



Art Universities as Transformative Actors in Education for Sustainable Development in the German Higher Education Landscape:

On the Role of Artistic and Creative Approaches in Profound ESD Learning Processes

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Abstract. Although education for sustainable development (ESD) is receiving increasing attention in the academic discourse of German universities, its practical implementation is often primarily attributed to natural sciences, technology and social sciences (Barth & Rieckmann, 2016). In doing so, the inherent transformative potential of artistic and creative approaches, which extend beyond the mere transfer of knowledge to encompass the development of practical skills, is frequently overlooked. However, ESD explicitly aims to promote critical and reflective thinking, stimulate emotional engagement and develop substantial visions for the future – areas in which purely cognitive and analytical methods are ineffective (UNESCO, 2017). This study examines the specific added value and strategic implementation approaches of art colleges in relation to anchoring and promoting ESD in the German higher education landscape. The focus is on two central research questions: (1) What distinct contributions do artistic and creative approaches make to the promotion of critical and reflective thinking, emotional engagement, and the development of well-founded visions for a sustainable society among students? (2) What specific strategies do art colleges pursue to integrate ESD into their curricula and establish sustainable educational practices? Methodologically, this study is based on qualitative triangulation, including a comprehensive analysis of student work and guided interviews with teachers and students. The results clearly demonstrate that art colleges develop and implement their own interdisciplinary, experimental and design-oriented strategies for embedding ESD. These include strengthening critical thinking, changing perspectives, deconstructing complex issues, managing complexity, developing a strong sense of self-efficacy, and thinking visionarily about the future.

Keywords: ESD, Art Universities, artistic and creative approaches.

1 Introduction: The Unrecognised Role of Art Universities in Education for Sustainable Development

The transformation towards a sustainable society is one of the most significant challenges of our time, requiring substantial structural and cultural changes to the economy, politics, and society as a whole (WBGU, 2011). Education, particularly education for sustainable development, plays a major role in this process by enabling learners to cognitively understand the complex challenges of sustainability, critically question and actively participate in shaping a sustainable world. Within the German higher education landscape, ESD is increasingly recognised as an integral part of teaching, research and knowledge transfer. However, its implementation has traditionally focused on natural and social science disciplines, with the substantial potential of artistic and creative approaches for transformative learning processes being insufficiently recognised so far (Barth & Rieckmann, 2016).

ESD involves much more than imparting factual knowledge. It requires the development of comprehensive design competence (de Haan, 2008), including the ability to think systemically and reflectively, engage empathically with different perspectives and develop visionary, innovative solutions to complex sustainability problems (BNE-Portal, n.d.). Artistic and creative approaches can offer decisive added value precisely in these dimensions. These approaches go beyond purely cognitive processes, integrating emotional, aesthetic and practical experiences that are essential for profound, action-oriented learning.

The overarching goal of this study is to identify the transformative potential of artistic and creative approaches in the implementation of ESD at universities, while also highlighting the role of art colleges as innovative actors in this field. The central research questions address two key areas: Firstly, the concrete contribution of artistic and creative methods to promoting critical and reflective thinking, emotional engagement and vision development among students. Secondly, the strategic approaches that art colleges adopt for the curricular implementation of ESD. Addressing these questions should foster a deeper understanding of the various ways in which art colleges can serve as transformative agents for sustainable higher education, providing fresh impetus for the design of ESD curricula across the entire higher education landscape.

2 Methods

This study is based on a qualitative research design which uses triangulation methodology to ensure a comprehensive, multidimensional analysis of the role of art colleges in ESD.

2.1 Research design and sample

The research design chosen was an exploratory case study, as this allows for detailed insights into the specific mechanisms and strategies of ESD integration in an art college (Yin, 2018). The qualitative data sample included:

Student works: A targeted selection of twenty student projects from the last three academic years (2021–2024) that explicitly addressed ESD-relevant topics or issues. These projects came from various artistic and design disciplines (e.g. communication design, fine arts and product design) and were selected using a targeted sampling procedure based on relevance, thematic focus and recognisable sustainability integration.

