history of the University of Modena, starting with that of the Department of Engineering—whose roots can be traced back to the 18th century—through careful examination of documents held in city archives, libraries, and the local Civic Museum, has made it possible to build an important network of connections not only among Modena's cultural institutions but also with a significant tangible heritage, namely the portraits of the rectors who shaped the development of the university. The university possesses 25 such portraits of relevant Modenesi and Italian painters, through which it is possible to recount more than 160 years of history, from 1859 to the present day. Enhancing these portraits within a gallery allows for the reinterpretation and narration—through sustainable initiatives aimed both at students and broader audiences—of the history of their activities, linked to the sustainable development of the University of Modena starting from 1859, a highly significant year for all of Italy. From that year onward, universities were no longer dependent on the governments of individual states (in the case of Modena, the Duchy of Este), since, following a decree of November 13, 1859 (no. 3725) by Minister Gabrio Casati (1798–1873), they became institutions of the Kingdom of Italy with uniform structures and educational systems. It is important to share—through the still little-known portraits of the rectors—the history of their governance of the university and its considerable development by organizing various initiatives, particularly aimed at the Modena community, in collaboration with local cultural institutions. The history of their governance, which can be reconstructed through careful documentation, intersects both with Italian and local history, reflecting the continuous development of the university, which has influenced the structure of the city—not only in the

historic center, through the renovation and use of the most important historic buildings that also house museum collections, but also in urban planning, with the creation of large campuses in the western area adjacent to the historic center to accommodate classrooms, offices, studios, and laboratories.

**NICOLE CRAWFORD**

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**Funding the future: University museum leadership, philanthropy, and the work of sustainability**

As universities are increasingly called upon to advance the United Nations 2030 Agenda for Sustainable Development, university museums face a critical challenge: how to sustain ambitious, community-engaged programming while navigating shifting financial landscapes. This presentation argues that fundraising is not ancillary to this work but central to it. When aligned with institutional mission and public impact, philanthropy becomes a strategic tool for advancing sustainability goals. Drawing on leadership at the University of Wyoming Art Museum, USA, this case study examines how fundraising practices can be reframed as a form of public engagement and institutional sustainability. Within a public university with a statewide service mission, the museum has developed a diversified funding model, shifting from reliance on more than 60% university support to approximately 29%, with expanded private and partnership-based funding enabling greater institutional agility and programmatic responsiveness. This shift has supported expanded access to arts education, statewide outreach, and interdisciplinary programming. As a public-facing, interdisciplinary unit, the university museum is uniquely positioned to engage external partners, cultivate donor relationships, and align philanthropic investment with both academic and community impact in ways that extend beyond traditional academic departmental structures. Through targeted donor engagement, board activation, and mission-driven storytelling, fundraising has been directly linked to initiatives aligned with SDG 4 (Quality Education), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), and SDG 17 (Partnerships for the Goals). Programs such as statewide mobile outreach, object-based teaching initiatives, and contemporary exhibition projects demonstrate how financial support can be mobilized to extend the museum's reach beyond the campus and into broader public contexts. By reframing fundraising as a core leadership function within sustainability work, this presentation offers a model for how university museums can build resilient financial ecosystems while deepening their contributions to the SDGs. It argues that philanthropy, when strategically aligned with mission and community, is not simply a means of support but a critical mechanism for enabling long-term cultural and social impact.

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**From objects to ways of seeing: University museums as mediators of Sustainable Development**

This contribution explores how university museums can support sustainable development by shaping new ways of engaging with collections and knowledge. Sustainability in museums is often approached through institutional strategies or environmental practices. This proposal offers a complementary perspective: sustainability is also embedded in how meaning is produced. University museums do not simply display objects; they actively shape how these objects are understood and valued. From this standpoint, sustainability is linked to the “ways of seeing” that museums generate, as these influence how objects—and the knowledge they embody—are perceived by diverse audiences. Drawing on anthropological approaches, the presentation considers how ethnographic objects can be exhibited in ways that open them to interpretation. Rather than presenting them as fixed representations of tradition, exhibition and mediation strategies can invite visitors to question established categories, reflect on how knowledge is constructed, and engage more actively with what they see. The discussion is grounded in recent experiences at the Museo de Artes y Tradiciones Populares (Autonomous University of Madrid), where exhibition design and public programmes have explored formats that encourage dialogue and multiple interpretations, shifting the visitor’s role from passive observer to active participant. In this way, university museums can contribute to the Sustainable Development Goals—particularly SDG 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities)—by fostering critical thinking and meaningful engagement with cultural heritage. Sustainability is thus understood not only in operational terms but also as an interpretative and epistemological practice.

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**Smart and sustainable educational museums: A digital exhibition redesign for the Educational Museum of Antiquities, Alexandria University**

University museums are dynamic educational environments that contribute to achieving the Sustainable Development Goals (SDGs), particularly in heritage conservation, education, and community engagement. However, many educational university museums still rely on traditional exhibition practices that limit interaction, reduce visitor engagement, and expose archaeological objects to risks associated with direct physical display. The Educational Museum of Antiquities at the Faculty of Arts, Alexandria University, exemplifies these challenges, including limited

exhibition effectiveness, weak collection documentation, insufficient application of conservation standards, and restricted public accessibility, all of which constrain its educational and societal impact. This study proposes a model for a smart and sustainable educational museum through the redesign of the exhibition scenario and display cases in the Greek and Roman section of the museum. Adopting an applied methodological approach, the research reformulates the exhibition scenario using a thematic framework and develops smart display units that integrate three-dimensional digital documentation and interactive visual technologies. This integration enhances display quality and enriches the museum learning experience. The study presents a practical model demonstrating the potential transition toward smart, sustainable museums by creating an interactive exhibition environment that integrates educational and technological dimensions. The proposed model improves visitor experience, supports non-traditional learning, enables digital access beyond the physical space, and reduces reliance on material resources, thereby supporting environmental sustainability, cultural heritage preservation, sustainable cities and communities, and climate action goals. It also highlights the capacity of university museums to evolve into flexible educational platforms that actively contribute to sustainable development.

