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Titel: Waste in education: recontextualisations, material practices, waste perceptions and sustainability

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Research questions, objectives and theoretical framework

Waste is not a new issue in Environmental and Sustainability Education. When the so-called new environmentalism rose back in the 1960s, provoked by the increasing pollution of air, water and soil, waste and waste treatment became the focus of efforts to raise the consciousness of waste problems and change people's practices (Jamison, 2001). Later, the waste issue became appropriated in technical waste management systems (Ekström, 2015) and obtained an image in environmental education research as a quite restricted, conventional and instrumental part of environmental education. Today, we propose, waste education in schools and daycares is still considered to be, in Scott & Vare's terms, ESD 1 (Vare & Scott, 2007). While it is true that some waste education is expert and fact-driven, the aim of this contribution is to offer a more complex picture of how waste becomes part of school and daycare education.

Learning about waste and resources forms part of the curriculum for primary and lower secondary schools in Denmark, and constitutes an optional theme in daycare institutions. Based on an ongoing research and development project we will present and discuss challenges and perspectives related to schools and day-care as learning arenas for waste treatment. Key focus areas in the empirical research are the processes unfolding when technical and pedagogical approaches to waste treatment in schools and daycare meet each other and when educational institutions interact with parents on waste issues. This presentation will focus on the research question, "*how is household waste brought into play in schools and daycare institutions in Denmark?*"

The analysis of empirical data suggests that bringing household waste into play in different educational contexts in Denmark releases various conceptual reworkings and recontextualisations of understandings of waste. These educational understandings of waste disclose different educational approaches, practices and engagements with waste as material. We will elaborate on, and critically discuss, the empirical findings by drawing on theories on recontextualisation (Beech, 2006), technological domestication (Lie & Sørensen, 1996) everyday practice theory (Shove, 2012; de Certeau, 1984), waste management and consumer culture (Ekström, 2015), materiality (Ingold, 2011), in dialogue with generic theories on EE/ESE.

In accordance with Nowotny, Scott and Gibbons' (2001) outline of Mode 2 research, our interactive approach intends to produce robust, context and process sensible and applicable knowledge in collaboration with other stakeholders rather than evident, immediately reproducible results. At the same time, as this presentation will show, we aim at contributing to theory development on waste in ESE as a generic knowledge base which may inspire waste education in other settings and contexts.

Research design and methods

The presentation will draw on an ongoing research- and development project (2015-2016), formed in collaboration between the Municipality of Copenhagen and researchers from the Danish School of Education, Aarhus University. The overall aim of the project is to explore day-care and schools as learning arenas for reuse of household waste. As part of this, experiences from ten schools/institutions located in ten different Danish municipalities, working with various approaches to waste treatment, will be explored and disseminated. Further, a knowledge exchange network has been established with participation of municipality employees, teachers, pedagogues, labor union representatives and researchers. As part of these meetings, the ongoing research is presented and discussed, and new knowledge is generated, which again informs and challenges further research. This approach is inspired by interactive research (Nielsen & Svensson, 2006), and implies a research position as 'critical friends' in relation to the overall project.

The research is based on two rounds of data collection; the purpose of the first round was, at an early stage, to receive insight into existing understandings, knowledge, experiences and ideas within waste treatment among pedagogues/teachers, parents and children in the ten cases. The purpose of the second round will be to obtain knowledge about the various experiences and learning processes with waste treatment in the ten cases. All in all, the research is based on 20 interviews with pedagogues/teachers/technical personnel, 8 group interviews with children, and 8 interviews with parents.

The analytical work is partly evaluative in relation to the involved development projects, partly interactive through workshops with mixed group of stakeholders. However, the material is also a source of an abductive process in which empirical interpretations is confronted and/or elaborated by applying the above mentioned theoretical perspectives. The outcome of this process is then tested and elaborated in dialogue with the other involved stakeholders.

Expected outcomes

The first part of the presentation will focus on how understandings of waste are reworked and recontextualised to become part of educational agendas and give rise to different educational practices. Preliminary results indicate that, besides simple waste sorting training and resource awareness, educational approaches to waste goes from being part of socializing social order, hygiene and good

manners, to waste as an opportunity to support creative pedagogical activities and further to waste as an enabling issue for developing children's basic horizons of possibilities, responsibility and experience with participation.

Second, we will explore one aspect of these educational projects which has aroused our curiosity; the role of the materiality of household refuse in educational practices. In relation to this theme we discuss children's participation in transformations of materials over time, the role of waste materials in social interactions involving institution, children and parents, and the changing properties of waste materials (resources for creative production, surplus materials for disposal, matters out of place creating problems for nature, and so on).

Third, we will take a critical look at perceptions of waste. Rather than seeing waste as separated and purely technically managed objects, we suggest to understand waste as embedded in everyday socio-technical structures, related to different practices, each with their own rhythm and tensions. Contextualizing waste in this way is expected to provide new lenses to look at limitations and new opportunities in 'waste pedagogy'. In connection with this focus on waste approaches, we will discuss the implications in relation to waste management and sustainability, not least by looking at whether the waste pedagogies address waste management as a matter of reducing, reusing, recycling or incineration with energy recovery.

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