Teachers: Five teachers from different departments at art colleges who are actively involved in ESD-related courses or have proven expertise in sustainability. The selection was made using targeted approaches and a snowball system to ensure a broad range of perspectives.

Students: Five students from different years, degree programmes and art colleges who had participated in ESD-related projects or courses. The selection process here was also based on targeted approaches and recommendations from teachers, ensuring that the respondents had direct experience with ESD-specific teaching and learning arrangements.

2.2 Data collection tools

The following instruments were used to collect data in order to create a comprehensive database:

Analysis of student work: A systematic content analysis of selected student work was carried out using a theory-based, pre-developed category scheme (Mayring, 2015). This scheme included indicators for: the explicit or implicit addressing of sustainability issues (ecological, social, economic and cultural); the artistic and creative methods used, and their contribution to problem perception, analysis and solution; the development of visions for the future, or alternative perspectives for action; the potential for promoting specific ESD competencies.

Guideline-based interviews: Semi-structured interviews were conducted with teachers and students to enable open exploration of the topics while ensuring comparability (Flick, 2018). The interview guides included questions about experiences with ESD-relevant teaching formats (for teachers) and learning projects (for students), the contribution of artistic and creative approaches to promoting ESD competencies that was perceived, and specific ESD implementation strategies at art colleges. The interviews were recorded with the participant's consent and transcribed verbatim.

2.3 Data analysis

The qualitative data collected (transcribed interviews, field notes and analysis of student work) was evaluated using qualitative content analysis according to Mayring (2015). The following steps were carried out: **Paraphrasing:** Condensing the relevant text passages. **Generalisation:** summarising similar statements into higher-level categories. **Reduction:** forming main categories and subcategories that address the research questions. **Verification** involved reviewing the categories by referring back to the source material and discussing them within the research team to ensure inter-coder reliability.

Triangulating the various data sources (student papers and interviews) enabled the validation and deepening of the findings, as well as reducing potential methodological biases (Denzin et al., 2017). Contradictions or similarities between the data were systematically analysed to develop a coherent and robust picture of the role of art colleges in ESD.

The following tabular coding scheme operationalizes the theory-based indicators described (Mayring, 2015).

Table 1. Coding Scheme

Main Category	Subcategories	Indicators/Examples	Examples from Student Works
Sustainability Themes	Ecological	Resource use, climate change, biodiversity	Circular economy in product design projects
	Social	Justice, inclusion, gender equality	Collaborative projects with local initiatives
	Economic	Sustainable business models, post-growth	Modular Tiny Houses from recycled materials
	Cultural	Aesthetic sustainability, narrative future design	Storytelling in “Chronicles of a Regenerative Future”
Artistic Methods	Design Thinking	Iterative prototyping, problem analysis	Post-Growth City 2050
	Visual Arts	Deconstruction of visual narratives	Greenwashing Revelations
	Theatre Education	Perspective-taking, systems thinking	Climate Theatre projects
	Storytelling	Future scenarios, transformative imagination	Narrative Future Design
Contribution to ESD Competencies	Critical-reflective Thinking	Deconstruction of structures, power analysis	Critique of greenwashing
	Emotional Engagement	Climate grief, empathy	Expressions for crisis anxieties
	Visions & Solutions	Future visions, prototypes	Prototypical solutions like urban permaculture
Problem Perception & Solution	Systems Thinking	Complex interrelations	Analysis of multi-stakeholder effects

3 Artistic and creative approaches as catalysts for transformative ESD learning processes

A detailed analysis of the available data, consisting of student work, interviews with teachers and students, and observations of teaching and learning processes, clearly shows that art colleges and the artistic and creative approaches they foster play a significant role in developing key ESD competencies in students. The examined approaches – ranging from theatre education and design thinking to visual arts and storytelling – are particularly effective in three core areas crucial for transformative ESD: promoting critical and reflective thinking, stimulating emotional engagement, and developing visions for the future.

