How can Climate Learning be Initiated? Piloting Unconventional Interventions in Neighbourhoods

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1 ABSTRACT

Bottom-up initiatives by citizens and communities are essential to increase acceptance of, and engagement in climate related actions. Yet, conventional approaches for raising awareness often fail to provoke a change in perspectives and actions. The CLEANcultures project conducts disruptive interventions in neighbourhoods to stimulate transformative learning processes to tackle climate change bottom-up at the neighbourhood level. The aim is not only to provide the neighbourhood with facts about the climate crisis, but also to trigger the citizens' emotions and attitudes, ultimately encouraging individual and collective action. Building on Transformative Learning Theory, local knowledge shall be activated, accepted norms questioned and alternative narratives of change co-created. A mixed-methods approach in two urban districts of Graz and the rural municipality of Admont combines 14 stakeholder interviews and a standardised postal survey of about 770 households with unconventional and interactive discussion formats involving 20 to 30 citizens per intervention.

In the urban districts, commuter traffic, increasing heat stress, soil sealing and the decline of green spaces pose the biggest challenges. By contrast, the rural area struggles with insufficient public transport and lack of protection against extreme weather events. In line with Transformative Learning Theory, residents were first invited to critically assess their prevalent practices, prejudices and assumptions. Residents were confronted with the perceived climate-related threats in their direct surroundings as they appeared in the interviews and survey results, in order to generate reflection and self-examination. Next, the residents were engaged in iterative and interactive phases of stimulus, discussion, and reflection to discover local capacities to address the identified issues. The goal is to point out to the neighbourhoods their own possibilities for action and to strengthen their collective efficacy. The first intervention consisted of an impromusical play in which the climate-related problems were conveyed and reframed in a humorous way. The second intervention involved representatives of different religions who discussed various perspectives on ethics of climate responsibility with local citizens. Both interventions invited the audience to engage in an interactive and open discourse.

As part of the transformative learning process, people realised that they were not alone in their thoughts and fears, and they were supported in developing ideas on how to get personally involved in their neighbourhood. Many mentioned that they were surprised by the relevance of climate-related issues in their residential surroundings. While citizens as individuals often do not feel heard and hardly see options for meaningful and effective contributions, the sense of belonging to a like-minded group can be empowering to explore new roles, relationships and actions. Working closely with (local) politicians also illustrated to decision makers the importance of the climate crisis in their neighbourhood and reinforced joint discourse. In all, unconventional interventions provide a promising entry point for introducing neighbourhood-level transformation processes in terms of climate change awareness, empowerment, and citizen involvement in decision-making.

Keywords: neighbourhoods, climate learning, transformative learning theory, mixed-methods approach, citizen engagement

2 INTRODUCTION

Many countries and communities have declared a climate emergency, but the desired results in reducing greenhouse gas emissions have not been achieved (Gills & Morgan, 2022). The main reasons for this policy failure are:

- Policy actions do not reach the ground level of individual behaviour.

- Top-down measures are proposed without engaging local citizens.

Thus, the research project CLEANcultures focuses on neighbourhood-level climate change issues and implements interventions to challenge existing assumptions and norms. The project conducts case studies in nine neighbourhoods across Austria, Finland, Norway, and Italy, aiming to promote sustainable practices within communities. This paper presents the results of the Austrian case studies.

3 THEORETICAL FRAMEWORK

3.1 The neighbourhood approach

Although "neighbourhood" is widely used as a category for social analysis, it is a complex construct. A neighbourhood can be viewed as a cohesive unit where individuals live close to one another and hold a sense of community, but can also be characterized by various dimensions. These dimensions include physical aspects (e.g., land use patterns and infrastructure), administrative boundaries, socio-demographic factors (e.g., similarity of residents in age, income, and education level), social aspects (e.g., cohesion and community engagement), and cultural elements like shared values, traditions, and religions (Komeily & Srinivasan, 2016). A comprehensive consideration of all these dimensions is essential to gain insights into climate-relevant behaviour in the context of neighbourhoods.

