

**The transformative potential of intersecting
arts-based inquiry and environmental learning
in urban South Africa:
A focus on socio-ecological water pedagogies**

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by

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Abstract

In this study I explore and explain transformative potential in arts-based environmental learning with a focus on water pedagogy. The study took place over a period of four years, where approximately 40 school pupils between the ages of 10 and 17 years-old were engaged in participatory arts-based inquiries into water located across unequal neighbourhoods in Cape Town, South Africa.

Educators, school learners, citizens and decision-makers hold different historical, cultural, political and spiritual perspectives on water. These play a role in shaping what is termed in this research the ‘hydro-social cycle’. Yet, due to dominant ideas of what counts as knowing and truth, educators in educational settings struggle to account for the complexity of water, limiting educational encounters to a partial knowing leading mostly to limited unimaginative framings of problems and solutions.

My focus on transformative potential in learning is derived from a concern for how environmental education encounters and the sense-making they enable, are infused by socio-economic, political, and historical elements, specifically colonialism, capitalism, and white supremacist racism. The connections between the multiple layers of capitalist crisis and the ever-urgent environmental crisis are not adequately made in mainstream forms of water education. The research explores how arts-based pedagogy could enable a productive meeting of critical environmental education with ecological literacies. Within this positioning, transformative potential considers how educational engagements position questions about water within the social life of participants/learners and inform learning that leads to fuller and more nuanced greater knowledge.

Theoretically, I work with an interrogation of critical education theory, underlaboured by critical realism which enabled me to rigorously consider how claims to knowing are shaped by their accompanying assumptions of what is real. Drawing on recent debates in critical education theory, I resist the notion of critique as ideology and engage instead in the craftsmanship of contextual and responsive inquiry practice. This has enabled me to articulate processes and relationships in water education encounters with meaningful understandings of the effects of simultaneous crises rooted in racial capitalism and environmental crisis.

My methodological approach is arts-based educational research with a directive to reflect upon educational encounters in an integrated way. It includes two parts informing the

facilitation and analysis of open-ended learning processes. One component was arts-based inquiry practice developed for exploring complexity, drawing on the thinking of Norris (2009, 2011) and Finley (2016, 2017). The second part holds reflective space for these encounters guided by the practice of pedagogical narration inspired by the Reggio Emilia approach, demonstrated by Pacini-Ketchabaw, Nxumalo, Kocher, Elliot and Sanchez (2014). Clarifying the intellectual work of a responsive educator-researcher, pedagogical narration brings multiple theoretical lenses into conversation with emergent dimensions of educational process.

In practice, in order to transgress the dominance of colonial white supremacist knowledge frames of water, I needed to be curious, to be confounded, to expect the unexpected in the educational encounters with participants and this mirroring of practice was emulated by the participants as they followed their own questions about water in Mzansi (South Africa). In our work together we came up against assumptions we had previously not questioned as individuals. Together we explored the implications of this by, for example, questioning who is responsible for saving water. These explorations required bringing together science knowledge and everyday knowledge at multiple scales: the household, catchment, government and global. It required us to be critical of how language and images are mobilized in public communication and school curriculums; for example, representations of water are infused with history and power in a way that impacts how we know and teach about water. The transformative potential of this pedagogical space is generated through acts of creative expression which are seen as acts of absencing absence, for example exhibiting through play how water use in the household interconnects with gender and age relationships. As such, creative expression through multiple mediums or more-than-text enables a deeper understanding of water as well as openings for interdisciplinary engagement with learning about water.

My research found that in bringing together the contributions of critical education and environmental education in practice, two shifts are needed: environmental educators need to view ecological literacy as inseparable from the social and political. The knowledge that is shared about water in the classroom has social and political implications. On the other hand, critical educators need to better locate justice concerns in the material and ecological world at scale. Arts-based inquiry, as a kind of scaffolding for pedagogical process, has the potential to enable these shifts by opening up fixed analytical frames.

