

RESEARCH-PRACTICE ARTICLE

Water as method: Explorations of locally situated environmental issues together with preschool children

Teresa Elkin Postila

Department of Child and Youth Studies, Stockholm University, Stockholm, Sweden
Corresponding author. Email: teresa.elkin.postila@buv.su.se

(Received 05 April 2019; revised 17 November 2019; accepted 21 November 2019; first published online 26 December 2019)

Abstract

The aim of this article is to show how water emerged as a research method nearby and within a small stream during a 9-month fieldwork carried out with preschool children. The fieldwork was informed and shaped by the preschool children's and researcher's situated knowledges and their questions about environmental issues concerning water, absence of water, pollution and ethics. The empirical material consists of films and photos, drawings and field notes, produced together by the preschool children and the researcher during the research. The analysis draws on relational ontology and the writings of Isabelle Stengers and Donna Haraway. The article concludes with a discussion about what can be learnt from the study and its contribution to research within the fields of Early Childhood Education and Environmental Education.

Keywords: early childhood; environmental education; education

When researchers and children do research together, what methods might emerge as part of their mutual collaborations? This question frames both this article and a research project about the relations of young children to environmental inquiries concerning water. The aim of the article is to show how water emerged as a research method during fieldwork carried out with preschool children, nearby and within a small stream in a coastal municipality in the Stockholm region in Sweden. During a 9-month field study, I, the researcher, and preschool children aged 3–5 explored how encounters with water might produce knowledge about environmental issues. Further, this study is part of an ongoing thesis project in Early Childhood Education, involving two preschools and 46 preschool children, divided into seven research groups. In this article, I will show examples of how we engaged with and followed water in different ways. I will illustrate how the flows of water in, with and through my and preschool children's bodies and minds, and through sand in a stream, can be understood as a theoretical-empirical and ethical method. Water guided our joint collaborative explorations throughout the field study period, guided by ethical questions and knowledges from different disciplines.

The theoretical-methodological and ethical research design, which unfolded during this explorative fieldwork, draws on relational ontology, which presupposes displacement of the human, her actions and language, by focusing on what is produced in relation with/to other humans and nonhumans. Isabelle Stengers (2015, 2018) invites us to think, imagine and formulate questions that matter to us, as well as doing research together with those whom the questions concern, in this case young children. However, this intriguing and creative invitation does not include a roadmap, but rather suggests different creative approaches to doing research together with those it affects. Nevertheless, I have here been influenced by previous inventive studies. To name but a few,

Gabrielle Ivinson and Emma Renold (2016), together with teenage girls, used filmmaking to investigate experiences of growing up in post-industrial rural Wales. Further, Riikka Hohti and Tuure Tammi (2019) have researched lives shared across species and the complexities involved in a greenhouse zoo incorporated into a lower secondary school in Finland. Others, like Fikile Nxumalo and Veronica Pacini-Ketchabaw (2017), have focused on knowledges produced in children's and walking sticks' relations in a preschool context in Canada; while Christine Eriksson (2019), together with toddlers, developed voice strolls as a method to curate a preschool context in the public transport system of Stockholm, Sweden.

In this article, the creative approach of doing research together with preschool children and water included pedagogical working methods common in Swedish preschools, such as circle time, walks in the neighbourhood, explorations of natural phenomena such as leaves or bark, as well as aesthetic activities like painting or construction. The pedagogical methods and the preschool activities were familiar to the 20 preschool children contributing to this article. We — the preschool children and I — documented our explorations and processes with digital tablets, an approach that involved ethical considerations such as asking for consent before taking photos or films. We also documented the research in drawings and writing in project diaries. These procedures were familiar to the children and are included in Swedish preschools' work with pedagogical documentation and explorative pedagogy (cf., Lenz Taguchi, 2010; Palmer, 2016). Our research sessions, during which we explored environmental issues concerning water, were characterised by the above-mentioned objectives and doing research within a familiar context for the participants.

This article consists of three sections. The first section situates water as method both theoretically and methodologically. The following sections involve the analysis of narratives in which I will show how water became our method of exploring different aspects of environmental issues. The article concludes with a summary of water as method and a discussion of what can be learnt from a research project where both children and researcher do research together.