3.1 Promoting critical-reflective thinking through artistic methods

In the context of complex sustainability issues, artistic and creative approaches have proven to be highly effective tools for cultivating critical and reflective thinking. Art colleges deliberately create experimental spaces in which students are empowered to critically examine and question the processes of social transformation and the multi-layered dimensions of sustainability (Interview with Student 4 and 7). Methods such as design thinking encourage students to analyse problems and generate creative solutions through iterative processes of understanding, idea development, and prototyping. The focus is not on producing a predefined answer, but on developing independent judgement and innovative perspectives on social and ecological challenges (Interview with Teacher 2).

Our task is to teach students not only to look, but to see; not only to hear, but to listen; and to critically reflect on the underlying structures and power relations that cause sustainability problems. (Interview with Teacher 2).

The visual arts, as evidenced by the analysed student works, facilitate the deconstruction of visual narratives and the critical analysis of representations of sustainable or unsustainable practices (analysis of student works, category “Visual Deconstruction”, project “Greenwashing Revelations”). Students learn to recognise the constructed nature of reality and create alternative representations that encourage reflection and challenge established patterns of thinking (analysis of student work; interview with Student 3). Theatre education approaches, as applied in an observed project seminar on “climate theatre”, encourage exploration of complex systemic relationships in a playful manner, taking on different perspectives and anticipating the effects of actions on various stakeholders (interview with teacher 5). Such performative processes strengthen not only cognitive skills for critical analysis, but also the metacognitive ability to reflect on one’s own thinking and actions in the context of sustainability. This is essential for developing design competence (Singer-Brodowski & Taigel, 2020).

3.2 Emotional confrontation and development of social skills

A unique feature of artistic and creative education is its emphasis on the emotional and affective dimensions of the learning process. Highly relevant topics in the context of sustainability, such as fears about the future, climate grief and hope for a better world, can be made accessible and manageable through aesthetic spaces of experience (student interview 6). Rather than negating these often overwhelming emotions, they are recognised as an integral part of the human response to the crisis and are processed artistically and creatively. This allows for a deeper, more personal and holistic engagement with sustainable lifestyles and associated challenges.

We give students the space to express their feelings about the climate crisis and use them as a starting point for creative engagement. This fosters a stronger inner connection to the topic and promotes intrinsic motivation to take action. (Teacher Interview 1)

As can be seen from the observed project work, work in artistic learning environments is often collaborative and process-oriented. This fosters essential social competencies, including empathy, effective communication and the ability to collaborate within diverse teams. Through the joint creation and reflection on artistic works or projects, students develop greater self-confidence in their creative abilities and their role in the transformative process. They learn to take responsibility for their creative contributions and for achieving shared objectives, thereby strengthening their pro-social and responsible attitude towards themselves, others, and society as a whole (interviews with students 8 and 10). Thus, the ability to work in transdisciplinary teams and navigate complex stakeholder networks is not only taught theoretically, but also experienced and tested directly in practice.

3.3 Vision development and innovations for a sustainable future

Artistic and creative approaches are ideally suited to promoting the development of visionary ideas and forward-looking solutions for a sustainable society. Students are encouraged and supported to develop new perspectives and realise them in concrete projects and prototypes (see interview with Teacher 3 and analysis of student work in the “Future Scenarios” category of the “Post-Growth City 2050” project). Institutions such as the “Sustainability Design Lab” at the Kassel Art Academy offer graduates spaces in which they can develop and implement sustainable projects through interdisciplinary cooperation, innovative materials research and the development of sustainable business models.

The creative freedom inherent in artistic and design processes enables us to transcend conventional patterns of thought and experiment with radically new approaches, which are frequently overlooked in more restrictive, problem-oriented contexts (student interview 9). Storytelling is a powerful tool for making complex future scenarios vivid and comprehensible. This makes alternative realities imaginable and promotes “transformative imagination” (Burg Giebichenstein Kunsthochschule Halle, 2022; analysis

of student work, category ‘Narrative Future Design’, project “Chronicles of a Regenerative Future”). This results in exemplary projects for sustainable products, social innovations, and new forms of coexistence, which can serve as prototypes for a desirable future (analysis of student work, category “Prototypical Solutions”, project “Modular Tiny Houses from Recycled Materials”). These approaches promote the ability to identify problems and design solutions in the spirit of transformative ESD, enabling students to participate in shaping desirable futures (de Haan, 2008).