Making these shifts requires a reflective practice on the part of the educator to navigate the inherited blind spots in environmental learning and critical education, such as dualities. One way to do this is for the educator to identify absences, as articulated in the Critical Realist tradition, and consider how these absences might be absented. This differs from a simplistic process of critique in the possibilities it opens up for collaboration between different schools of thought rather than further polarisation and alienation between educators and knowledge keepers on social ecologies.

These insights have relevance for many sites of environmental education practice, such as natural science lecturers, school teachers or community activists. It is knowledge-learning work emergent from and responsive to complex ecological crisis, which requires everyone to rethink and open up to new ways of being, seeing and doing around these issues. The transformative potential of this work is that the thinking and transforming at all scales can be catalysed and grounded through the arts based educational encounters *with* the participants.

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*I dedicate this work to all educators and learners
who take an activist stance on this 'damaged planet'.
Your work matters and will bring the change we need.*

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Chapter 1: Introduction

This chapter serves as the introductory chapter to this thesis. It begins with an autobiographical account situating how I was drawn to do this work. I then discuss the theme of water and how I came to understand it as a generative subject of a critical arts-based inquiry. I further present an orientation of the work in relation to the field of environmental education covering the main concepts of the thesis. I end with a section on ‘how to read this thesis’.

1.1 Situating the work: The critical reflection on my own educational journey

Every day during my first year of school, my friend and I would walk down the steep set of stairs between our homes and the local school, laden with cardboard backpacks and recorder bags swinging at our sides. Behind us was the Muizenberg mountain and in the near distance, the shimmering ocean, but these were mostly in the background of our minds. While on these journeys, we had developed the habit of foraging, we would pick yellow sorrel flowers from the side of the concrete stairs and sip at the sour stems as we made our way.

As our walk came to an end, I would feel fear in the pit of my stomach. I was not happy at the school I was attending. I did not see the point of reading, and I could not read well. Sums seemed to be a conspiracy against me, and I felt like a persistent disappointment to my teachers. I can only imagine these were the experiences behind something I said to my mother when I was seven years-old: ‘I want to go to a school where they make things’. This encounter was the beginning of two decades of participation and reflection on educational experience in post-apartheid South Africa.

I was born into a white middle-class South African family and our situation made it possible for my mother to take on some extra work and send me to the Waldorf School, a school based on the philosophy of Rudolf Steiner. At this school, painting, woodwork, handwork, singing, and storytelling were built into the weekly programme. The classrooms were decorated with candles and flowers. Tree climbing was encouraged, fruit harvesting was one of our responsibilities, and we were taught juggling and balancing in order to learn to focus. Regular school subjects were taught as well, however in an integrated and embodied way. These years are precious and grounding in my memory.

We moved to Johannesburg and I started high school at a government school, the National School of the Arts, in Braamfontein, Johannesburg. This fuelled my lifelong passion for

music making but the ‘curriculum’ of this school included much more! I learnt from peers about what it was like to travel from Soweto to school. I realised many learners had to awake an hour earlier than I did. While I caught one bus (the number 79) from the street corner and walked from the bus stop to school, my peers from Soweto had a much longer journey involving three taxis before they arrived for the school day. Our schools were post-apartheid and racially integrated but our individual journeys to school told other stories.

I had the opportunity to go to university and, unable at this point to settle on an established ‘career path’, I straddled science and humanities in the field of environmental science in my undergraduate degree. This foundation culminated in an interdisciplinary master’s course on climate change. My dissertation looked at the role education might play in bringing together the problematically separate concerns of becoming more ‘green’, and the urgency for improved well-being for so many of South Africa’s citizens. I soon found that ‘education’ or skills could not be instrumentally linked to ‘development’ and that they meant different things in different localities for different people. If you are poor and struggling for survival in Khayelitsha, a course in electricity might not prove useful, and could in fact work against you in the eyes of employers looking for ‘low skilled’ labour. Contrary to well-intentioned skills discourses, the forces at play seemed to prefer that not everyone become ‘skilled’. The second important lesson was that the act of my research was sending me up the social ladder, to become someone with a master’s degree. However, I felt as though I was being moved further and further away from those parts of my country that suffered in the struggle for life. At the end of five years at university, I felt I did not have the crucial skill of being able to communicate and act to make a difference for the majority of people in my country – what was it all for? I soon found work at an organisation running research and programs in the informal economy. I lead research programs in informal recycling, food markets and theatre-based engagement.