According to Bronfenbrenner's ecological theory (1979), an individual's development and well-being are influenced by interactions within multiple interconnected systems, from direct interactions with the immediate environment, including family, peers, and neighbours (microsystem), to broader cultural factors like government, media, and cultural values (macrosystem), and historical events in an individual's environment (chronosystem). Examining neighbourhoods as a unit of analysis may link the micro- and macrosystem dimensions of contemporary urban and rural communities.

3.2 Transformative Learning Theory

Mezirow's (2008) Transformative Learning Theory (TLT) explains how individuals can undergo profound personal and cognitive transformations through the process of changing their frames of reference, that is, the structures of culture and language that shape our perceptions, beliefs, and intentions. Transformative learning involves recognising and challenging problematic frames of reference, leading to a more inclusive, reflective, and emotionally open mindset that is better able to adapt and change. The theory proposes that transformative learning occurs through a series of stages:

(1) Disorienting dilemma

(2) Self-examination with feelings of fear, anger, guilt, or shame

(3) Critical assessment of assumptions

(4) Recognition that one's discontent and transformation are shared

(5) Exploring alternatives

(6) Planning for action

(7) Acquiring knowledge and skills

(8) Provisional trying of new roles

(9) Building competence and self-confidence

(10) Reintegration into one's life based on a new perspective

TLT highlights the importance of critical reflection, dialogue, and experiential learning, all of which may occur throughout a person's lifetime. CLEANcultures centres on stage 1–5 to foster a process of activating local knowledge, challenging accepted norms, and co-creating alternative narratives.

4 METHODOLOGY

The paper examines three case studies in Austria: two districts of Graz, Eggenberg and Jakomini, and the rural municipality of Admont in Upper Styria. To assess the initial situation of the climate culture and local climate-related issues in each neighbourhood, a mixed-methods approach was employed: Fourteen

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stakeholder interviews were conducted with key actors in the respective neighbourhoods, and a standardised postal survey was carried out in which 767 households participated.

In order to operationalise the psychological concepts underlying the TLT, survey data were aggregated into a set of variables using an exploratory factor analysis (Hamann et al., 2021; Stern, 2000; Steg & Vlek, 2009):

- Participatory efficacy refers to an individual's belief in their ability to actively contribute to achieving a collective goal by collaborating with other people in the neighbourhood (3 items, Cronbach's Alpha α=.72).

- Collective intention represents a shared commitment and motivation among community members to engage in certain actions (1 item).

- Collective awareness encompasses the shared understanding that the decisions and behaviours within the neighbourhood have direct consequences for future conditions (2 items, α=.75).

- Social norms refer to the perceived expectations of other community members about what behaviour is considered acceptable and appropriate (3 items, α=.62).

Subsequently, unconventional and interactive intervention formats were utilised, involving groups of 20–30 citizens per intervention, to explore how disruptive interventions in neighbourhoods can stimulate climate learning. After conducting interventions, participants were interviewed in a semi-structured qualitative format about their experiences, and the project team reflected on interactions and reactions.

5 RESULTS AND DISCUSSION

5.1 Initial situation

5.1.1 Climate Change Beliefs

The belief that climate change is happening, is caused by humans, and is already having visible local consequences is generally high in all neighbourhoods surveyed. Among urban respondents, 93% say that climate change is definitely or probably happening, compared to 94.5% in the rural area. In terms of cause, 70.2% of urban respondents attribute climate change mainly to human activities, in comparison to 60.8% in the rural neighborhood. While 65.3% of urban respondents report they definitely or probably observe changes in their local environment, this percentage is slightly lower in the rural area (61.1%).