Situating water as method

For this article, the location of the field study was important, since it constitutes a familiar context for the children. We (the preschool children and I) started out in what we had here and now, as a means of staying truly present (Haraway, 2016), which was the preschool and its neighbourhood. The preschool is situated in an undulating fenced-in yard divided into different sections, with slides, wooded parts, lawns and paved areas. This preschool's neighbourhood is characterised by its greatly human-modified parts, intermixed with forests, fields, the Baltic Sea, various freshwater bodies and a nature reserve. In particular, a small and narrow stream not far away from the preschool, which the children named the Tiger Stream, became important for the exploration of environmental issues and the emergence of water as method. The Tiger Stream flows through a natural depression, controlled on both sides by man-made features such as walking paths, train tracks, roads, a train station, a gravel football pitch and a golf course. The area where the field study was conducted could be described as typical for the Stockholm region, with its man-made features, undulating broken-up bedrock and abundant freshwater bodies. Freshwater bodies cover approximately 8% of the landscape of Sweden compared with, for example, 3% in built-up areas (Statistics Sweden, 2019c). However, the abundance of water is changing and becoming unpredictable. The expected consequences of climate change in Sweden are, for example, a higher risk of flooding and polluting of water bodies (Swedish Meteorological and Hydrological Institute [SMHI], 2015). This is due to altered seasonal patterns, with more intense and other quantities of annual precipitation and higher average temperatures (SMHI, 2015).

The above gave a relevance to exploring the overarching question: environmental issues concerning water for preschool children in their neighbourhood. However, what mattered and concerned us unfolded during the field study. In the first phase of our research, we started by

asking ourselves where we could find water, how it smells, looks, tastes and feels. These became our research questions during the study. During the 1½-hour research sessions, the children and I followed each other and water; we posed questions to deepen and broaden our understanding of water, and we presented material, shared knowledges, and showed and/or helped each other. This process was familiar to the children who had experience of their teachers relying on them as co-researchers through their questions and experimentations in their everyday work with pedagogical documentation (cf., Lenz Taguchi, 2010; Palmer, 2016). During our explorations, the individual child's questions and interests were negotiated with other preschool children, as well as with me and with water through hands-on experimentations. Further, in the research process we tested our previous understanding of water by putting methods from different disciplines to work, depending on what questions mattered to us; therefore, the research process could be described as permeable. For example, to document processes and explorations, we used survey practices that I was acquainted with from Geosciences, as well as pedagogical documentation practice from Early Childhood Education that were familiar to both the preschool children and me (cf., Lenz Taguchi, 2010; Palmer, 2016). We also made use of our different situated knowledges (Haraway, 1988). For example, I shared my knowledges both from my long working experience in preschools as well as from my academic background in the Geosciences and Education. The children, on the other hand, shared their knowledges of their neighbourhood, the Tiger Stream and its waters. It was also of importance that some children had recently been in regions with water scarcity, and that some children had been part of the preparations for the annual Litter-Picking Day organised by the Keep Sweden Tidy Foundation (2019). Together, we took care of our relations in a mutual understanding that we mattered for each other, as well as for the research process.

The data woven into this article is related to the Tiger Stream and has been selected by both the preschool children and myself. During the sessions, we took photos or films on a digital tablet; for example, Oscar, one of the 4-year-olds who participated most of the time through his snapshots, has been an important contributor to this article. We also took notes or drew in different project diaries. Both the children and I had the authority to delete or save what we found interesting and important for the process. Thus, at times we were so engaged in the water's flows that we forgot to document. Further, as a researcher, at times I had to let go and lose control both of the research process as well as the data production.

The name 'Oscar' and all the other names used in the article are pseudonyms and were collected from the governmental agency Statistics Sweden's (2019a, 2019b) list of the most common names from 2018 for newborns. The project followed the ethical requirements for regulating Swedish research involving humans. In the upcoming analysis of three excerpts, my approach has been to stay as close as possible to the here-and-now data when reproducing the narratives.