This phase was the beginning of a journey of unlearning, re-learning and *re-turning* to learning. I had to unlearn that I could trust the system (economically, politically and in the various representations that normalised our social world) ruling our country. I had to unlearn that working hard was enough, that my education was inherently good. While acknowledging the tremendous change that was the end of the apartheid regime in 1994, I had to unlearn that our democracy meant authentic equality. In fact, I had to unlearn that a nation being democratic was less significant than a nation entangled in a history of exploitative relations based on racial categories and locked into a global economy of inequality. On the ground,

democracy was in a way the ticket to becoming stuck in the clutches of global hegemonic structures.

Much of my unlearning was instigated by Paulo Freire's books, *Pedagogy of the Oppressed* (1972) and *Cultural Action for Freedom* (1970). Here my unlearning and learning merged into a more nuanced and complex praxis of life experience which helped me to begin to embrace less certainty, and to rather become a more responsive, reflexive being, thinking and doing. This was my identification with a field of inquiry broadly known, not unproblematically, as critical education.

As if to prepare the soil for further learning, this awakening, took place shortly before the student movement, #feesmustfall,¹ was activated at the University of Cape Town, from where it rippled across the country. While I had already graduated from UCT, I knew people who were there and involved with the movement, who cowered in the doorways of the administrative building while police hippos² moved onto the campus. What is not commonly known about the student protests is that before the protests reached the streets and media, they took the form of engaging educational spaces where students explored their experience at institutions of higher education, reflected on what was included/excluded in their curriculums, asked questions about what was being researched and why, thus reflecting on the usefulness of this research for their home communities.³ For the first time, I was witnessing alternatives that would speak to the contradictions thrown up in my master's degree.

I joined a study group that read *The Eye of the Needle*, a book by Rick Turner exploring the possibility of freedom in South Africa. He, a white South African, practised Freirean-based education in the 70s, worked with the ideas of Biko and drew on them to challenge the white community of the time and, tragically, was assassinated by the apartheid government in 1973.

1 Focusing on fees as a generative theme for challenging the ways our society is structured around a form of economics that exploits and divides and alienates.

² Hippo is a term used for South African armoured vehicles that were designed to be landmine resistant. Police hippos were always present at popular protests events which turned violent during apartheid. They have also been increasingly present at protests in the post-apartheid time, including the Marikana massacre and many of the student protests which took place just 3 years after the massacre.

³ This is written and spoken about extensively by Leigh-Ann Naidoo, an educationalist who has investigated the parallels between the black consciousness movement and the Rhodes Must Fall movement arguing that these two moments resonate in decolonial impulses for change.

He made the important point back in the 1970s that freedom is not possible in the current condition of inequality and exploitation. This point is extremely relevant for the widening inequality gap today. This study circle allowed me to begin to understand my whiteness and ask important questions about the possibility of changing things I have taken from granted in my life.

As a young researcher and non-formal educator, increasingly interested in practices of critical pedagogy, my path led to a part-time job assisting on a research project exploring the traditions of popular education in South Africa. I went to workshops where the conveners used a popular education approach exploring gender, patriarchy, alternative economics, organising and mobilising, while using theatre throughout as a platform for dialogue. I discovered artefacts from Freirean educational work done in South Africa since the 70s – why had I not learned about this important social movement in our history? I soon met a researcher working with Freire’s ideas in environmental justice contexts and through her, I linked up with the Environmental Learning Research Centre where I began this PhD.