**PATTI WOOD FINKLE**

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**Decolonizing the Academic Museum: Working with Students to Lead the Way**

The Earth and Mineral Sciences Museum & Art Gallery at Pennsylvania State University just celebrated our 130th anniversary. Like many other small geology museums, we have not recognized our old collecting practices as problematic because, "we only collect rocks." However, even the "rocks" can have problematic pasts that need to be unravelled and told so that our visitors and students can better understand how colonial practices and colonial legacies impact the world today. By looking back at our past, we hope to offer students a clearer path to break these cycles by becoming active researchers in their own scientific fields. In the spring semester of 2026, museum staff taught 'Decolonizing the Academic Museum' to various science students within EMS College, including students in geosciences, geography, materials science, and energy extraction and finance. The course was created in the hope that the museum can provide these students with the tools and knowledge they will need in their careers to break the cycle of colonial impacts, such as the science of skydiving, and also ask them to help us begin the journey of decolonizing the museum collection by identifying and reporting on the areas we should address. The course examined both the global impact of colonization and the current efforts of academic museums to address these pasts and work with Indigenous and Indigenous groups to move forward. We were able to provide the foundation for these students to become better science managers as well as introduce the Sustainable Development Goals to a wide range of

streams, many of which had not been exposed to them in any meaningful way. Lessons include lessons learned from students as well as their final presentations on the starting points of the museum for its own journey.

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**Destructive analysis of non-organic museum collections**

Researchers at universities across the globe are looking for new ways to test inorganic materials for rare earth elements and for other research purposes, some of which are destructive and some of which aren't. The non-destructive analysis requests are usually granted, but how do university museums deal with the destructive requests? The Earth and Mineral Sciences Museum & Art Gallery is grappling with these questions as we take on historic departmental collections that hold holotype specimens and complete an inventory of our own collections to create an outward-facing data portal. Research requests from faculty and students, both undergraduate and graduate, are increasing as the collections become more visible and available to the campus community. In this Flash Talk, we will discuss our new destructive analysis request process and look at lessons learned through the first few test cases as we balance research and collections' preservation. Through increased access to the collection, we hope to support SDGs 4, 5, and 9 as the college and university push to discover new ways to access and recycle critical mineral resources.

**PIETRO GRAZIANO**

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**From education to display: Sustainable Development and the Gallery of the Academy of Fine Arts in Naples**

This paper engages directly with the framework established by ICOM-UMAC analyzing the case of the Galleria dell'Accademia di Napoli (GAN), a paradigmatic southern european example of how a (fine arts) university art museum can embody and advance this agenda across multiple dimensions of sustainability. Born in 1891, when the painter Filippo Palizzi — then president of the Istituto di Belle Arti di Napoli — transformed the institution's existing collection — typical of a School of Fine Arts which students had to learn art from examples - into a permanent gallery of modern art, it reached a peak 1896, when Palizzi donated to the nascent gallery his own works alongside those of his brothers Giuseppe, Nicola, and Francesco Paolo, as well as a group of French artists. In this act of institutional generosity, Palizzi transferred to the Academy a relevant share of unfinished works, to serve the study of the creating process, as the gift was intended

primarily for educational purposes. GAN exemplifies several intersecting principles of Sustainable Development. It operates as a site of intergenerational knowledge transfer, mobilizing the institution's own School of Restoration in active conservation work under public heritage supervision — a model directly relevant to SDG 9. It pursues social sustainability by expanding the representation of women artists and broadening public access to a collection long denied to audiences, contributing to SDG 10. Its collection has been sustained through a long tradition of loans, donations, and interinstitutional collaboration, embodying the kind of participatory heritage governance that UMAC identifies as central to the role of academic museums within the communities they serve. The story of the GAN thus invites a broader reflection on the strategic role that university museums can play in sustainable cultural ecosystems: not as peripheral repositories, but as active laboratories — in the words of the institution's own recent vision — of research, documentation, and civic culture, capable of bridging memory and innovation in the service of a more equitable and resilient society.

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**From science and technology museum's exhibits to Public Engagement for a Sustainable Future**

University museums serve as modern intermediaries between scientific knowledge and society, actively contributing to the promotion of the Sustainable Development Goals (SDGs) through education and public engagement. This paper examines the role of the Museum of Science and Technology (MST) of the National and Kapodistrian University of Athens (NKUA) in informal education to highlight the continuous progress of science and the evolution of technology and its applications, as well as to foster an understanding of contemporary environmental challenges, through experiential collaborations with school and academic communities. Through the educational use of its collections, the Museum connects fundamental scientific principles with issues of sustainability. For example, this includes conducting hands-on experiments in small groups, following the methodological steps of scientific inquiry with worksheets and instruments for measuring electrical quantities that focus on understanding energy consumption and energy efficiency, addressing relevant sustainable development goals. It is also recommended to utilize similar experimental setups related to atmospheric pressure and physical phenomena to connect scientific knowledge with issues of climate change and environmental balance. The uniqueness of the MST lies in its dual role: both as an integral part of our historical and cultural heritage and as an institution for research and education, enabling the transformation and application of scientific knowledge into experiential learning opportunities. The use of digital storytelling and interactive applications enhances visitor engagement, facilitating the reinterpretation of exhibits and their connection to sustainable development goals.

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**The Hanyang Museum Academy: A public lecture series for lifelong learning and community engagement in a university museum**

Hanyang University Museum develops educational initiatives aligned with the SDGs, particularly Quality Education and Sustainable Cities and Communities. This study focuses on the ‘Hanyang Museum Academy’ as a public lecture series that connects the university with the local community, demonstrating how a university museum can function as a space for Education for Sustainable Development. The ‘Hanyang Museum Academy’ is a flagship public lecture series sustained for nine years, offering structured and accessible lifelong learning opportunities. Open to university members and local residents, it fosters an inclusive educational environment by engaging participants from diverse backgrounds, with particularly active participation among senior citizens. Through continuous learning that encourages intellectual engagement, dialogue, and knowledge-sharing, the Academy contributes to inclusive and equitable lifelong education (SDG 4). The program is held twice annually, with nine lectures per session. Its curriculum reflects both institutional identity and local context; it began with lectures on the history of Seoul—historically known as ‘Hanyang’, the name used from the 14th to the 19th century—establishing an initial focus on the city’s historical development in relation to the university’s name. It has since expanded to include urban studies, art and cultural history, medical humanities, and interdisciplinary topics. In 2026, the program returns to twentieth-century Seoul. The first half examines urban infrastructure, while the second explores the everyday lives of citizens. This structure strengthens local identity and deepens understanding of the urban environment and community dynamics (SDG 11). Importantly, the program also responds to the challenges of an ageing society in South Korea. With many participants being senior citizens, it serves as a public lecture platform for lifelong learning that supports intellectual engagement, social interaction, and mental well-being. In doing so, the program contributes to social sustainability while reinforcing inclusive education and community-based learning, as well as supporting Good Health and Well-being (SDG 3), particularly in the context of an ageing society. This case highlights how a university museum can address the needs of an ageing population while fostering a sustainable connection between education and local communities.