Water as method — flows and meetings

The fieldwork started out with an assignment for the children to bring water, in any physical state (liquid, solid or gas), to the preschool. Together with their guardians, the children prepared and delivered water in bottles, jars and plastic bags. At the preschool, we explored the variations of water; we smelled, looked at, listened to, touched and tasted it. This deepened the understanding of water. In this first phase, we paid attention to multiple kinds of water: saltwater, freshwater, ice water, dirty water, fish-tank water and so on. We also word-played with water as prefixes and/or suffixes, in which water unfolded different aspects of water that mattered to us and concerned us — the 'relational material-semiotic worldings' of water (Haraway, 2016, p. 13). During our first session, water emerged as a hands-on empirical method, which was similar to what geoscientists do in a research practice. To smell, taste and sense empirical material became an

approach to understand and get to know the research object. In this first phase, the relations between containers, the water and ourselves were of interest, but also the relations between our different earlier experiences of water, knowledges of water, questions to and relations with water, and different possible flows to follow unfolded for the research groups and/or for the individual child.

After the initial research session, we asked ourselves where we could find water. We started to pay attention to water indoors, noticing puddles of water on the hallway floor, in the dishwasher, in the freezer, dripping from taps, as droplets in sinks and condensing on drying cabinets. Furthermore, we experienced dirty water in the Tiger Stream and shared both the experiences of Ebba and Leo of economising with water in regions with water scarcity. The somewhat neglected, mundane water became something noticed and paid attention to. The children and I came to understand that water was not one thing; water was many different things and could be experienced, looked at, experimented with and explored from a multiplicity of different approaches. Each child had her/his own way of understanding, perceiving and defining water. The taken-for-granted water started to unfold as something more than a resource. We paid attention to the distinct marking on the Tiger Stream's brink indicating normal water level, different debris in the stream, and how strong the force of water had been when finding big and/or heavy material along the stream, and how salty and dirty waters affect our and other organisms' bodies. We documented certain manners and ways of trying to capture what was important to us in relation to water. Water called and insisted on our attention, asking us questions about velocity, force, depth, pollution, presence and absence of water. It called for responsibility and seriousness.

Foam and clamshells — pollution

In early April, the project had been ongoing for three months. Six preschool children, aged 3 and 4, and one of the assistant teachers and I walked to the Tiger Stream. The children at the preschool and their teachers often spent time close to the stream. They had experiences and knowledges of the Tiger Stream and the surrounding physical space. They knew the trees, the grass, the water, and the deer paths through the forest.

We started to walk towards the Tiger Stream. In the lower parts of the Tiger Stream, where the water flows slowly, a white-yellow to brown-yellow foam covers the water surface. The outer parts of the foam look like quills. Where does the foam come from? Further up the stream on the brink of the stream, Adam finds a pile of big white pinkish clamshells. Why are there clamshells in the forest?

The children thought that the foam in the stream was pollution of some sort; they had no previous experience of foam in this stream. We talked about the foam and I explained that though an aesthetic anomaly, the foam had a natural explanation, being residues of microorganisms' activities and chemical humification of animal and plant matter. The attention paid to the foam produced other questions about pollution, such as what pollution is, where it comes from, as well as who and what pollutes. Adam's paying attention to the pile of clamshells could have resulted from our discussions on pollution. These seemingly natural phenomena, the clamshells, were not indigenous to the forest nor to the Baltic Sea. The pile of shells in the forest made us theorise about why they had been left in the forest and by whom. The seemingly normal phenomena turned into a pollution of the forest. Our response became to pick up the shells and bring them to the preschool, as Ebba suggested, to use them in the art and crafts room, while pondering over why there were no Swedish clamshells in this room. We picked up the shells, placed them in bags, and brought them to the preschool as empirical evidence important for the upcoming work. Thus, how and why the shells had ended up in the forest in the first place puzzled us throughout our research together.

On our way back to the preschool, Freja and Walter started to pick litter from the ground in the forest and on the stream brink, running back and forth and throwing the litter in the litterbins

along the walking path. Axel, Stella and Leo also started to pick litter while singing a litter-picking song they had sung during preparation for the upcoming annual litter-picking day. This attention paid towards litter may have also been drawn from our previous discussions on pollution. During the picking, the litter was categorised by the children as either throw-away litter or as litter to keep and reuse. For example, Leo found parts for his water filter machine. The litter along the walkway and in the neighbourhood both concerned us and mattered to us. By contributing as litter-pickers, the children started in the here and now, and made a difference there and then.

