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Learning a Way Out of Unsustainability? Exploring a Pedagogical Space and Time in Sustainability Transition Initiatives.

Katrien Van Poeck¹, Leif Östman², Jonas Van Gaubergen¹

¹Ghent University, Belgium; ²Uppsala University, Sweden

Presenting Author: Van Poeck, Katrien

Learning a way out of socio-ecological problems is often seen as vital for transforming our society into a more sustainable direction (van Mierlo et al. 2020). There is a growing body of research literature on how learning processes may contribute to so-called 'sustainability transitions' (STs): profound and long-term transformations of non-sustainable structures, cultures, and practices into more sustainable alternatives (Köhler et al. 2019). A recent review of this literature shows, however, that 'the complexity of the relationship between learning and transitions is not deeply analysed' (Stam et al. 2023). This confirms earlier findings which revealed a poor conceptual and empirical underpinning of research on learning in STs. Van Mierlo and Beers (2020, p. 255) argue that well-established research fields related to learning which could provide valuable insights are 'broadly ignored or loosely applied'. Van Poeck et al. (2020, p. 303) similarly report on conceptual haziness and a lack of 'a clear, consistent understanding of the relation and distinction between "learning" and the changes in society that may be the result of it'. Van Mierlo et al. (2020, p. 253) edited a special issue on the topic and conclude that there is a need for conceptual work that goes 'beyond a superficial use of notions such as social learning and double-loop learning'. Furthermore, they raise concerns about a weak empirical knowledge base which impedes progress in our understanding of learning in STs. Learning is often assumed to take place, the editors argue, but it is neither specified nor critically investigated. Van Poeck et al. (2020) also discuss how empirical research contributions often fail to convincingly reveal *that, what, and how* people are learning in practices striving for STs.

This paper aims to further explore – theoretically and empirically – how learning takes place in the context of ST initiatives. We do so with a focus on the occurrence of a *pedagogical* space and time within settings and initiatives that primarily have a *political* purpose of fostering social change. We theoretically conceptualise and empirically investigate the emergence of what Garrison (2010) calls 'teachable moments' and how these may be seized as unique pedagogical opportunities which may evolve into 'educative moments' (Garrison et al. 2015). Teachable moments are those moments when the participants are drawn into shared inquiry regarding some problematic situation and desire to explore possibilities together. In informal learning settings we call this 'educable' moments as there is no formal teaching at play. We investigate how such moments arise in ST initiatives and under which conditions they give rise to educative moments in which critical and creative inquiry results in imagining or developing novel possibilities for the future.

Through three case studies of a variety of initiatives aimed at fostering STs in the food, mobility, and energy system, we thus aim to contribute to strengthening the conceptual and empirical underpinning of research on learning in STs. On the one hand, we further conceptualise learning in STs by theorising how a pedagogical time and space within political settings of social change can be understood in terms of (not always predictable and plannable) educable moments which may or may not evolve in a shared inquiry into collective matters of concern and, eventually, educative moments where novel pathways for the future emerge. On the other hand, we create empirically grounded knowledge about how this takes place, conditions for it to happen, and how it can be facilitated.

Methodology, Methods, Research Instruments or Sources Used

We conduct multiple case studies of learning processes in ST initiatives in which a variety of actors are involved in attempts to transform non-sustainable systems and practices. The cases are selected through maximum heterogeneity sampling (Patton 2002) and vary as to the topics addressed (agri-food, energy, and mobility transitions), the locus of initiating and steering (government-led, community-based, social movement driven), the actors involved (policymakers, citizens, businesses, scientists, etc.) and the scale of the initiative (ranging from a neighbourhood to a transnational movement). The dataset consists of interviews with organisers, facilitators, and participants (recorded and transcribed), (transcriptions of) video-/audio-recorded observations of activities, and documents (websites, social media posts, internal documents, publications, flyers, posters, audio-visual productions, etc.).

Sensitizing concepts derived from theoretical work on teachable moments (Garrison 2010, Östman et al. forthcoming) and educative moments (Garrison et al. 2015) are in the first step of our analytical work used to select relevant excerpts from the data. We select data about those instances where aspects of teachable moments (e.g. shared focus, attentiveness, inquiry, engagement) and educative moments (e.g. creativity, evolving values, epiphany) become visible. Next, we investigate the learning that takes place with the help of transactional learning theory (Östman et al. 2019), an analytical model that has proven to be useful to open up the black box of learning in STs (e.g. Van Poeck and Östman 2021). The third analytical step is to investigate the conditions under which educable moments may result in shared inquiry and in educative moments. We use a dramaturgical analytical framework for studying the facilitation of learning in terms of the scripting and staging of a setting and the performance of the activities taking place in it (Van Poeck and Östman 2022). Finally, we look for patterns in our findings that reveal diverse ways in which educable moments may occur, different ways of handling these, a variety of inquiry processes, and varied types of educative and non-educative moments that may result from this.

Conclusions, Expected Outcomes or Findings

Our results contribute to the further conceptualisation of learning in STs and shed new light on when, what, and how people can learn in practices striving for social change in view of more sustainable practices, structures, and cultures. The question how learning is, or ought to be, related to societal transformation is a topic of vibrant debate in educational research (e.g. Masschelein and Simons 2013) and in sustainability education research in particular (Van Poeck and Säfström 2022). Our study provides further theorisation but also takes this topic beyond the realm of merely theoretical discussions by creating a thorough empirical knowledge base that also has vital practical relevance: insight in how to facilitate learning in a fruitful way.

We present typologies of different sorts of educable moments, different practices of inquiry, and different types of educative and non-educative moments. We also reveal how these varied learning processes and outcomes are influenced by the dramaturgy of the setting in which they take place and, thus, by people's actions to script purposes and roles, to stage a learning environment and ways of acting within it, and to perform specific interventions in these settings. This provides 'actionable knowledge' (Hölscher et al. 2023) on how educable moments can be elicited and seized as well as on how, for example, collective reflection on on-going experimentation or the way in which participants build upon each other's input can influence whether and, if so, how this may result in a fruitful inquiry and educative moments.

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