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**Reframing regional heritage: Sustainable curation**

Mining generational knowledge rooted in our Wyoming heritage, the Galleries, Library, Archives, and Museums (GLAM) curation team is currently building an exhibition that highlights the vital

intersections within our collections to empower college students to reflect on the “West”. This new exhibit documents a unique regional heritage where ecology, natural resources, art, and economy converge. The gallery space will transcend the typical format to include the campus greenhouse and a regionally significant herbarium collection, situating our natural science history – a living archive- with traditional art and archival collections. Exploring historical narratives alongside biological and geological specimens will invite students to see themselves as part of a continuous, generational, ecological story. Additional satellite exhibitions will decentralize the commonly known narrative, highlighting student research and local historians work, with topics such as the early 20th century dramatic “Bone Wars”, when fossils found in Wyoming initiated tremendous public interest in dinosaurs. This collaborative model demonstrates that sustainability is not just about the future, it is about how we curate our heritage as part of stakeholders’ present.

### **SPYRIDOULA PYRPYLI**

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### **The 17 SDGs as a powerful tool for promoting the scientific decolonization of university museums’ collections of natural history. Case study: Pikermian material and the 19th-century Physiographic Museum of the University of Athens**

The human, environmental and epistemological costs of assembling natural history collections under colonial conditions constitute an issue that university natural history museums should examine by identifying potential indications of power imbalances or violence in past practices. The contemporary concept of decolonizing science operates in this direction, interrogating historically shaped inequalities in the production and circulation of knowledge. A relevant and particularly interesting example of unequal scientific exploitation and dissemination of natural heritage is the case of the material from the famous 19th-century excavations at Pikermi (Attica, Greece). Greece served as the excavation site, while institutions of more powerful countries functioned as the primary centers for the classification and publication of the findings. Thus, although the discovery of Pikermian material represented the first major geological event of international significance in independent Greece, a significant part of the findings was exported to Paris, Munich, Berlin, and London, and was dispersed among numerous natural history museums abroad. This material, however, could have been attributed to the Physiographic (Natural History) Museum of the University of Athens. Therefore, in 19th-century Greece, alongside the well-documented archaeological losses resulting from the colonial transfers carried out by the powerful nations of the time to enrich their museums, losses of natural history material are also identified. The aim of the proposed paper is to highlight the significant ethical and scientific value of examining, critically analyzing, and reflecting on the history of the dispersal of Pikermian material, in light of the 17 SDGs. It uses as a case study the Physiographic Museum of the University of Athens, which was deprived of material that it might otherwise have had

colonial practices of the time not been implemented. Pikermian material reveals characteristic structural inequalities in the history of global science. A critical examination of its history—a well-known example of scientific colonialism and concentration of scientific power in specific European centers— through the framework of the 17 SDGs, can contribute to a deeper understanding of contemporary approaches to decolonizing science and museum ethics related to the formation and management of university museum collections. These contemporary approaches reinforce the role of university museums as active agents of scientific justice and institutional accountability, not through simplistic claims for restitution, but rather through nuanced ethical approaches that promote collaboration, co-curation and the digital reunification of dispersed scientific material.

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**Museums in a changing climate: University museum curricular approaches**

How do museums respond to changing climates and develop resilience strategies? This question drives a museum-based seminar that explores local and global museum approaches to climate awareness, adaptability, advocacy, and action. Class sessions include site visits to campus museums and other cultural organizations. Topics include: museum definitions and sustainability; conservation ideas and practices; climate change, collections, and cultural heritage; environmental policies; museum initiatives; natural history museums and climate research; Indigenous perspectives; and climate wellness. Students learn about museum roles and responsibilities, museums as unifying sources for community to spread awareness and empower action, storytelling and communication, infrastructure and operational practices, and adaptations to reduce carbon footprints, among other issues. For students, key take-aways included: museums' role in awareness and advocacy of global environmental issues; museums as centers of community and as safe spaces during climate events; the ways museums make climate impacts understandable and emotionally memorable for the public. While this course serves as one strategy for educating small groups of university students on issues and challenges to sustainable development and who hopefully continue to expand and apply their learning, it further contributes to the learning, thinking, and doing of the various campus museums involved, raising shared questions and considering shared strategies for the future. This paper will reflect on course impacts as well as other museum curricular approaches, including a series of undergraduate seminars focused on the UN Sustainable Goals, to consider how academic museums serve as actors enhancing the role of universities for Sustainable Development.

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**Visualizing nature and the long-term transmission of knowledge: Art science approaches to university collections**

Universities preserve diverse collections across departments, including museums, laboratories, and research institutes, that embody long-term processes of observing, recording, and understanding the natural world. These materials not only function as scientific records but also reflect historical and cultural practices of visualizing nature. This presentation explores how university collections can be reinterpreted through an art science perspective that connects scientific observation with visual and cultural analysis. It focuses on "Dynamic Earth" (working title), an exhibition project currently under development at the Intermediatheque, The University Museum, The University of Tokyo (UMUT), which draws on historical materials related to earthquake and volcano studies, including photographs, illustrations, and seismological waveforms. By presenting these materials within a university museum context, the project examines how scientific archives can be understood as both natural history and cultural history. This approach highlights the role of visual representation in the production and transmission of knowledge, particularly in relation to long-term understanding of natural phenomena and disaster awareness. Through this case, the presentation reflects on the role of university museums in sustaining and reactivating knowledge across disciplinary boundaries, emphasizing their potential as spaces for interdisciplinary learning and long-term knowledge transmission.