The examination of the Tiger Stream, as well as the litter picking, induced delicate ethical questions. Is it right to move the clamshells from the forest? Is the foam toxic? What will happen if litter is not removed from the forest? What happens to the litter once the bins are emptied? These questions were prompted by water, or by the encounter with the stream and its surroundings. These questions turned into ethical problems for me, as well as the assistant teachers, because at first we did not know how to handle the questions arising from the situation (cf., Palmer 2016). Thus, the problem turned into theorising, during which we started to talk and ask open questions about pollution and the cause of pollution, raising questions about dislocation and relocation of matter and organisms. These were questions with ethical implications on a small as well as on a large scale, about moving matter and organisms through the geosystem from one place to another in an interconnected world. This way of approaching tricky questions together with the children was also included as part of the method.

Memories of tadpoles

The Tiger Stream became a place we returned to during the fieldwork; we went back because we wanted to find out more about the stream and its waters — we were part of and connected with the stream and its surroundings. The more time we spent with the stream, the more we noticed and paid attention to subtle changes. In the middle of June when we — six children aged 3, 4 and 5 years, an assistant teacher and myself — returned to the Tiger Stream, it was altered and very different from the week before.

The interface: the small stream and the pathway to and from the train station is a pool of dry debris: golf balls, bottles, plastic of different sorts, burnt out fireworks, leaves, twigs, branches, grass, weeds, sand and mud, but there is no water. The stream is dry. We physically and mentally felt the dramatic change from one week to another. Some of us jumped on the hard ground; the springy clayey feeling was gone and replaced by a mute hard ground with cracks. The tall aspens, the nettles and other nitrogen thriving plants' leaves dropping in the warmth, produced a different sound in the warm breeze, saturated with smells of drought and decay.

When the six children and I experienced the absence of the water, the project had been ongoing for six months, and we had other experiences and knowledges of this well-known part neighbouring the preschool. The otherwise cold and moist parts surrounding the stream were now hot and dry. The surroundings looked, felt and smelt different; it was dusty and reminiscent of late summer and autumn, though it was midsummer. The mystery of the missing water puzzled us. We wondered where the water had gone and why it was gone. At the same time, the otherwise submerged debris now revealed itself as a garbage pit, making us able to identify individual parts.

As far as we can see upstream, the stream is dry. We walk alongside the stream, following the meandering. Here and there at the deepest sections, we find puddles of water. Alexander suggests we could refill the stream with the method he earlier developed indoors, transporting water from one vessel to another. Further up the stream, the puddle, which a week ago was teeming with tadpoles, is dry. Elsa asks, 'Where are the tadpoles?' A red squirrel comes down from the canopy searching perhaps for water or tadpoles in and around the dry streambed. We walk in the

dried-up stream and on the stream brink, searching for water and tadpoles. Where the stream submerges, we find tadpoles, fast moving when our shadows fall on the water. Walking back to the preschool, we take the dried-up stream as a trail. Lilly asks, 'What has happened to the water?'

Some of us elaborated on Alexander's suggestion to refill the stream. However, Elsa reminded Alexander that his method did not work and elaborated on what water to refill the stream with. I mentioned the problem of transporting water from one place to another, bearing in mind previous discussions of dislocating and relocating. The impact of the lack of rain, the dry stream and the absent water took over and made us talk more quietly. One of us uttered something about the tadpoles and we started to run or walk fast upstream, concerned for the tadpoles, wondering what could have happened to them. When we reached the place where the tadpoles were the week before, it was dry and empty. We discussed whether the puddle was empty of tadpoles due to the lack of water and the subsequent tadpoles' death or due to the tadpoles turning into small frogs or toads. Without consensus, we started to look for puddles of water with tadpoles, finding one with tadpoles still in it. During this session, water demanded our attention due to its absence. While following the flow of the absent water, ethical and existential aspects of its absences were uncovered, such as the causes of its absence, and consequences, such as the presumed death of the tadpoles, as well as the squirrel's presumed search for water. An absence that posed and unfolded many ethical questions involving who or what had taken the water concerned us. We could not avoid responding to these questions as they pushed us into an ethical affective thinking-doing; anxiety, sadness and pain were unavoidable. It required courage for us to stay with the problem and consider ourselves as part of and folded into the ethical dilemmas that emerge (Palmer, 2016). Why was the water gone? Where had it gone? Had someone taken the water from the stream? What would happen to the remaining tadpoles and the squirrel? The children speculated and had different theories about the missing water and the animals. They drew attention to the water's relations to and connections with everything, and that everything living shares water, paraphrasing Chen, MacLeod, and Neimanis (2013). This argument can be related to previously mentioned studies that focused on investigating human and animal relations in a school and a preschool context (Hohti & Tammi, 2019; Nxumalo & Pacini-Ketchabaw, 2017).

