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## **Learning About, for and Through Transformation: Designing a Workshop Format for (Future) Teachers on Transformative Education and Urban Change**

### **Abstract**

Global challenges require profound processes of social transformation. Innovative educational approaches that empower learners to actively participate in shaping such processes are increasingly recognised as key to sustainable development. As part of the Erasmus+ Teacher Academy *teff*, the University of Cologne has designed and evaluated a hybrid workshop format entitled *Urban Laboratory: Changing Cities*. This workshop serves the purpose of the principles of transformative learning becoming practically experienceable and implementable. The workshop format is designed according to the principles of transformative learning. Participants from various European countries analyse how participation and empowerment can turn cities into learning spaces for sustainable transformation. The didactic structure is designed in such a way that the format can be used as an adaptable model for transformative teacher training in a wide variety of thematic contexts.

**Keywords:** Transformative education, Teacher education, Urban change

### **1. Introduction**

Global crises are shaping the 21st century and presenting humanity with existential challenges (Richardson, 2023). The *Wissenschaftliche Beirat der Bundesregierung Globale Veränderungen* (WBGU 2011) in Germany speaks of a major transformation, in other words a profound process of social change, that must be actively shaped. Education is increasingly seen as a key response to global challenges as it can make a significant contribution to actively shaping societal transformation (Meyer, 2023; Sterling, 2024). Teachers are recognised as change agents and facilitators of societal transformation. The question that arises is how we, as educators, can enable our students to not only cope with, but actively participate in the epic transformations of the 21st century.

The aim of transformative education is to empower learners in a process of emancipation and to create learning opportunities that understand transformation not as a distant goal, but as something that can be shaped in the here and now (Grana-

dos-Sánchez, 2022; Wilmot et al., 2025). To make this possible, transformative formats for teacher training and continuing education are needed (Lotz-Sisitzka et al., 2022; Vogelsang & Meyer, 2023). This chapter presents a workshop format that was developed as part of the *teff* Academy at the Department of Geography at the University of Cologne. At the *Urban Laboratory* in Cologne, educators from across Europe explored urban transformation and reflected on how these hands-on experiences can inspire transformative learning in the classroom.

## 2. Transformative Learning

At the beginning of the 1990s, the concept of sustainability gave rise to the idea of education for sustainable development. This concept has gained importance globally in a wide variety of education systems, particularly because it has since played an important role in the agendas and programmes of the United Nations, for example, with regard to the Sustainable Development Goals (SDGs) targeted for 2030. The understanding of what the goals of education for sustainable development (ESD) are and how they should be designed has changed significantly in educational science in recent years. The main criticism of ESD is that it focuses too strongly on promoting a particular way of thinking and acting sustainably, thereby encouraging specific behaviors aimed at producing a certain type of citizen (Pettig & Ohl, 2023). This understanding of ESD is characterised as instrumental ESD or ESD 1 (Vare & Scott, 2007). Distinct from ESD 1, other approaches have emerged that view the future as open and malleable, and assume that a sustainable future can only be achieved through social debate; these are referred to as ESD 2 and 3 (Pettig & Ohl, 2023). These approaches are not intended to promote specific sustainable behavior, but rather to encourage learners' ability to participate. ESD 2 integrates emancipatory approaches and thus aims to address the criticism of ESD 1's lack of reflexivity by promoting the search for, questioning, discussion, and summary of possible paths and alternatives (*ibid.*). ESD 3, on the other hand, includes transformative approaches and aims to empower learners to participate in shaping a good life for all in the face of an uncertain future (*ibid.*).

Building on this change, the approach of transformative education has gained importance in recent discussions on geography education (Mittrach, 2023; Ammonet & Reudenbach, 2024). In the spirit of an emancipatory and critical education, learners are meant to question existing power structures and, on the basis of diverse perspectives within a dialogical interaction, be empowered to participate in the transformation towards a more sustainable and socially just society (Schreiber & Nöthen, 2023). This approach assumes an uncertain but malleable future that requires joint engagement with controversial social issues (Pettig, 2021). Another essential aspect of this understanding of learning is the openness of the learning process to diverse outcomes, which is based on the assumption that "it is not possible to directly control transformative learning processes, but only to shape the framework conditions" (Bormann et al., 2022). In this understanding, social change towards greater sustainabili-

ty is increasingly seen as a socio-ecological transformation, which, according to Seitz (2018), has the character of a social search process.

Transformative learning offers a valuable pedagogical approach to address the persistent mind-behaviour gap, the discrepancy between cognitive awareness (e.g. frustration, disappointment, moral concern) and actual behaviour, or self-efficacy in sustainable action. According to Mezirow (2009), adults learn most effectively through biographical crises that provoke irritation. As Bähr et al. (2019) emphasize with regards to the context of secondary education, such crises need not be existentially threatening; irritation may result from perceived dilemmas or moments of dissonance. In teaching, irritation can be understood as a productive learning opportunity rather than a disruption. Irritation can be intentionally initiated by confronting learners with radically new perspectives. For example, encounters with unfamiliar cultures or value systems can challenge existing assumptions and trigger reflective engagement. Teachers can also induce irritation by breaking institutional routines, such as using unconventional methods, presenting content in unexpected ways, or introducing sensory and affective learning experiences (Bähr et al., 2019). Encouraging self-reflection, and the questioning of personal beliefs and knowledge systems further deepens this process. Creating tensions between everyday perceptions and scientific concepts, or deliberately slowing down interpretation processes, allows learners to dwell in uncertainty and develop more complex understandings (Combe & Gebhard, 2009).