However, as the interviewed local stakeholders pointed out, climate change is not considered a central concern in people's daily lives. Although climate-friendly actions are seen as potentially enhancing the quality of life, many individuals feel limited in their ability to make a significant impact on their own. There is a prevailing sense that insufficient actions are being taken to address the issue. Additionally, there is a lack of cooperation and collective effort within neighbourhoods towards addressing climate change.
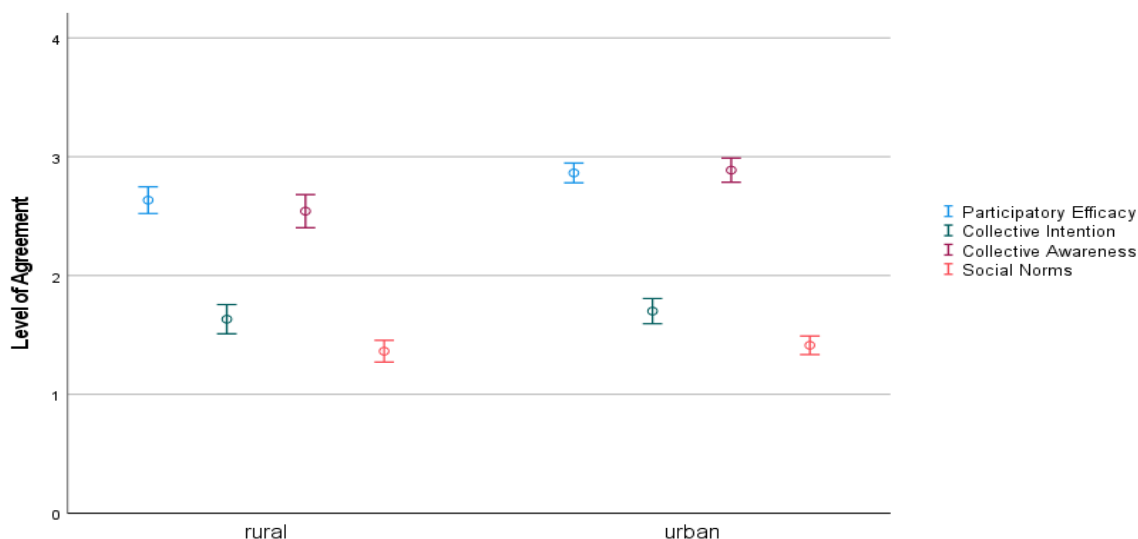
5.1.2 Collective Drivers

Figure 1: Collective drivers (means with 95% confidence intervals; 0=weak, 4=strong; N=695)

For taking action against climate change on the neighbourhood level, participatory efficacy, collective intention, collective awareness, and social norms could be of central importance. In terms of collective drivers (Figure 1), social norms related to climate action were ranked lowest, indicating limited expectations and support for climate-related efforts within the community. Collective intention to engage in local climate action ranked second, indicating a medium level of commitment to collective climate-related efforts. While social norms and collective intention have similar measures in the urban-rural comparison, participatory efficacy (indicating that residents recognise the impact of their joint actions on climate change) and collective awareness (indicating that residents recognise the impact of their actions on climate change) differ. In the urban neighbourhood, both variables were ranked higher compared to the rural case study, and collective awareness slightly higher than participatory effectiveness. Conversely, in the rural neighbourhood, participatory efficacy was ranked marginally higher than collective awareness.

