Chapter 5
Complexity Literacy for a Sustainable Digital Transition: Cases and Arguments From Transdisciplinary Education Programs

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ABSTRACT

Educational measures in line with challenges related to increasing complexity need to go beyond traditional educational means and require the integration of the basic competences of systems thinking and complexity understanding. In addition, the chapter argues for a transdisciplinary approach, based on

DOI: 10.4018/978-1-7998-5033-5.ch005

knowledge integration across disciplines and between science and practice together with supporting communication patterns and strategies. In order to train current and future generations for this kind of transition process, with the aim of making this emergent digital environment ecologically and socially sustainable, we must consequently adopt digital literacy as well as complexity understanding and systems thinking in sustainability education more consistently.

INTRODUCTION

The argument and exemplary cases put forward in this paper follow a transdisciplinary approach that considers knowledge integration between science and practice a key success factor for dealing with the kind of wicked, multi-stakeholder, multi-perspective problems that are typical of sustainability issues. Coming from a planning background with its tradition of stakeholder involvement, sustainability education integrated processes of negotiation and knowledge integration early on (Caniglia et al., 2016). Systems thinking and complexity understanding in this context were also already established as necessary prerequisites for dealing with the inherently complex and systemic nature of sustainability challenges (R. W. Scholz & Binder, 2011; R. W. Scholz & Steiner, 2015a, 2015b). This seems to be less the case in digitalization education, where the predominant paradigm still seems to hold, that the main purpose of education is to bring anyone who lags behind up to standards (Buckingham, 2020) and expert expectations of qualification remain uncontested. This has further implications beyond demands for a voice for those affected by digitalization: A major one being expert group think. In combination with the fast pace and potentially divisive quality of digitalization, disciplinary and expert forms of knowledge on their own are likely to miss important unseen side effects, as shown paradigmatically by the DiDaT-Project on the unseen side effects of digitalization in Germany ('Responsible Use of Digital Data as the Subject of a Transdisciplinary Process'). Also, closed discourses within the "tech" bubble amount to ideal growing conditions for group think (Pedersen, 2019). Thus forms of knowledge integration, tapping the situational knowledge of practice partners and giving voice to stakeholders, are more likely to produce comprehensive, fair and sustainable orientations for societal or political interventions (R. W. Scholz et al., 2021) than the kind of closed discourse that still predominates digitalization.

Our contribution builds on experiences from two sustainability and transition oriented higher education programs: First, the Global Classroom Project (Showcase 1), a transnational experiment in curriculum reform for undergraduate education in sustainable development (i.e. Bachelor students, US and Germany) which focused on the need to combine complexity understanding and digital literacy in the creation of innovative teaching-learning environments and curricula for the education of future change agents who can contribute critically and creatively to sustainable development.

Second, the European Erasmus Mundus Project Transition, Innovation, and Sustainability Environments (TISE) (Showcase 2), which, as a transdisciplinary higher education study program reaching out to undergraduate students from all over the world, provides a holistic and intercultural perspective on transitional processes from various stakeholder perspectives.

The two cases span a period of almost a decade and offer insights from before, during, and after the pandemic and the accompanying surge in digitization in academia and beyond. This long time span, regrettably, also shows that the struggle to incorporate complexity literacy into sustainability education has been going on for quite some time and it has not yet become mainstream in the contemporary education landscape. The same is true for Education for Sustainable Development (ESD), that has been