Teachers need to be aware of the challenges inherent in such a process and find strategies to make it bearable for both their students and themselves. Singer-Brodowski et al. (2022) argue that educators should work towards creating „safe-enough spaces“ for learners to engage with the climate crisis through transformative learning. This process involves equipping learners with resources to manage negative emotions and reduce stress, making space for conversations that feel safe and constructive to everyone involved, and questioning the education system and its entanglement in problematic social structures. Initiating learning processes through a focus on solutions and then engaging with the underlying problems as a second step, is another approach which may help to avoid extreme emotional responses that prevent the engagement of learners (Hoffmann, 2022). Importantly, this dialogical approach also implies that the teacher must take on a different role: In transformative learning, teachers do not act as mediators of knowledge, but as facilitators of a dialogue in which they themselves partake as learners as well. They thus explore different scenarios of what a more sustainable future may look like along with their students, model an open-minded approach, and encourage all students to participate in a process of co-creation (Pettig, 2021). Transformative education can be particularly relevant in the context of urban change, as cities act as laboratories for social transformation.

### 3. Urban Transformation

By 2050, more than two-thirds of the world's population is expected to live in urban areas. This underscores the growing importance of cities for global climate change and sustainability (UNDESA, 2019). In the European Union, 38.9% of the population already lived in cities in 2021, with a further 35.9% living in small towns and suburbs (Eurostat, 2022). Today, cities are hotspots of consumption, resource use, and environmental pollution. At the same time, climate change makes urban areas particularly vulnerable to extreme events such as heat waves, droughts, and floods. Rising temperatures increase the frequency and intensity of heat waves and exacerbate the urban heat island effect. Around 70% of global greenhouse gas emissions come from urban areas, making cities key drivers of climate change (Lwasa et al., 2023). Urban structures such as sealed surfaces and a lack of green spaces further exacerbate these effects (Oke et al., 2017).

The consequences of extreme events hit cities particularly hard and have a negative impact on health and well-being. Noise and air pollution, often combined with a lack of green spaces, can lead to stress and respiratory or cardiovascular diseases. Despite advances in air pollution control, a significant health risk remains, especially in large cities (WBGU, 2016). A future rise in temperature will further increase the number of heatwave days and place greater strain on particularly vulnerable groups, such as children, older people, and low-income households (Hamdi et al., 2020). This illustrates how disproportionately urban areas influence the global climate and how crucial environmental factors are for the physical and mental health of their inhabitants. In view of these challenges, comprehensive strategies and the active participation of the population are necessary to aid cities in adapting to climate change. Education and participation formats promote an experience-based understanding of climate risks, strengthen social integration, and increase the willingness to implement effective adaptation measures (Schneider et al., 2025). Climate-friendly urban development therefore requires both targeted management and the active participation of citizens. Public participation increases the legitimacy of political decisions and strengthens identification with local adaptation approaches (Coenen, 2015).

### 4. Urban Laboratory: Workshop Format

As part of *teff*, a hybrid learning format focusing on transformative learning was developed at the University of Cologne, using *Changing Cities* as the theme. In two workshops held in April and September 2025 in Cologne, participants tested current scientific findings in practice in the context of an international exchange. The programme was continuously evaluated and adapted based on feedback and focus group discussions to ensure ongoing optimisation. The aim of the workshop was to enable participants to implement the concept of transformative learning in their geography lessons by experiencing it firsthand at the workshop. To this end, participants were invited to experience the perspective of learners for two days, participate in joint excursions

sions, and work on their own project. The transformative workshop concept is versatile and can be adapted to address other topics, such as energy, mobility or nutrition.