4 Implementation strategies of art colleges for ESD

Art universities are pursuing a variety of structured and innovative strategies to integrate education for sustainable development into their curricula and institutional practices. These strategies go beyond the mere incorporation of individual topics, aiming to embed ESD systemically in order to transform the college as a whole (Holst & von Seggern, 2020). The results of the interviews at various colleges reflect these overarching trends and demonstrate particular implementation methods.

4.1 Curricular anchoring and module design

A fundamental approach is to systematically anchor ESD in the detailed descriptions of modules in order to emphasise its relevance and binding nature. At HBK Saar, sustainability skills have been explicitly formulated as mandatory learning objectives in the revised art education modules and integrated into the product design study programmes as a cross-cutting theme or in specific modules, ensuring they are systematically acquired throughout the course (interview with Teacher 4 at HBK Saar). Examples of this include the integration of the circular economy into product design courses and the consideration of the ethical implications of visual language and media communication in communication design (Barth & Rieckmann, 2016). Additionally, new ESD-oriented modules covering key sustainability topics, methods, and design practices are being developed. At HFBK Hamburg, for instance, specific teaching formats are being developed that consider sustainability in the context of art and art colleges, teaching it experimentally (HFBK Hamburg, n.d.).

4.2 University-specific mission statements

Many art universities are developing specific mission statements and actively adapting their development plans to embed ESD as an integral part of their overall strategy, ensuring a coherent institutional approach. Mission statements such as that formulated by the Berlin-Weißensee University of Art promote an institutional culture in which sustainable development is firmly embedded in teaching, research, knowledge transfer and all areas of university operations. A lecturer at HBK Saar emphasised the importance of such a mission statement, stating that it ‘creates a framework in which we can all – students, lecturers and administration – find our place and develop a common language

for sustainability that goes beyond individual projects and establishes a long-term vision' (Interview with Lecturer 7). These mission statements serve as a strategic framework and point of reference for all university stakeholders, ensuring long-term commitment to sustainability principles and facilitating identification with the goals of ESD.

4.3 Didactic and methodological innovations and experimental teaching formats

Art universities are characterised by innovative and interactive teaching formats that convey ESD in a practical, experience-oriented manner. These include interdisciplinary projects, transdisciplinary research-based learning, service learning, and collaboration with external partners from civil society, business, and academia, whereby real-life issues are incorporated into the learning process. From a didactic perspective, sustainability is promoted by developing design skills, critical thinking, systems thinking, and participatory methods such as design thinking, storytelling, and artistic real-world laboratories. These experimental approaches enable students to address complex sustainability issues in real-world contexts and devise their own creative solutions. For instance, in a project on "urban permaculture", students collaborated with local initiatives to design and implement sustainable urban garden concepts. Such formats promote technical skills as well as interdisciplinary skills such as teamwork, project management and communication.

4.4 Integration in Governance and University Operations

Beyond the curriculum, ESD is increasingly being incorporated into governance structures and everyday university life as a cross-cutting issue, in order to ensure consistent institutional sustainability (Interview with Lecturer 10; Sterling, 2011). This can be seen in the establishment of sustainability working groups, the implementation of joint projects to promote sustainability and the targeted design of sustainable campuses that serve as 'living labs' for ESD. At HBK Saar, for instance, a university-wide initiative to reduce material consumption and encourage the reuse of materials in studios has been implemented, alongside the creation of a database of recycled and sustainable materials. Thus, curricular strategies are always part of broader institutional sustainability concepts that aim to transform the university as a whole into a sustainable learning organisation and strengthen its role as a role model in society (Holst & von Seggern, 2020).

5 Discussion

The results of this study strongly support the thesis that art colleges can play a significant yet often overlooked role as transformative agents in the field of education for ESD within the German higher education landscape. The case study provides concrete evidence of the effectiveness of artistic and creative approaches in promoting key ESD

competencies and implementing strategic measures to embed ESD, offering a more substantial basis than anecdotal reports.