When we got back to the preschool for lunch, we talked about nothing else but the dry stream, the presumed death of the tadpoles, and whether or not the red squirrel had shown up in search of water, tadpoles or because it was lonely. Questions and answers spread to the other research groups. We started to ask each other questions and shared our situated knowledges; some started to plan where to go next time to find tadpoles and water. Some theorised on what to do about the situation, while some agreed with Alexander's solution to move water from one place to another. Others wanted to save the few remaining tadpoles by moving them to an aquarium at the preschool, which in turn resulted in questions about how to take care of captured tadpoles, such as what do they eat? What do they need to survive? Who will take care of them during the weekends? Do humans have the right to capture and save animals? Once again, ethically challenging questions about dislocation and relocation arose.

Following water through the study also produced a readiness to put thoughts, experiences and knowledges into action. The research approach became aligned with what Stengers (2018) describes as science led by curiosity where the processes are led by interest and genuine questions, and where different fields of knowing work together. It also showed how different thought collectives were helpful when employing a common matter of concern (Stengers, 2018).

Conclusion

In the beginning of this article, I wrote that I would show how water became a method in the empirical work with children and water. During the analysis, I have followed the flows of water

through the preschool children and my collaborative research practices and explorations, unfolding how encounters with water produced knowledge about environmental issues. In this part, I will describe what can be learnt from the study and its contribution to research within the fields of Early Childhood Education and Environmental Education.

This article shows that doing research with preschool children about environmental issues that concern the children within their familiar context could involve a permeable research approach informed by both explorative pedagogical working method and methods from Geoscience. Thus, starting here and now and staying with the trouble, as Haraway (2016) suggests, was at times not an easy task. For example, when ethical and existential questions competed for attention with questions about tattoos, younger siblings or candy, what mattered to the children in relation to the question of environmental issues concerning water? It therefore became relevant to start out with the preschool children's and my own curiosity, questions, earlier experiences and situated knowledges of water. When allowing water to be part of the research, guiding the issue through both pollution and ethics, the matters of concern became tangible in explorative dialogue that produced water as method. This dialogue comprises a 'speculative proposal, a "what-if"' (Haraway et al., 2016, p. 554). We managed to meet through water and establish shared interests, leading the explorations further. Through the preschool children's and my attention, and the questions this attention produced, we shaped the research process together with water. Joint environmental matters of concern shaped by water became vital, like pollution and absence of water. We communicated both with each other and with water, paying attention to foam, clamshells, litter, tadpoles, squirrels and relations during which different ethical aspects were dealt with, and water proposed possible flows and actions (cf., Stengers, 2018).

However trivial, small and mundane this study may have come about, it can be argued that it matters and may have implications elsewhere (cf. Malone, 2018; Taylor & Pacini-Ketchabaw, 2015). In our contemporary epoch, the Anthropocene, where climate change challenges our mode of thinking and being, Stengers (2015) argues for different creative approaches to doing research together with those it affects. In this article, young children were included in research about their matters of concern in relation to environmental issues, which may have implications on how to revise Early Childhood Education, and Environmental Education. The article supports the arguments of Haraway et al. (2016) that research in the Anthropocene, when starting here and now with what we have, can be an invitation to possible worlds, with different work practices and different disciplinary skills.