# Posters

**KARINA AULIA**

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**Opening the store: The Hunterian Collections Study Centre and the role of university museums in advancing Education and Wellbeing (SDG 3 and 4)**

University museums are increasingly positioned within sustainability discourse as institutional actors contributing to educational, social, and wellbeing agendas. This poster critically examines the Hunterian Collections Study Centre at Kelvin Hall, University of Glasgow, as a case study to interrogate how open collection models contribute to Sustainable Development Goals (SDGs) 3 (Good Health and Wellbeing) and 4 (Quality Education). The Hunterian has been at the heart of the University of Glasgow since 1807. As the oldest public museum in Scotland, its collections span the arts, sciences, and humanities, forming a significant cultural and academic resource. The university museum has developed the Hunterian Collections Study Centre as a purpose-designed facility located within Kelvin Hall, a historic venue now repurposed as a centre of cultural excellence. The Study Centre provides structured access to collections, temporary displays, teaching, and research, offering in-person appointments for students, researchers, and members of the public. In doing so, it positions the collections simultaneously as an academic resource and as an accessible cultural infrastructure. In relation to SDG 4, the study explores how object-based learning and research access are mediated through institutional frameworks that both enable and structure educational encounters. It argues that “openness” operates not simply as availability, but as a curated pedagogical infrastructure embedded within higher education systems. In relation to SDG 3, the poster engages with scholarship on cultural wellbeing and the “museum effect,” examining how open collection environments may foster experiences of inclusion, curiosity, and intellectual wellbeing, while also critically questioning how such outcomes are defined, measured, and distributed across different user groups. Drawing on the author’s experience as a Museum Studies student at the University of Glasgow, the poster reflects on how the Hunterian Collections Study Centre functions as an example of a university museum contributing to sustainable development through integrated educational and wellbeing practices. By situating this case within SDG frameworks, the poster contributes to critical museum studies debates on the mobilisation of university museums within global sustainability agendas, while critically interrogating the assumptions underpinning their role as agents of social value.

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**Historical herbaria as tools for sustainable development: Evidence from the Sassarese, Sardinia**

Nowadays, historical herbaria serve as valuable resources for documentation and research, advancing the Sustainable Development Goals (SDGs) and fostering public engagement on environmental issues. Together with historical floristic data, they provide critical insights into

changes in biodiversity over time. This is the case of the historical Herbarium Moris, part of the botanical collections of the University of Sassari. The herbarium includes specimens collected by G.G. Moris during the first half of the 19th century. Our study focuses on environmental changes documented through shifts in the flora of a specific area in north-western Sardinia, around the City of Sassari, known as the “Sassarese.” We compared the data available from the Herbarium with the updated flora of the same area. The analysis confirms and strengthens the results of a previous study, which reported a checklist compiled by G. Pitalis for the same area. In recent decades, the region has undergone significant biodiversity shifts due to land-use and climate change. Approximately 60% of vegetal (crop wild relative) species and 20% of freshwater habitat species have disappeared, while several alien species have been introduced over the past two centuries. The study highlights the impact of agricultural abandonment, urbanization, and habitat loss on species decline. These findings emphasize the importance of data from Historical Herbaria in understanding biodiversity trends and guiding conservation and restoration efforts in Mediterranean landscapes. They also help make climate action more tangible by connecting people with environmental history and biodiversity.

#### **MATILDE BIANCHI**

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#### **Unlocking participatory potential: A sociometric study on the discovery of the University of Padua’s museums and cultural heritage sites**

The current museum landscape, focused on social sustainability and inclusion, recognises university museums as key venues for building social capital. This mission was reaffirmed by the ICOM General Conference in Dubai in 2025 through Resolution 4, which promotes youth empowerment as a driver for the SDGs. This paper presents a research project within the PhD programme in Digital Humanities at the University of Genoa, conducted at the University Centre for Museums of the University of Padua between January and July 2026. The research addresses the gap between the excellence of academic collections and student participation, unlocking the potential of the audience by studying how cultural heritage becomes a resource for identity and engagement. The methodological framework involves a CAWI survey designed for the Padua academic context, targeting bachelor’s and master’s students, with recruitment via the University newsletter to ensure a representative sample across disciplines. The tool combines closed-ended questions for statistical profiling with open-ended items capturing qualitative nuances of students’ perceptions. This integration enables a holistic assessment of the audience (NEMO 2024), incorporating logistical, informational, and behavioural variables and following Henry McGhie’s approach (2021), exploring motivations behind engagement with or avoidance of the University of Padua’s museums and cultural heritage sites. Data analysis, currently underway, uses RStudio between June and July 2026. The discussion focuses on the model’s ability to reveal latent potential in student interaction, providing indicators for a more inclusive

redesign of museum offerings. Ultimately, the study shows how digital audience measurement can transform academic heritage into a hub for collective well-being, consolidating university museums as key players in sustainable development.

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### **Be a paleontologist for a day: A student-led educational programme for the school community at the NKUA Museum of Geology and Paleontology**

The present study seeks to elucidate the content and the design methodology of the educational programme "Be a Paleontologist for a Day" developed at the Museum of Geology and Paleontology of the National and Kapodistrian University of Athens (NKUA). The programme is addressed to compulsory education and places particular emphasis on the interconnection between paleontology and the Sustainable Development Goals. The study is structured around two principal axes. The first concerns the content of the programme, which is grounded in the Museum's collections and is organized into the following stages: (i) introduction to the profession of the paleontologist; (ii) familiarization with the scales of geological time, culminating in the Holocene and highlighting climate change (SDG 13); (iii) exploration of contemporary environmental challenges related to climate change and biodiversity conservation through the lens of paleontological research (SDGs 14 and 15); and (iv) identification of the ethical principles governing paleontological research, particularly with regard to the collection, management, and promotion of fossils as integral components of natural and geological heritage. The second axis pertains to the design methodology, which was developed by postgraduate students of the Interdepartmental Postgraduate Programme "Museum Studies" at NKUA within the framework of their academic training. This process transforms the development of the programme into a dynamic learning environment for future museum professionals, who become acquainted with the methodology of designing museum education programmes in the context of outreach and the communication of the geosciences. The innovation of the initiative lies in the museum's dual role, both as an educational environment for university students and as a space of non-formal education for the school community, thereby promoting quality education (SDG 4), with the students themselves acting as facilitators. In this way, the university museum operates across two interconnected levels in promoting quality education.

