

PREFACE

Sustainability and Innovation in Creative Industries and Design.

1. Introduction

Sustainability is now a central concern in the creative industries and design. Sustainability involves improving the efficiency of products and production processes, shaping cultural values, changing how people participate and produce, supporting inclusive learning, and creating practices that remain useful and meaningful over time. Creative industries have an important role in this shift because they bring together technology, imagination, culture, identity, communication, and everyday life.

The link between sustainability and innovation is not always straightforward. New technologies can make creative work more efficient and collaborative but being new does not automatically make them sustainable. Innovation becomes sustainable when it responds to social, cultural, environmental, and ethical needs; keeps people meaningfully involved; and supports knowledge, practices, and resources over time. Design is central to this process because it shapes products, behaviours, services, and systems through which sustainability is understood and put into practice.

This special issue, *Sustainability and Innovation in Creative Industries and Design*, explores how design methods can support sustainable change. The seven selected papers examine this topic from different but connected theoretical, methodological, and practical perspectives. Together, they show that sustainability is not only an environmental issue; it also has social, cultural, experiential, educational, technological, and systemic dimensions.

Although the contributions address different domains and contexts, they are connected by a common perspective: sustainable innovation emerges through the relationships that design creates and mediates. Across this Special Issue, design is not treated simply as a process for creating artefacts, services, or technologies. Rather, it functions as a framework that connects people with technologies, communities with resources, learners with educational systems, consumers with sustainable choices, and local practices with broader ecological and societal challenges. Whether examining AI-assisted decision-making, participatory environmental design, digital learning, interactive art, spatial representation, sustainable consumption, or open and distributed production, the papers collectively explore how design can shape these relationships in ways that remain meaningful, responsible, inclusive, and adaptable over time.

Across the seven contributions, design serves as the central thread linking diverse contexts and forms of innovation. The papers examine how design mediates relationships between human judgement and artificial intelligence, people and

ecological systems, learners and educational infrastructures, designers and occupants, participants and interactive technologies, consumers and sustainable choices, and communities and distributed production systems. While the empirical settings differ, all contributions share a common concern: how design can create forms of innovation that are socially meaningful, environmentally responsible, ethically informed, and capable of adaptation over time. In this sense, sustainability is not presented as an outcome alone but as a quality of the relationships, practices, and systems that design helps to establish and sustain.

The papers also show the wide range of work found in today's creative industries. They cover creativity support tools, participatory and more-than-human design, interior and spatial representation, interactive art, premium products and services, open and distance learning, digital fabrication, makerspaces, and distributed food systems. Despite this variety, several common ideas stand out: sustainability should be built into systems from the start rather than added later; innovation should be questioned and assessed rather than assumed to be beneficial; and creative practices should be transparent, inclusive, flexible, and responsive to their social and ecological settings.

2. Papers in the special issue.

The first paper, "Beyond Convergent: Reframing Creativity Support Tools through LLM-assisted Decision-Making in Sustainable Contexts" [1], examines how LLM-based tools reshape the evaluation and selection of ideas. This is especially important in sustainable design, where decisions involve competing environmental, economic, social, and ethical criteria.

The paper introduces *mediated decision-agency* to explain how designers and AI systems jointly shape evaluative judgement. Its framework links control, transparency, and trust, and offers five design principles to preserve human responsibility, reveal assumptions and trade-offs, and avoid silent automation. The paper shows that sustainable innovation depends on both generating ideas and evaluating them responsibly. It supports human AI collaboration while keeping final judgement with the designer.

The second paper, "Participatory Design in Environmental Contexts: The Influence of Topic-Related Attitudes on Ideation" [2], examines how prior environmental attitudes shape problem framing and ideation. In a three-week biodiversity workshop linking universities in Türkiye and Japan, participants with varying environmental interests used card sorting and structured and open-choice ideation methods.

The study identifies informational, motivational, social, therapeutic, and ecological-relational framing. Participation did not automatically reduce human-centred priorities; most ideas still focused on human knowledge, motivation, interaction, or well-being.

More-than-human perspectives appeared but often weakened during selection and implementation.

The paper recommends involving participants with varied interests, using ecological scaffolding and framing-aware facilitation, and reinforcing ecological perspectives throughout the design process. Participatory design can then reveal, question, and negotiate different views of sustainability.

The third paper, “Activity-Centered and Emotional Design as Catalysts for Sustainable Innovation in Open and Distance Learning for Adult Learners” [3], examines sustainable educational experiences. It combines Activity-Centered and Emotional Design to show how learning goals, technologies, institutional structures, communities, roles, and emotions influence adult learners’ engagement, well-being, and continued participation.

Activity-Centered Design identifies structural problems, while Emotional Design explains how learners experience them. Together, they show that anxiety, frustration, isolation, or withdrawal may result from rigid schedules, fragmented technologies, unclear roles, inaccessible processes, punitive assessment, or unsupportive feedback. An online studio scenario translates the framework into practical features, including authentic projects, integrated workspaces, flexible critiques, clear milestones, stable peer communities, shared feedback, and supportive recovery options. The paper also offers design guidance, evaluation indicators, ethical safeguards, and directions for future research. Sustainability is defined as a learning system’s ability to sustain emotional resilience, belonging, identity, recovery, and continued participation.

The fourth paper, “Embodied Multimodal Dialogue in Interactive Art Installations: Toward Sustainable Creative Practices” [4], examines experiential longevity and methodological continuity in artistic Human-Computer Interaction. It compares three installations; *SandBox*, *TIDE (IDEArt)*, and *Threshold* through observation, interviews, audiovisual documentation, thematic analysis, and cross-case comparison. Across the installations, participants engage through movement, sensory attention, spatial exploration, contemplation, and personal meaning-making. The study focuses on observed behaviour and participant accounts rather than task-efficiency measures or unsupported emotional claims.