References

- Chen, C., MacLeod, J., & Neimanis, A. (2013). Introduction. In C. Chen, J. MacLeod & A. Neimanis (Eds.), *Thinking with water* (pp. 3–22). Montreal, Canada: McGill-Queen's University Press.
- Eriksson, C. (2019). The art of displacement — Curating a preschool context in a public transport system. *Children's Geographies*, <http://dx.doi.org/10.1080/14733285.2019.1668913>
- Haraway, D.J. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Durham, NC: Duke University Press.
- Haraway, D.J. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14, 575–599.
- Haraway, D.J., Ishikawa, N., Gilbert, S.F., Olwig, K., Tsing, A.L., & Bubandt, N. (2016). Anthropologists are talking — About the Anthropocene. *Ethnos*, 81, 535–564.
- Hohti, R., & Tammi, T. (2019). The greenhouse effect: Multispecies childhood and non-innocent relations of care. *Childhood*, 26, 169–185.
- Iverson, G., & Renold, E. (2016). Girls, camera, (intra)action: Mapping posthuman possibilities in a diffractive analysis of camera-girl assemblages in research on gender, corporeality and place. In C.A. Taylor & C. Hughes (Eds.), *Posthuman research practices in education* (pp. 168–185). London, UK: Palgrave Macmillan.
- Keep Sweden Tidy Foundation. (2019). Retrieved September 21, 2019, from <https://www.hsr.se/english>
- Lenz Taguchi, H. (2010). *Going beyond the theory/practice divided in early childhood education — Introducing an intra-active pedagogy*. London, UK: Routledge Taylor & Francis Group.

- Malone, K.** (2018). *Children in the Anthropocene: Rethinking sustainability and child friendliness in cities*. London: Palgrave Macmillan.
- Nxumalo, F., & Pacini-Ketchabaw, V.** (2017). 'Staying with the trouble' in child-insect-educator common worlds. *Environmental Education Research*, 23, 1414–1426.
- Palmer, A.** (2016). 'Is this the tallest building in the world?' A posthuman approach to ethical dilemmas in young children's learning projects. *Global Studies of Childhood*, 6, 283–298.
- Statistics Sweden.** (2019a, January 31). Namn — nyfödda flickor 2018, topp 100 [Name — newborn girls 2018, top 100]. Retrieved September 20, 2019, from <https://www.scb.se/hitta-statistik/statistik-efter-amne/befolkning/amnesovergripande-statistik/namnstatistik/pong/tabell-och-diagram/nyfodda-efter-namngivningsar-och-tilltalsnamn-topp-100/flicknamn/>
- Statistics Sweden.** (2019b, January 31). Namn — nyfödda pojkar 2018, topp 100 [Name — newborn boys 2018, top 100]. Retrieved September 20, 2019, from <https://www.scb.se/hitta-statistik/statistik-efter-amne/befolkning/amnesovergripande-statistik/namnstatistik/pong/tabell-och-diagram/nyfodda-efter-namngivningsar-och-tilltalsnamn-topp-100/pojknamn/>
- Statistics Sweden.** (2019c, February 20). Land use in Sweden (7th ed.). Retrieved May 17, 2019, from <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/environment/land-use/land-use-in-sweden/>
- Stengers, I.** (2015). *In catastrophic times — Resisting the coming barbarism* (Trans. A. Goffey). Lüneberg, Germany: Open Humanities Press & Meson Press.
- Stengers, I.** (2018). *Another science is possible — A manifest for slow science* (Trans. S. Muecke). Cambridge, UK: Polity Press.
- Swedish Metrological and Hydrological Institute (SMHI).** (2015, December 4). New analyses show how the climate can change in Swedish counties. Retrieved May 17, 2019, from <https://www.smhi.se/en/news-archive/new-analyses-show-how-the-climate-can-change-in-swedish-counties-1.96960>
- Taylor, A., & Pacini-Ketchabaw, V.** (2015). Learning with children, ants, and worms in the Anthropocene: Towards a common world pedagogy of multispecies vulnerability. *Pedagogy, Culture & Society*, 23, 507–529.

Teresa Elkin Postila (MSc GeoSci., MSc Edu.) is a doctoral student in Early Childhood Education at the Department of Child and Youth Studies, Stockholm University, Sweden. Her work focuses on how to investigate and research environmental issues together with preschool children. The research process draws on posthuman philosophies.