1.2 Learning with water – an urban ecology

After a year of reading into the field of environmental education and critical pedagogy, I embarked on the field work for this study. It became clear to me that to link daily experiential realities to learning contexts, to ensure learning experiences were not disconnected from daily lived realities, I would have to zoom in on a particular environmental issue. I was increasingly drawn to water, which very easily dissolved the false separation between conservation and social justice. At the time the City of Cape Town had such low dam levels that the municipality threatened to turn off taps to private residents’ homes and requested that people collect buckets of water from centralised collection points. Together with a fellow PhD student, I embarked on a podcast project on the Cape Town drought which included a mix of voices, bringing in artists, water experts, water anthropologists, borehole engineers, civil society, farmers, water activists together, in audio form (Van Borek and James, 2019). We collaged their contributions into several themes we thought were important for understanding the drought beyond the directive of saving water. The podcast, in its own small way, became an attempt at a transdisciplinary water curriculum illuminating the complex and interrelated forces acting on the water available to us. This curriculum included the devastating story of how E. coli pollution from urban sewerage systems made it impossible to use river water as an alternative water reserve at a time of drought. Those rivers were causing

extreme health risks to the communities that lived along them (Green *et al.*, 2019). Because these rivers are the canalised rivers – remnants of colonial city planning – they were channelled out of sight. It is in between these rivers and the wealthier members of the city that the poor were forced to reside. These are the people who now observe, witness, and deeply understand the effects of a polluted river (Green *et al.*, 2019). To develop a curriculum through which we could understand the unobvious mechanisms behind water flows in urban space, follow the water and you will discover relationships and interconnectedness across a city that is locked into a perpetual attempt to separate. Follow the water you will reach a grounded understanding of capitalism. The water teaches.

Bringing my educational inquiry into conversation with the materiality of water enabled a radical grounding for this work – one that accessed a more radical environmentalism and a materiality of power relations. I realised I had occupied a place in the world that moved between the bubbles of different water crisis ideologies. Of course, my movement through these bubbles was contained by an urban material reality, including a system of degrading water resources. I had the opportunity to be in uncomfortable spaces in which I could hear these multiple positions and perspectives. Each explanation and response to the drought came with its own ontological and epistemological way of thinking about water, social institutions, social life and the individual, and of course, the presence of wrong ideas. I was interested in how some friends in professional positions had not come across the concern about privatisation – the moves the city might make to use the drought to further commodify water and deny access to those who did not fit the model of ‘customer’ citizen outlined in their policy (City of Cape Town, 2019b). The problem was limited to the ‘practicalities’ of dam levels and the solutions that the city was implementing. By contrast, a man without a tertiary degree could point out the contradiction of the availability of bottled water in the shops with raising water tariffs and threatening to switch off the taps by the government. The absence of a clear way forward for an environmental justice pedagogy was really a call to work it out and enter a reflective praxis. This working out would need to be done with concern for the many different views and ways of thinking about the drought around the city, contained by, but not determined by, the social bubbles in South African urban life. This realisation led me to realise how important the idea of solidarity is in South Africa: we need to at once understand our “interconnectedness” and our “radical differences” produced in our society if we are to move together to something different (Gaztambide-Fernández, 2012)

Knowing that there are multiple forms of knowledge, and modes of learning that relate to uncovering the way water moves through our lives (explored in Chapter 2), is a theme around which we can gather to study learning in context of environmental and social struggle. In this thesis I argue that reading water is a way of reading the world, mirroring Freire's argument that reading the word is a way of reading the world (Freire and Macedo, 1987). Water connects us to each other, it connects our bodies to ecological systems, it is also engineered to differentiate along axes of social inequality. Its ecological systems remind us that if we ignore our interconnectedness, we will end up swimming in our own shit. It reflects to us the state of our world and our relationships within that world.

In her investigative journalism in South Africa's transformation post-1994, Antjie Krog found herself speaking to a municipal director in Kroonstad who said: "You must remember that the real struggle in South Africa is happening here in the ordinary towns and districts, where access to resources is being worked out. ... at the level of the town or district, you touch the lives of each resident. And it is going badly" (Krog, 2003, p. 65). This is a snapshot of post-apartheid South African life, where inequalities become worse as we face the impact of global climate change exacerbating the situation of the poor and vulnerable. This moment comes at the end of a long history of colonialism and apartheid, and a present story of increasing neoliberal capitalism. Understanding the ways in which these histories and political presents are enacted through unequal material conditions, is part of the environmental education project in contemporary South Africa.