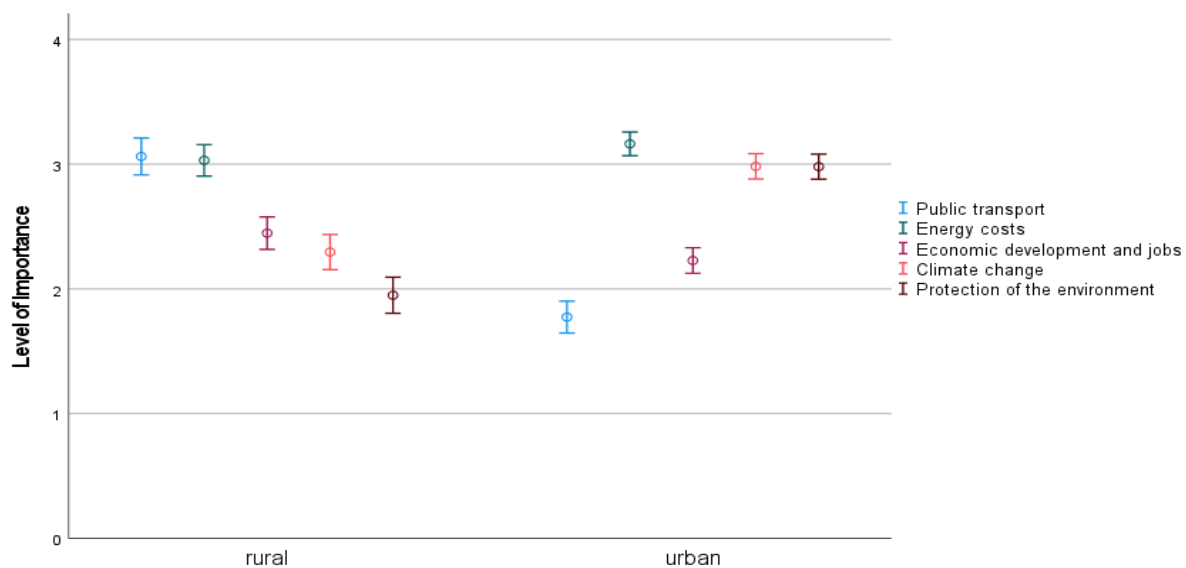### 5.1.3 Priority areas of improvement in the neighbourhoods

Figure 2: Priority areas of improvement (means with 95% confidence intervals; 0=not important, 4=extremely important, N=735)

Figure 2 demonstrates the top 5 areas of improvement based on the survey results. In urban areas, environmental protection and climate change are the most significant concerns, followed by economic development. Public transport ranks fifth in importance. According to the stakeholder interviews, urban districts face challenges like commuter traffic, rising heat stress, soil sealing, and reducing green spaces.

By contrast, in rural areas, public transport takes the top priority. Economic development and jobs come in second place, followed by environmental protection and climate change. In rural neighbourhoods, the focus lies in enhancing local infrastructure, with less attention given to climate and environmental concerns. The interviews also highlighted the importance of adapting to extreme weather events. In this analysis, energy costs are neglected due to the influence of sharply increased energy prices during the 2022 energy crisis.

5.2 Intervention design

The project's interventions involve linking abstract climate change induced problems to participants' real-life experiences and providing thought-provoking impulses in unexpected ways. Residents participate in iterative and interactive periods of impulse, discussion, and reflection to unlock the local capacity to address climate change induced problems. Three interventions were designed:

5.2.1 Intervention 1: Survey Presentation and Impromusical Play

After introducing the participants to the topic of climate change and perceptions in the neighbourhood by presenting and discussing the survey results, a theatre group transformed the previously discussed content as well as spontaneous reactions of the audience into improvised musical performances. The artists engaged the audience in a spontaneous conversation in which there was space for worries, concerns, fears and hopes regarding the climate crisis. By means of music, climate-relevant topics were conveyed in a respectful but also humorous way.

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5.2.2   Intervention 2: Multi-ethical Polylogue

Representatives of different religions discussed the ethics of climate responsibility with local citizens. The aim of this intervention was to promote a deeper understanding of climate change from an ethical perspective and address questions such as morally appropriate action in times of climate crisis, collective responsibility for climate protection, and humanity's relationship to nature. Speakers' contributions from Christianity, Buddhism, Islam, and Judaism enriched the discussions and contributed to a comprehensive exploration of ethical responsibility in times of the climate crisis.

5.2.3   Intervention 3: Throwing Game "Hit Climate-Friendly Decisions"

This game is designed to engage children, teens, and their parents in reflecting on climate-friendly behaviours. In a throwing gallery, participants attempt to hit targets that represent climate-friendly decisions (e.g., vegetarian diet, no flying, buying local food); the harder the decision is to implement in daily life, the smaller the target. By posing complex climate change related choices in an interactive and playful environment, the game is designed to prompt reflections on current habits and to foster a sense of personal responsibility towards the climate.