The paper links sustainability to installations that remain meaningful, invite reinterpretation, and avoid reliance on constant technological novelty. Reusing a transparent qualitative method across projects also enables comparison, builds knowledge, and connects creative practice with rigorous HCI research.

The fifth paper, “Sustainable Innovation in the Creative Industry: A Participatory Mobile Methodology for Interior Design Spatial Representation” [5], presents a user-centred mobile prototype that improves dialogue between interior designers and occupants. Grounded in Human-Building Interaction, participatory design, and sustainable design thinking, it lets users explore designer-curated options for materials,

lighting, furniture, and layouts, reducing misunderstandings and resource-intensive revisions associated with conventional representations.

Expert review, usability testing, and a comparative pilot found high usability and suggested that interactive exploration improved detail retention, user agency, and reconsideration of design decisions. However, the small pilot requires broader mixed-method evaluation.

The study also highlights accessibility challenges for some older participants and recommends clearer visual guidance, larger interface elements, simpler navigation, and accessible support. It argues that digital transformation is sustainable only when differences in digital confidence and access are addressed, positioning the application as a collaborative tool for user feedback and spatial decision-making.

The sixth contribution, “Premium Design and Sustainability-by-Default: A Methodological Framework for Eco-Accidentalism in Creative Industries” [6], explores how products, services, and brands can make responsible choices attractive and convenient by default. Its *eco-accidentalism* framework makes sustainable options visible, desirable, and easy without relying solely on ethical persuasion.

The framework covers option architecture, service infrastructure, desirability, transparency, and incentives. It also requires clear explanations, reversible choices, meaningful opt-outs, and evidence-based sustainability claims. Nespresso’s “Da Chicco a Chicco” initiative illustrates how product use, collection, recovery, agricultural reuse, food donation, and premium branding can form a circular service pathway. The paper treats it as a critical example, noting trade-offs, evidence gaps, user autonomy, and greenwashing risks within the wider single-use capsule system.

For creative industries and design education, the paper develops skills in redesigning defaults, making sustainable choices desirable, applying ethical choice architecture, and evaluating environmental claims. It links sustainable business innovation with education, evidence, and accountability.

The seventh paper, “Open and Distributed Design as a Capacity-Building Methodology: Digital Technologies for Sustainable Creative Practices” [7], examines digital technologies in Open and Distributed Design. It treats them as context-dependent tools whose sustainability relies on surrounding practices, communities, infrastructures, and institutions.

The paper maps digital technologies across project stages from definition to communication. Collaborative platforms, repositories, digital fabrication, physical computing, documentation, and generative tools can support participation and knowledge sharing, but their value depends on access, skills, coordination, infrastructure, regulation, and maintenance. The empirical study examines two academic makerspace initiatives and five open-design projects on circular food systems. Digital technologies supported knowledge transfer, adaptation of existing designs, local production, prototyping, citizen participation, and capacity-building,

while revealing regulatory challenges and limits to scaling beyond specialist communities.

The paper concludes that Open and Distributed Design gains value from its local, community-centred grounding. Although this can limit replication, it supports learning, shared ownership, technological autonomy, and locally relevant capabilities. Sustainability depends on the communities, knowledge, documentation, maintenance, and infrastructure that keep open projects usable and adaptable.

3. Concluding remarks

The papers in this Special Issue demonstrate that sustainability in creative industries and design cannot be reduced to a single material, technology, method, or indicator. It is a multidimensional and continuing process that connects environmental responsibility with social participation, cultural meaning, ethical judgement, emotional well-being, knowledge sharing, accessibility, and long-term adaptability.

Several common insights emerge from the contributions. First, technologies are not sustainable merely because they are digital, intelligent, interactive, or open. Their sustainability depends on the values they embody, the practices they enable, the resources they require, the people and communities they include, and the conditions under which they can be maintained. Artificial intelligence may support creative evaluation, mobile interfaces may reduce representational waste, and digital fabrication may enable distributed production, but each also introduces questions of opacity, exclusion, dependence, regulation, and responsibility.

Second, the papers demonstrate the importance of expanding participation while remaining critical about what participation achieves. Participatory processes can reveal diverse perspectives and distribute design agency, but they do not automatically overcome anthropocentrism, unequal access, technological dependency, or entrenched assumptions. Participation must therefore be carefully facilitated, ecologically informed, inclusive of different levels of knowledge and motivation, and sustained throughout the development process.

Third, sustainability involves continuity. It concerns whether learners can continue to participate, whether installations remain meaningful beyond their technological novelty, whether open projects can be repaired and maintained, whether communities can retain knowledge, whether users can understand and challenge AI-supported decisions, and whether sustainable choices can become part of ordinary practice. This temporal dimension invites creative practitioners to move beyond immediate novelty and consider how systems, experiences, and relationships evolve.

Finally, the contributions position design methodology as a form of infrastructure for transformation. Design organises choices, participation, interpretation, collaboration, learning, and accountability. It can make sustainable alternatives more visible and desirable, create space for ecological and community perspectives, connect

digital and material practices, and support critical reflection on the consequences of innovation.

Taken together, the seven papers do not offer a single formula for sustainable innovation. Instead, they provide conceptual frameworks, empirical evidence, prototypes, case studies, ethical principles, and methodological guidance through which sustainability can be designed, debated, evaluated, and continuously improved. We hope this Special Issue will serve as a valuable reference for researchers, educators, designers, creative practitioners, industry leaders, and policymakers seeking to develop forms of innovation that are environmentally responsible, socially inclusive, culturally meaningful, and capable of enduring beyond short-term technological change.

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