Digital Learning Modules				
LM1: Changing Perspectives: A short introduction to transformative learning				
LM2: Subject of choice: <i>Changing Cities: Why our cities are in need of transformation</i>				
Face-to-face Workshop				
Day 1		Day 2		
<p><b>Introduction and First Exchange</b></p> <p>The participants:</p> <ul style="list-style-type: none"> <li>-Exchange perspectives about LM2</li> <li>-Present successful example from one's own environment</li> </ul> <hr/> <p><i>-Share perspectives on urban transformation</i></p> <p><i>-Present transformative urban projects from participants' hometowns</i></p> <p style="text-align: right;">90 min</p>	<p><b>Excursion 1: Best-Practice Example</b></p> <ul style="list-style-type: none"> <li>-Empower people for change</li> <li>-Actively show opportunities to shape the future</li> </ul> <hr/> <p><i>Excursion to MoMiKS, Köln Südstadt:</i></p> <ul style="list-style-type: none"> <li>-Get to know climate adaption and citizen science project MoMiKS</li> <li>-See practical projects and measurements networks</li> <li>-Explore collaborative participation</li> </ul> <p style="text-align: right;">120 min</p>	<p><b>Excursion 2: From Problems to Solutions</b></p> <ul style="list-style-type: none"> <li>-Create Irritation</li> <li>-Explore the area</li> <li>-Brainstorm ideas</li> <li>-Develop solutions</li> <li>-Reflect on one's own role</li> </ul> <hr/> <p><i>Excursion to Winzerveedel:</i></p> <ul style="list-style-type: none"> <li>-Hands-on SWOT analysis</li> <li>-Develop solutions to transform the area</li> <li>-Get to know existing plans</li> <li>-Reflect on experiences with transformative learning</li> </ul> <p style="text-align: right;">210 min</p>	<p><b>Input</b></p> <ul style="list-style-type: none"> <li>-Contextualize transformative learning</li> <li>-Relate input of LM1 and real-world implications</li> </ul> <hr/> <p><i>Theoretical input:</i></p> <ul style="list-style-type: none"> <li>-Deepen central principles</li> <li>-Present practical tips for implementing transformative learning</li> </ul> <p style="text-align: right;">60 min</p>	<p><b>Transfer and Meta-Reflection</b></p> <ul style="list-style-type: none"> <li>-Plan own transformative projects for learning groups</li> <li>-Discuss and reflect</li> </ul> <hr/> <p><i>-Exchange of ideas on implementation</i></p> <p><i>-Discussion: Form of irritation, Topics, Spatial Reference, ...</i></p> <p style="text-align: right;">90 min</p>
<p>Regular font: Core concepts and methods (transferable to other topics)</p> <p><i>Italics: Content and activities specific to the Cologne case study</i></p>				

Figure 1: Workshop schedule and structure (own illustration)

Prior to the workshop, participants attend an online meeting and complete two digital learning modules. The first learning module, *Changing Perspectives*, introduces the didactic foundations of transformative learning, while the second, *Changing Cities*, outlines subject-specific issues. On the first day of the workshop, participants got to know each other, explored a best practice example of urban change, and came up with solutions to identified problems. As part of the workshop, participants went on an excursion to the climate adaptation project *MoMiKS* in Cologne's *„Südstadt“* district. There, citizens act as co-researchers by installing weather stations on their homes to provide data on the urban microclimate (Eingrüber et al., 2022). Such citizen science projects promote understanding and acceptance of adaptation measures as well as strengthen social engagement and self-determination through direct participation. A key part of the excursion involved an exchange with a local family who provided practical insights into the project's implementation and their experiences in the participation process.

On the second day, an excursion to another learning location in the *„Winzerveedel“* neighbourhood, close to the University of Cologne, was organised. This district is particularly emblematic of urban challenges. Unlike the best-practice example of the *„Südstadt“* district, the intention here was to deliberately cause irritation. The groups conducted a SWOT analysis on site to map the neighbourhood's strengths, weakness-

es, opportunities, and threats. Recurring issues such as soil sealing, heavy traffic, and a lack of green spaces were evident. Based on this analysis, the participants developed ideas and solutions to improve quality of life and sustainability in this area. This process was divided into two phases. The first was an open vision phase, supported by a digital “toolbox” describing practical steps for implementing various co-creative urban development measures (Agora Köln e.V., 2025). The second phase focused on the feasibility of the proposals. The resulting solutions were presented and compared to existing plans for the transformation of the neighbourhood developed by local citizens.

In the second phase, the participants stepped out of their roles as learners to reflect on their experiences and develop their own project ideas. To this end, they were provided with supplementary theoretical input on the central principles and goals of transformative learning, as well as practical implementation tips. Inspired by the previous activities, the participants designed individual projects to show how transformative learning could be implemented in their own learning groups back home. There was also an opportunity to reflect on and discuss the specific challenges of transformative learning processes, with a particular focus on how the participants themselves had perceived transformative learning throughout the workshop.

## 5. Conclusion

The workshop format developed as part of *teff* provides an example of how opportunities for transformative learning can be created through practice-oriented learning settings. By combining digital preparation and on-site activities, the format creates spaces where participants can not only acquire knowledge about transformative learning and urban transformation, but also experience it firsthand and learn how to implement it in their own teaching. Through direct involvement in participatory projects, participants are able to experience how transformation can be initiated and come to see citizens as indispensable, active agents of social change. These experiences give concrete form to the previously abstract concept of transformative learning, allowing participants to experience it as an approach that can be implemented in their own teaching. The consistent embedding of the workshop format in real social contexts combines sustainable thinking, collective responsibility, and active action. The Urban Laboratory is also characterised by a high degree of adaptability, with the methods developed being transferable to diverse thematic contexts, increasing the reach of transformative educational processes. Overall, this *teff* project makes a significant contribution to supporting teachers in designing innovative learning spaces, in which learners can understand the future as a malleable and experiential space and actively help to shape it – all over Europe.

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