The findings regarding the promotion of critical and reflective thinking through artistic methods align with existing research, which highlights the significance of non-cognitive, experience-based strategies for navigating complexity in ESD (Reimann et al., 2020). Notably, the capacity to deconstruct entrenched thought patterns and foster novel perspectives, as demonstrated in the students' work, frequently surpasses the capabilities of analytical methods alone. This is similar to the approach of 'critical design' (Dunne & Raby, 2013), where design is explicitly used to provoke reflection on social norms and critically examine future scenarios. Art colleges thus offer an ideal breeding ground for cultivating a critical attitude towards established narratives of sustainability.

The focus on fostering emotional engagement and social skills development through arts education is a valuable addition that is frequently overlooked in traditional ESD approaches. In light of the psychological distress caused by various sustainability crises (e.g. climate grief and anxiety about the future), artistic expression and collaborative activities provide a vital outlet for processing and channelling these feelings (Kothari, 2022). This promotes students' resilience, prosocial motivation and empathy, all of which are essential for cooperative transformation processes (UNESCO, 2017). The collective and iterative nature of many artistic projects also strengthens the ability to collaborate across disciplines and negotiate different perspectives, which is fundamental to addressing complex sustainability challenges.

Art universities' ability to promote visionary ideas and innovative solutions for a sustainable future contributes to the discussion on 'transformative imagination' (Galafassi, 2018). While other disciplines often aim for incremental improvements, the artistic context enables the radical reconception of futures that go beyond the existing. The development of prototypes and narrative future scenarios, as identified in this study, demonstrates artistic and design approaches' unique ability to make abstract concepts tangible and experiential. This is crucial for mobilising engagement and inspiring collective action towards a sustainable society.

The implementation strategies of art colleges, ranging from curricular anchoring and college-specific mission statements to innovative teaching formats and integration into governance, demonstrate a holistic and systemic approach to ESD. These findings align with the call for 'whole institution approaches' (Sterling, 2011), which seek to effect comprehensive sustainability-related transformation within universities. Art colleges' particular strength in this regard lies in their inherent culture of experimentation and interdisciplinary collaboration, enabling flexible and creative ESD integration beyond rigid structures. Combining teaching, research and university operations in the spirit of sustainability highlights the exemplary role of these institutions.

This study's limitations lie in its qualitative, exploratory design and limited sample size. While the results cannot be generalised directly, they provide valuable insights and well-founded hypotheses for further quantitative or mixed-methods studies. Future research could focus on conducting a broader investigation of art colleges, carrying out longitudinal studies on the development of ESD competencies in students through artistic approaches and examining the transfer of artistic and creative solutions into society more closely. Despite these limitations, this study makes an important contribution

to filling the research gap concerning the role of art colleges in ESD, providing convincing arguments for integrating artistic and creative approaches into transformative higher education.

6 Conclusion

In summary, this study highlights that art universities and their creative methodologies are a valuable, yet often overlooked, resource for ESD in the German higher education system. Moving beyond the transfer of traditional cognitive knowledge, artistic approaches provide essential tools for fostering critical reflection, emotional resilience and visionary thinking — competencies that are indispensable for navigating the complexities of social-ecological transformation. The findings show that successfully integrating ESD into art universities requires a holistic approach, including specific modular integration, sustainability-focused mission statements, experimental ‘living labs’, and sustainable campus operations. These strategies demonstrate that art universities embody sustainability through a culture of experimentation and interdisciplinary collaboration, rather than merely teaching it as a single subject or a major subject. In conclusion, the ‘transformative imagination’ nurtured in artistic contexts provides an effective alternative to purely analytical problem solving by making abstract future scenarios tangible and actionable. For the broader higher education landscape, the creative and design-oriented strategies of art universities can provide valuable inspiration for developing more integrative and action-oriented ESD curricula. Future efforts should focus on scaling up these findings and exploring how artistic research can contribute further to the socio-ecological transition of society.

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