In South Africa and the African continent more broadly, the contemporary situation relating to the water commons is dire. African feminists point to the trends of newly independent African countries turning to neoliberal privatisation of municipal services to be independent from colonial powers. However that very structure, tied up in colonial domination anyway, continues to disempower those on the periphery, especially women (Rombo, Lutomia and Malinga, 2017). The result is a significant number of women and men in African cities living without adequate access to water. Alongside this, the *crisis* of water is a disguised excuse to further commodify the life-giving commons through the logic of market managed scarcity, pushed along by the flawed logic of the tragedy of the commons. Because profit is made on scarcity, the effect is an utterly inappropriate way to manage a commons resource that is suffering from a genuine finiteness and degradation (Salleh, 2018, p. 18). We are living at a time when solutions in market-oriented framings are perpetuating the problem; we need to become sly foxes in the struggle for the water commons.

Not only does the global trend in neoliberalism make the real water crisis worse but it masks other solutions. These once again are highlighted by eco feminists and African feminists. Benson (2020) notes that French NGOs reported that there were no water organisations in Senegal and neglected to acknowledge the significant movements of women resisting water privatisation. The paradigm of development systematically strips women of their agency in water management, through this exclusion erased their knowledge of, and agency in respect of healthy river systems (Shiva, 1988). This absence paved the way for ‘mal-development’. In understanding this, we are given an escape from the doom and gloom of the mainstream environmental tropes; alternatives are possible but only if they can transgress the limited frames of problems and solutions shared in hegemonic knowledge and policy circles.

The water crisis is situated in a composite set of ecological crises. Many educationalists have worked in response to the concept of the Anthropocene (Somerville, 2017) the name for an age when human forces now play a significant role in shaping the planetary systems (Crutzen and Stoermer, 2000). The concept of the Anthropocene has been critically engaged in for its political implications, for instance, as the term was launched into the academic world (2000), it was acknowledged that those humans responsible for the anthropogenic forces significantly shaping the planet only include 25% of the planet (Malone, 2018, p. 3). In this way, some authors have argued for an engagement with the capitalocene, “understood as a system of power, profit and re/production in the web of life” (Moore, 2017, p. 594) that it is more productive to understand the system of relationships that have made human influence on the planet so destructive rather than a depoliticised, undifferentiated humanity in general. While not necessarily using the alternative terms, this Anthropocene-inspired educational research has involved important elaborations such as thinking through how political ecology can complement the ways education orients around the new ontological realities of the Anthropocene age (Lloro-Bidart, 2015). Significant for contexts of the global South are elaborations on the connections between human and nature extending prior to the “official” age of the Anthropos. Yusoff (2019) discusses the ways in which the world has been ‘ending’, due to human intervention, for many groups of people since the 1400s and the first Portuguese ships catalysed the colonial movement. These elaborations in the literature are relevant to the context of South Africa, a society that is extremely divided along class and race lines and a context in which elaborations of nature, especially nature as an enclosed commodity, is significantly present in the consciousness of the public (Death, 2014). While much educational research has been developed in conversation with critical discussions

relating to the “Anthropocene”, I work with the term socio-ecological crisis to indicate a slight distance from newness of a complex crisis which feels old in South Africa. It is thus necessarily that we work with education in response to the socio-ecological crisis in politically rigorous ways.

There are cracks and ruptures throughout societal structures and the light has been getting in through many channels. These ‘pulses of freedom’ (Bhaskar, 2008) help us to see beyond disguises and to understand essences. The metaphor of light getting through the cracks is in part, a way of reading the world and becoming attuned to its scary silences so that it becomes unbearable not to work to repair it.