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**Universities, collections and museums in Brazil: Building new parameters and definitions**

What is the profile of university collections and museums in Brazil? Based on the importance of preserving and promoting the university collection, dedicated to teaching, research and university extension, the study was structured on three pillars: 1) organization of references; 2) collection, categorization and availability of data; 3) structuring of the Digital Platform of the Brazilian University Collections and Museums Network, an accessible repository with four databases: a) university collections and museums, b) people, c) publications, d) events. In the search for new concepts and definitions, the research shaped the term 'University Museological Nucleus' to designate the extremely varied set of university collections and museums. The research also coined the terminology 'Ecosistema Museal' within the universe of university heritage and in the context of the Digital Platform (<http://rbcmu.com.br/>), which currently has 686 collections and university museums - 32 Planetariums and 185 Herbariums should be added with collections open to visitors, totaling incredible 903 University Museological Nucleus! In addition, we have 624 people, 245 publications and 50 registered events. The next step will be articulating the work groups and implementing the representative council.

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**Passion meets precarity: A data-driven analysis of the academic museum field**

Academic museums, galleries, and collections serve not only as hubs for cultural inquiry and interdisciplinary learning but also as critical sites for professional development within the museum field. Understanding the unique characteristics of academic museum work is essential to fostering a strong and resilient workforce. What defines the experience of working in an academic setting? What is valued most about being part of an academic museum? What are the primary hopes and concerns for the wider field? This poster explores these questions through a data-driven analysis of member feedback collected by the Association of Academic Museums and Galleries (AAMG). Drawing on Member of the Month interviews between 2021 and 2026, it examines the role professional associations play in supporting academic museum workers. The findings highlight how shared context can strengthen professional networks and support the long-term sustainability of the academic museum field.

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**University museums driving sustainable development and gender equality: The NCKU Museum's Women in STEM Initiative**

In an era of rapid technological change, increasing women's participation in STEM is essential to sustainable development. Yet women remain underrepresented in STEM in Taiwan, reflecting gender stereotypes, limited role models, and a weak sense of belonging. Responding to the UMAC 2026 theme, this poster examines the National Cheng Kung University (NCKU) Museum's "Campus Treasure Hunt—Women in STEM Project" and its core series, "STEM up!—Our Technology Forum." Since 2023, the initiative has positioned the museum as a "third space" linking campus, communities, and the public through science communication, intergenerational dialogue, hands-on learning, and outreach, while advancing Quality Education (SDG 4), Gender Equality (SDG 5), and Climate Action (SDG 13). This poster analyses 10 activities conducted between September 2024 and June 2025, drawing on 139 valid questionnaires and a total attendance of around 250. Representative cases include "Cybersecurity through Your Eyes," which challenged disciplinary and gender stereotypes through everyday cybersecurity issues and Morse code activities; "Following Wind and Tide: A Journey through the Changing Chigu Lagoon," which encouraged reflection on climate change, energy transition, and environmental justice; and an outreach science fair at Fangliao Station, which extended access to science learning and women-in-STEM role models. Results show that nearly 70% of female participants reported greater willingness to pursue STEM-related pathways, while the overall gender ratio shifted from about 1:3 (male: female) toward 1:1. The project demonstrates how a university museum can serve as a dynamic platform for inclusive STEM education, science communication, and sustainability-oriented public engagement.

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**Towards the centenary: University history research as a foundation for institutional sustainability**

This poster showcases how the National Cheng Kung University (NCKU) Museum utilizes a series of strategic initiatives to transform university history research into cultural capital for institutional sustainability. In anticipation of NCKU's centenary in 2031, the museum has systematically promoted the "University History and Institutional History" series, including academic seminars and writing workshops, since 2022. The core strategy consists of two pillars: First, establishing an academic platform through professional seminars to deepen fundamental research on university heritage (SDG 4). Second, lowering the barrier to participation through

regular workshops that invite faculty, students, and alumni to co-construct collective memory (SDG 17). The poster will illustrate the progression from 2022 to 2025, demonstrating how isolated historical inquiries have evolved into a cross-departmental collaborative network. This practice highlights the pivotal role of university museums in institutional transformation: not only as keepers of past heritage but also as active agents in building a foundation of identity and sustainable governance for the university's next century through institutionalized knowledge production and social inclusion.

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**A cultural-educational Platform: Co-creating the “Settling on the Sandbar” Digital Exhibition Platform — practices and reflections from the National Cheng Kung University**

The digital exhibition and knowledge platform *Settling on the Sandbar—The Fort, City and Citizens of Zeelandia in 17th-Century Formosa* is a project developed by the National Cheng Kung University (NCKU) Museum, supported by Taiwan's Ministry of Culture under the 2023 5G Technology Program. The platform integrates long-term research on Fort Zeelandia conducted by Professor Huang En-yu of NCKU's Department of Architecture, transforming scholarly findings into an accessible digital exhibition environment. Adopting an interdisciplinary approach, the project brings together academic research, curatorial practice, and digital technology development. Coordinated by the NCKU Museum, it establishes a collaborative workflow that connects university research units with professional digital production, enabling the translation of research outcomes into publicly accessible content. Within this process, the museum serves as a key mediator, facilitating knowledge translation, curatorial narrative construction, and cross-disciplinary communication. The project is situated within the broader context of Tainan's 400th anniversary (2024–2025), revisiting Fort Zeelandia (now Anping Fort) as a critical site in the city's early modern development. Focusing on the 17th-century coastal urban landscape, the platform explores multiple dimensions, including fortifications, urban development, everyday life, and intercultural interactions. Through digital exhibition techniques such as 3D reconstructions, historical map comparisons, and interactive interfaces, specialized knowledge is presented in a more tangible and engaging manner. By incorporating multiple narrative perspectives, the platform enables users to understand Tainan's historical development as an early port city within the broader contexts of maritime history, migration, and cross-cultural exchange. This project demonstrates how university museums can extend beyond traditional roles to become platforms for interdisciplinary collaboration, public engagement, and knowledge dissemination. As an evolving digital cultural resource, it contributes to the promotion of accessible education and sustainable cultural development.