Figure 3: Impressions of intervention 1, 2 and 3 in Graz (Source: JR/LIFE)

5.3 Intervention experiences and link to Transformative Learning Theory

Based on TLT, the interventions initiate a learning process by presenting participants with a disorienting dilemma, challenging their existing assumptions and norms about climate change. Through self-examination and critical assessment, participants reflect on their attitudes and contributions to climate change issues. The interventions evoke emotions and trigger critical reflection, empowering individuals to explore new roles and possibilities for climate action. They also discover that they are not alone in their fears and receive support to generate ideas for personal involvement in their local community.

Through the interventions, many participants were surprised to realise the relevance of climate-related issues in their own neighbourhoods. Participants were also able to connect with local politicians and community organisations and explore new roles and actions within their neighbourhood.

5.3.1   Intervention 1: Survey Presentation and Impromusical Play

The intervention's informal atmosphere fostered open discourse, making discussions on climate change related topics approachable and engaging. Playing improvised songs about the neighbourhood reinforced the connection to one's surroundings, and the positive environment encouraged participants to dance together, fostering a sense of unity and community spirit. Additionally, the intervention's low entry threshold attracted and engaged new audiences, broadening the reach of climate-related initiatives and promoting a more diverse and inclusive approach to climate learning. While initially met with scepticism in the rural community, participants eventually opened up to the approach.

5.3.2   Intervention 2: Multi-ethical Polylogue

Participants realised that their climate-related concerns were widely shared, which created a sense of belonging. Many expressed surprise at discovering ethical responsibility as a common theme across various religions, gaining new insights from the diverse perspectives presented. The polylogue provided a platform for critical self-examination of ethical beliefs and values in relation to climate responsibility, deepening participants' self-reflection and awareness.

5.3.3   Intervention 3: Throwing Game "Hit Climate-Friendly Decisions"

The experience with the climate game showed a high level of enthusiasm and engagement among the – mostly – children who played the game. The incorporation of gamification elements, such as rewards,

challenges, and social interaction, contributed to sustained interest and motivation to explore climate-friendly behaviours beyond the game itself. By awarding points in certificates depending on the hit CO2 saving targets, a competitive spirit was perceived by many children. The game also encourages reflection on personal actions, such as "I don't go on holiday" or "I am already a vegetarian".

6 OUTLOOK

The project expects to yield results at three distinct levels, contributing to the understanding of small-scale societal system dynamics (micro level), offering a transferable methodology (meso and macro level), and providing recommendations for climate policy-making. A follow-up survey will be conducted in spring 2024 to compare the perception of climate change before and after the interventions in a longitudinal study. In addition, the results of the case studies in Austria will be compared with those in Finland, Norway, and Italy.

The CLEANcultures concept can also make a valuable contribution in other areas, such as spatial planning. With regard to citizen involvement in the development of urban and rural areas, participatory processes can be loosened up by creative thematic interventions and create a low-threshold, open access for residents to get involved. The use of creative and interactive methods can attract a diverse range of individuals, ensuring a more inclusive representation of the community's perspectives and ideas. Addressing emotions empowers citizens to question existing norms and take an active role in shaping their neighbourhoods, fostering a sense of ownership, e.g., towards collaborative approaches of nature based solutions such as community gardens. Incorporating participatory processes enables drawing on community knowledge, tailoring projects to local needs, and fostering citizens' meaningful engagement in creating sustainable communities.

7 CONCLUSION

The findings of the CLEANcultures project underline the importance as well as the potential of unconventional interventions for initiating transformative climate learning and promoting bottom-up climate action at the neighbourhood level. The designed interventions demonstrated their effectiveness in triggering emotions, stimulating critical reflection, and empowering individuals and communities. The results also shed light on the particular challenges faced by urban and rural neighbourhoods, highlighting the need for tailored intervention strategies. In the future, incorporating neighbourhood-level perspectives, fostering community engagement, and co-creating solutions in policy-making will be critical for climate change mitigation and adaptation and for creating sustainable and resilient neighbourhoods.

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