1.3 Describing the study within the fields of environmental and critical education

Coming with the history and experience of being me in this complex and difficult time, wanting to understand more about the transformative potential of education with children and youth, has required that I open up these different streams of work. It has required that I explore the interconnected concerns that must accompany processes of learning about our socio-ecological challenges aligned with learning about water, if it is to be a part of education as the practice of freedom. To develop a praxis of education is to hold and work productively in complexity.

I embarked on this thesis with an understanding of how our ecological crisis is rooted in locked-in and persistently immovable structures exploiting both humans and our biophysical systems (Lotz-Sisitka *et al.*, 2015). From this understanding, I was interested in the possibilities for responsive educational practice to emerge. This responsiveness was well held in terms such as “socio-ecological education”, a term that helps to renew some perspectives on environmental education (which at times loses its social-ecological connections) and consider educational responses to ecological crises explicitly conceptualised as relational and interrelated (Mckenzie, 2004, 2009), and therefore must include intersectional literacies (Darder, 2010) including experiential approaches to pedagogy, engagement with place and participation (Brown, Jeanes and Cutter-Mackenzie, 2013). I was eager to **explore the practical application of pedagogies**, developed in traditions of resistance to those systems of exploitation, and committed to collective remaking and reimagining the world.

Reading into the literature on Ecopedagogy, originating in South America and drawing on Freire’s ideas in environmental education, opened up the space to think about links made

between education, educational struggle, environmental struggle, and social movements, centred in the global south, or with an explicit critique of the status quo under capitalism. Ecopedagogy is a wide and varied area of thought that can be captured in this question posed by the editors of the *People's Curriculum for the Earth*: “How should environmental justice movements partner with the educators who work daily with the millions of young people learning their ecological ABCs – or, perhaps too often, not learning them?” (Bigelow and Swinehart, 2014, p. ix). Ecopedagogy is an emergent tradition drawing on tools of critical pedagogy/transformational learning of Paulo Freire and Moacir Gadotti with a particular concern for the intensifying global ecological crisis (Kahn, 2010). It is an approach and study of teaching and learning, which connects the activities of schools with social movements and grassroots activism, engaging a power sensitive analysis of environmental destruction to address our planetary crisis (Kahn, 2010; Russell, 2013; Omiyefa, Ajayi and Adeyanju, 2015; Misiaszek, 2016).

The work of ecopedagogues has been described as a merging of analytical approaches in critical education traditions with ‘functional ecology’ (Kellner and Kneller, 2010), in this way absencing the ecological blind spot of critical pedagogy and nurturing a political literacy often excluded within the science-based pedagogy and most readily at hand in environmental education. The work of ecopedagogy is to map the intersections between various social and ecological challenges and explicitly frame the ecological crisis as an extended challenge of liberation including for the ‘more-than-human⁴’ (Kahn, 2010). Importantly, it brings to the question of ecological crisis the ways in which educational praxis, with all its historical challenges, can be reimagined as part of the solution. In the words of Antonia Darder (2010, p. xvi):

[T]o contend effectively with issues of racism, sexism, homophobia, disablism, and other forms of inequalities, a life-affirming ecological praxis is paramount. That is, one that encompasses a refusal to adhere to political, economic, and philosophical

⁴ Theoretical trends in socio-ecological and intersectional environmental education engage the term ‘more-than-human’ to serve the shift away from narratives that separate humans from animals and ecosystems and secondly, includes the “relationships and coexistence” of humans and the more-than-human world (Maina-Okori, Koushik and Wilson, 2018, p. 291)

disconnections, which falsely separate humankind from those ecological dynamics that shape local, global, regional, rural, and urban landscapes.