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### **The Museum of Natural History of Florence as a place of social development ante litteram: focus on the Litho-Mineralogical Collections**

The Museum of Natural History of Florence traces its roots back to the Imperial and Royal Museum of Physics and Natural History, inaugurated in 1775 as the first natural history museum in Europe open to the public. This event marked a fundamental cultural turning point, sanctioning the transition from private collections conceived for the entertainment of sovereigns to a new model oriented toward scientific development and public utility. Commissioned by the Grand Duke of Tuscany with the aim of elevating the culture of the people through science, the museum was structured to encourage self-directed learning among its visitors. In fact, the materials were organized according to a logical path that ranged from the earth to the sky, integrating earth sciences, botany, anatomy, and astronomy—all supported by innovative object descriptions, spaces dedicated to experimentation, and an annexed, well-stocked library (Contardi, 2009). In modern terms, the concept of sustainability was remote, but certainly not that of social development based on learning. Within this context, the mineralogical collections have always played a prominent role. At the time of its opening, the catalogue already counted over 24,000 specimens, generically defined as "minerals" at the time (but also including rocks and fossils), largely transferred from the Tribuna of the Uffizi to celebrate the magnificence of nature. In the following years, precious glyptic objects that belonged to the Medici family and were previously preserved at the Uffizi were also added (Cipriani, 2011). Over time, the heritage was significantly enriched through purchases and donations. Furthermore, the intense study campaigns conducted on the Island of Elba during the nineteenth century allowed the museum to see the creation of one of the most important and vast collections of Elban minerals in the world (Tanelli & Poggi, 2012). In 2024, the museum inaugurated a new exhibition layout that aims to recover the spirit of its origins, reuniting the Litho-Mineralogical Collections that history had temporarily separated from those kept at La Specola. The new rooms do not limit themselves to covering the classic themes of the discipline, such as mineral systematics and planetary sciences, but open up decisively toward contemporary issues. In fact, the exhibition path offers important new insights and concepts on current matters, such as mining exploitation in Italy and the geopolitical distribution of resources and critical minerals worldwide. Finally, the museum continues to be a living hub of scientific and historical research. To give a few examples, recent studies on the Collection of Carved Stones have made it possible to identify the geographical origin of certain gemstones and to recognize a diamond model historically kept at the Uffizi (Fabrizi et al., 2025). In parallel, experts are conducting a systematic analysis of the eighteenth-century collection of the naturalist Giovanni Targioni Tozzetti: a heritage of about 2,000 specimens that has reached us virtually intact. This study not only reveals unprecedented details about the technological and scientific development of Tuscany at the time, but will also soon allow for the enhancement and public display of specimens that have remained entirely unpublished until now.

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**The university museum as a social laboratory in the face of the climate emergency: rescue and curative conservation of a historic radio collection after the Valencia, Spain DANA**

In the current climate crisis scenario, university museums are emerging as critical infrastructures for resilience and sustainable development. This proposal outlines the response of the Universitat Politècnica de València (UPV) (Spain) to the impact of the 2024 Valencia DANA (high-altitude isolated depression) on a private collection of historic radios in the town of Paiporta. The project, led by the “Vicente Miralles Segarra” Museum of Telecommunications History, exemplifies the museum’s evolution into a “social laboratory” capable of generating proactive responses to environmental disasters. The emergency phase was structured under the “First Aid to Cultural Heritage” (ICCROM) framework, mobilising a student volunteer network that carried out the rescue of 124 radio sets affected by mud and humidity. Following this rescue phase and the donation of the collection to the Museum of Telecommunications’ holdings, the UPV Heritage and Art Collection Area took over the management of an integral curative conservation process. Currently, the work is being carried out by an interdisciplinary team comprising specialised technicians, conservation-restoration interns, and telecommunications engineers. This synergy allows for an intervention where the preservation of physical integrity coexists with functional recovery—the essence of technological heritage. Moving beyond the material aspect, the recovery of these radios constitutes a curative action for Valencian society, symbolising the overcoming of the catastrophe. This initiative reaffirms that university museums are essential institutions at the service of society, transforming heritage into a tool for reparation, memory, and collective hope.

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**Values education through the arts: Ateneo Art Gallery and Teach For the Philippines Partnership**

In the Philippines, visiting museums is not fully integrated into school activities and programs due to the lack of resources. Even when it is part of a day-long school trip, the museum visit is rushed to fit other locations. The Ateneo Art Gallery, a modern and contemporary art museum under the Jesuit-run Ateneo de Manila University, began a partnership with Teach for the Philippines in 2018 to provide students from public schools with their first meaningful museum visit experience. In collaboration with teacher volunteers and curriculum planners, a half-day visit (2-

3 hours long) to the university art museum provides a close encounter with contemporary art through the lens of values education and social integration. For three years, students from Metro Manila public schools between grades 3 to 6 encounter art that relates to everyday life through guided and engaged discussions, activities, and learning kits. The visit aims to encourage self-reflection on their place in the world and how working with others can help bring about positive change. During the pandemic period, this program was transposed into the development of learning booklets, which were distributed to TFP partner schools around the Philippines. This partnership between public schools and private entities has received grants from the Museum Foundation of the Philippines, Inc., in line with their advocacy to develop a museum-going community.

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### **Towards multidisciplinary and multispecies sustainability in museums**

To address interconnected crises related to the environment, inequality, and power structures, the frameworks of planetary wellbeing and decolonisation can provide a foundational basis for achieving the Sustainable Development Goals (SDGs). These frameworks can also be used to build a dialogue between ecological and socio-cultural concepts of sustainability. Disciplinary divergences in the concept of sustainability can generate friction within multidisciplinary environments such as university museums, where scientific, cultural, and educational missions intersect. A recent multidisciplinary exhibition project at the Jyväskylä University Museum has illuminated these paradigmatic discrepancies in defining ethically sustainable museum practices and, in turn, has stimulated productive interdisciplinary dialogue. As part of an ongoing project examining contested academic heritage, students in teacher education were invited to co-curate an exhibition centred on the historic natural specimens—a collection situated at the intersection of the museum's cultural history and natural history domains. In doing so, the project shows how collaborative work with contested collections can serve as a powerful pedagogical and ethical tool, prompting deeper reflection on sustainability, responsibility, and multispecies coexistence in the museum. Drawing on both decolonial and planetary wellbeing perspectives—which offer productive ways to engage with the paradigmatically divergent questions raised by contested heritage, and which intersect in their attention to structural inequities and multispecies futures—we advocate for multidisciplinary and multispecies approaches to sustainability that acknowledge planetary boundaries and the limits of human growth, thereby enriching the ambitions of the 2030 Agenda.

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### **Composting, Coexistence, Climate: Contemporary Art and Diagonal Learning with Junior High School Pupils at Keio Museum Commons**

Keio University (Tokyo) is an educational corporation that includes a university, secondary and primary schools, and a hospital. Keio Museum Commons (KeMCo) is the university museum, and aims to open the collections held across Keio's schools to wider society and to connect the people involved with them. Since opening, KeMCo has held a workshop for pupils of Keio Junior High School alongside each of its exhibitions. This poster reports on programmes developed jointly by KeMCo and Keio Junior High School from 2022 to 2024, on the theme of the UN Sustainable Development Goals, with a focus on Goal 13: Climate Action. The series began in 2022 with a workshop and exhibition titled 'Climate Change × Making: The Tomorrow Each of Us Envisions'. Junior high pupils, senior high students, undergraduates and postgraduates worked together, using making as a way to think about what each of them could do in response to climate change, and shared their ideas with visitors. In 2023–24, the programmes were developed through engagement with contemporary art practice. Junior high pupils took part through year groups, classes, clubs and individual applications, while university participation included KeMCo's student staff (KeMCoM) and students from a range of departments. One programme was led by the artist Soichiro Mihara, whose practice addresses the human as part of the environment. Participants first explored the ecosystems present in school life, then made tools from waste collected on campus. Mihara's composting machine was installed at KeMCo, and pupils, students and staff continued soil-making together over the following months. Another programme was developed in collaboration with Roppongi Art Night, an annual art festival held in Minato City, where the university and junior high school are located. Responding to the 2023 festival theme, 'A Field Guide to Urban Creatures', participants visited artworks and performances exploring how humans, animals, insects, and plants coexist in the city. University students then led a workshop in which participants reflected on coexistence through making. One feature of the series was the range of people involved: alongside university students and pupils, artists, external curators and people working in industry also took part. This opened up what we call 'diagonal learning relationships', extending beyond the horizontal (peer-to-peer) and the vertical (teacher-to-learner) across generations, roles and fields. We suggest that this was made possible by the guiding ideas that shape KeMCo's activities. As a Commons, KeMCo is conceived as a place where collections and people meet and collaborate, and its work is also informed by the keyword "akichi," literally a vacant lot, used here to evoke an open and experimental setting in which people bring in their own ideas and things for "asobi," or playful, short-lived activities. These orienting concepts made KeMCo a suitable host for programmes that were themselves open-

ended, cross-sectoral and experimental in nature. The poster will describe the aims and design of each programme and reflect on its outcomes and points for improvement."

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### **Museum Literacy and Object-Based Learning: A Multisensory Approach in University Museum Education**

This poster presents the Museum Literacy program developed by Hanyang University Museum, focusing on how university museums can function as educational platforms that enhance interpretive skills and sensory engagement. The program is grounded in Object-Based Learning (OBL), encouraging participants to observe, analyze, and reinterpret museum objects through structured, multi-stage learning processes. The project integrates a range of educational formats, including hands-on activities, guided interpretation, and digital tools. In particular, the "Digital Sensory Journey" program explores the relationship between technology and human perception by incorporating historical devices such as analog calculators alongside contemporary media including VR and sound-based interfaces. These approaches enable participants to engage with objects through multiple senses, expanding beyond visual-centered museum experiences. This project conceptualizes museum literacy not merely as the ability to understand information, but as the capacity to critically interpret and construct meaning from objects and exhibitions. By combining OBL with multisensory and digital approaches, the program fosters active learning and positions visitors as participants rather than passive recipients. The poster highlights how university museums can bridge academic knowledge and public experience through structured educational frameworks. It also suggests that such approaches contribute to Education for Sustainable Development, particularly in relation to SDG 4 (Quality Education), by promoting critical thinking, creativity, and inclusive learning environments.

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### **Educational Programs of the Science and Technology Museum: The History of Electromagnetism as a Link to the Sustainable Development Goals**

At the Science and Technology Museum of the University of Patras (STM), one of the educational programs designed for lower and upper secondary school students, entitled "Exploring the Paths of Electromagnetism and Its Pioneers," traces, through an interactive presentation environment,

key milestones in the history of the science of electromagnetism and addresses fundamental concepts within this field of Physics. During the implementation of the program, a central objective and challenge is for students to discover, through hands-on experiments using simple materials, alternative ways of constructing basic electrical devices. In particular, students are engaged as active researchers who both explore and construct, working in groups, a simple battery and a basic electromagnet using natural materials (such as lemons, potatoes, and vinegar) as well as everyday items (such as coins, screws, and copper wires). Subsequently, students are invited to present their group experiment to the entire class, explaining how such experiments can be developed without reliance on pre-manufactured equipment, but instead using their imagination and creativity and readily available materials. Finally, using the operating principle of the electric generator as a starting point, students explore how humans can transform scientific ideas and their technological applications in ways that contribute to a sustainable world, particularly through energy production methods that respect and protect the planet Earth. The evaluation of the program by the students themselves demonstrated, on the one hand, that new knowledge is effectively assimilated through their active involvement in experiments that foster critical thinking. On the other hand, it proved the development of environmental awareness and social responsibility through discussion, during which students express their concerns and recognize the significance of human choices in relation to planetary sustainability.

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### **Empowering Knowledge, Crossing Class Boundaries: University Museums and the Construction of Life Histories from Transnational Educational Archives**

Since the 1950s, National Cheng Kung University (NCKU) has served as a critical gateway for Malaysian Chinese students to overcome institutional limitations and achieve social mobility. Driven by American aid and economic aid policies and the specific educational landscape of Malaysia, NCKU emerged as a key catalyst for cultivating transnational professional talent and fostering social transformation. The NCKU Alumni Association in Malaysia remains one of the university's most cohesive international networks. Its profound unity is rooted not only in shared cultural heritage but also in the "group resilience" forged through the collective challenges of studying abroad during the mid-20th century. As custodians of institutional memory, university museums are shifting their focus from traditional object collection to the deep interpretation of human narratives. By utilizing cross-national oral histories, this exhibition documents life stories defined by "knowledge empowerment" and "class crossing." This research clarifies the university's enduring contribution to global social flow, demonstrating how higher education serves as a powerful lever for social change. Ultimately, the project affirms the university museum's mission to preserve the historical value and contemporary significance of these transnational life trajectories.

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**On claiming waters: The case on the University of the Philippines Bulwagan ng Dangal Exhibition on the Contentious West Philippine Sea**

Harnessing the university's collections, academic research, and networks within and across its various communities, university museums open possibilities for reflection and dialogue on how genuinely sustainable development can most effectively be attempted at. This is specifically made apparent by the University of the Philippines (UP) Bulwagan ng Dangal University Heritage Museum as it delved on human and environmental security in the context of the most pressing and oppressive territorial disputes enveloping the Philippines and a vast part of the Southeast Asian region in recent years, delved upon in its 2024 exhibition entitled "Kanlungan at Kasarinlan (Home and Sovereignty): An Arts-Science Exhibition on the West Philippine Sea." In partnership with the UP Marine Science Institute, a research and academic unit housed in the university, the museum brought together scientific research, biological specimens, and contemporary artworks to highlight the natural and cultural richness of the maritime space and the ongoing tension surrounding it. Narratives of oppression have been traced through artworks and archival resources from the university collections to offer a historical backdrop to the country's geopolitical conditions. The museum also engaged individuals who had long-running and active engagements with fisherfolk from the area, whose livelihoods and safety are the most directly at risk. It also sought to put attention to the ecological dimension of the issue, oftentimes sidelined by militaristic and nationalistic perspectives that dominate popular discourse. The exhibit lays bare how security, defined not only as the protection of individuals from threats against their survival and dignity but also those of the environment, is a vital aspect of sustainable development. Coincidentally, security cannot be reasonably achieved without addressing the root causes of underdevelopment, such as economic inequalities within and outside the country and environmental degradation. Furthermore, this poster presentation reflects on the curatorial and institutional learnings generated from the exhibition, particularly in positioning the university museum as a platform for multidisciplinary, critical public discourse, and civic engagement; in light of the state university's overarching thrust of being the nation's scholastic center and social critic.

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**The Accessible Repository: Designing a University Museum Collection Hub as a Living Laboratory for SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure)**

University museums and collections face a persistent tension: preserving heritage objects for future generations while making them accessible for present-day teaching, research, and public engagement. This poster presents an in-progress project to transform a conventional university art collection storeroom into an integrated Collection Hub – a purpose-designed space where safe storage, academic access, and experimental learning coexist. Located within a university gallery context, the Hub directly addresses two Sustainable Development Goals: SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure). Besides professional storage, the Hub's design incorporates several interconnected zones: a Tinkering Room or object-based teaching space for hands-on learning with original artworks; a photographic collection area including analogue cameras and a working darkroom; a green room studio for virtual reality (VR) content creation; research cubicles for postgraduates and visiting researchers; a transit bay for condition checking, packing and quarantine; and – critically – 3D printers for producing replicas of fragile collection items. Rather than separating storage from access, the Hub makes preservation infrastructure visible and pedagogically active. This poster will demonstrate how the Hub functions as a living laboratory for sustainable development. The Tinkering Room embeds SDG 4.7 by enabling students and young learners to engage directly with cultural heritage as a lens for discussing climate action, social justice, and responsible production. The 3D printing facility supports SDG 9.1 by reducing physical handling of vulnerable objects while democratising access through replicas. The VR green room and darkroom together bridge analogue and digital storytelling – a strategy that facilitates connecting museum visitors with the SDGs through immersive, multi-sensory experiences. By presenting architectural plans, student co-design processes, and proposed programmes and activities to run within the Hub, this poster argues that the university museum storeroom need not be a hidden, inert space. Reimagined as an accessible repository, it becomes a powerful actor in the university's broader mission for sustainable development – bridging preservation, pedagogy, and public value

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### **How sustainable can development be? A shift from limited resources to conscious principles**

The University of Tartu is actively working to achieve sustainable development goals. Museums play a key role in this process. This presentation analyzes the University of Tartu Museum's sustainable development principles that we implement at the museum. In this presentation, I will focus on both the principles and specific examples within the Estonian academic museum sector, and I will attempt to answer the question of why and for whom these principles are necessary. Are they merely a formality, or do they fundamentally represent a different perspective on what we do at the museum today? Are these decisions primarily driven by limited resources or by conscious principles of choice? The University of Tartu Museum aims to reduce the environmental impact of its activities, promote a sustainable mindset in society, a culture that supports human well-being, research, and education, and contribute to the balanced

development of society. We are adding momentum to environmental protection and sustainable development in the Estonian museum sector and playing a role in raising awareness of sustainable behavior in society. Since October 2022, a sustainable development working group has been active at the University of Tartu Museum. Three examples are highlighted of our efforts in different areas: (1) Achieving the “Green Museum” label, which defines the activities and principles followed by the museum; (2) The use and reuse of old furniture and other historical items with the aim of operating as sustainably (and smart) as possible (SDG 11) and (3) Increasing access through interdisciplinary projects for children on the autism spectrum and with learning disabilities, as well as for underserved communities (SDGs 4 and 10).

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### **Gramophone digital twin to promote sustainable development goals**

A digital twin is a computational model capable of conducting analyses and predictions regarding the behaviour of physical assets. In the museological context, they can offer engaging and pedagogical experiences for museum visitors and contribute to conservation efforts and to the generation of immersive experiences. In the present work, a digital twin of a gramophone has been developed. The digital gramophone is a very detailed 3D virtual and interactive model of an artifact from the collection of the Telecommunication Museum Vicente Miralles Segarra of the Universitat Politècnica de València, Spain. To develop the digital twin, the original gramophone was 3D-scanned and modelled in Blender. Two WebXR interactive applications were developed using Godot and Godot XR Tools. One version allows interaction with the digital twin using a Meta Quest 3 headset, and the other one using a PC or a mobile device. The use of the gramophone digital twin contributes to the safeguarding of cultural heritage (SDG 12) in two ways. Firstly, it preserves the original artifact without any damage. Secondly, it preserves the knowledge associated with the operation of the device, because the virtual gramophone allows visitors to interact with it and understand how it worked, which is also a fundamental part of the didactic role of the museum (SDG 4).