A lingering legacy of environmental education and its relationship to place has often denied the reality that urban spaces are also ecological or socio-ecological places of interconnectness with the rest of ‘nature’ and of significance to the people who occupy their concrete structures (Bellino and Adams, 2017). The work of “reframing youth relationships to urban environments and the ways we teach environmental education” (2017, p. 274) enables us to reconsider the knowledge and literacies that are needed to understand our lived realities and their relationship to the rest of the world. While there are many environmental education initiatives across the City of Cape Town, little is known about the environmental pedagogical approaches that can work across extreme divides of peoples, natures, cultures, languages. This has been innovatively explored in the context of adult learning (Kaplan and Davidoff, 2014). This lack or omission is despite growing urban ecological work that calls for urban actors to have skills that span sound knowledge of urban ecological processes and political agility and willpower to address the question of ‘who benefits?’ under existing predominant values systems (Katzchner, 2013). This is something that is not possible in the false rejection of urban areas as environmental spaces.

This is the work that ecopedagogical research can do. In Misiaszeck’s (2016) phrasing:

Ecopedagogical research focuses on how individuals learn about these imbalances between benefits and negative effects, how they don’t learn about them, and the politics behind why or why not such learning takes place.

The notion of ecopedagogy, as a critical pedagogy of urban environments, prepared the ground for articulating the kind of educational research I was interested in.

1.3.1 Ecopedagogy and critical, transformative education

Within the frame of ecopedagogy, an interrogation into ‘theory and practice in practice’ (Lotz-Sisitka, 2016a) as well as a consideration of the geo-politics of knowledge is required. Specifically, thinking is required about the travel and resonance of this theory from South America where it originated to South Africa and the African continent. The term ‘environmental learning’ emerged in the Southern African context to differentiate a kind of education that is life-long and not restricted to formal curriculum. It is also a kind of learning that speaks to the socio-ecological conception of the crisis (Lotz-sisitka and Price, 2016). In

pedagogical practice this extends towards theory and practice approaches which enable critical education to be situated in the place where it is, rather than stuck in ideological traditions of elsewhere.

Scholars are grappling with ‘critical education’ in terms of the move from critique as a mode of thought *only* to critique as a creative process of change. Reflecting on critical education processes McKenzie and Bieler (2016, p. 34) write:

By better attending to these dimensions of practical experience, we can extend beyond the mainly cognitive and deconstructive histories of much critical education, and towards also including more constructive, emplaced, and creative pedagogic practice.

Critical education traditions were present at a transformative moment in South Africa (1990s) and thus opens up a concept of transformative potential for this research. As Dei argues “[c]ritical debates about schooling can help us carve out the path for educational and social transformation.” (Dei, 2010a, p. 13) Commenting on two decades of attempts to integrate critical education in to the South Africa curriculum, O’Donoghue (2018) describes the problem of processes of abstraction that separated context and process, separating method and situation ... resulting in yet another, ‘we must fix this approach’ [spot the troubled thread of the missionary shining through?]. His view resonates with the concern of Carpenter and Mojab (2017) that critical education has become ossified in unreflective assumptions about processes and ‘conscientisation’. Collapsing the need for active praxis into ossified ideologies fails to engage with the reality of the socio-material context and how it is dialectically linked to our consciousness (a sense of learning).

If critical education is understood to be an educational approach concerned with social change in response to forms of injustice in context, the decolonial educational theorists are an important contribution in the South African context. Shava (2016) analysed the power and reproduction of marginalising communities from knowledge production through the way indigenous knowledges were represented and attended to at the interface of communities and formal learning institutions. Odora-Hoppers (2017) has also warned that uncritical considerations of environmental pollution fail to interrogate the international relations with countries in the African continent.

The edge of critical education research is a concern for situated emergence with an attunement to broader contextual and structural relations. Several scholars are returning to

dimensions of practice to move beyond critique for its own sake. Taking seriously the impossibility of abstracted process and or a sole focus on content, means the impossibility of instrumentalism. This means the necessity of learning to read and reflect on relational educational encounters.

1.3.2 Emergence and reflexivity in environmental education practice and research

If we think about education in this open-ended and contextually grounded way, the study of it takes on a particular character too. **Studying the practical application** of pedagogical ideas, requires a commitment to emergence in education, multi-dimensionality in the educational process and deep listening by the educator-researcher. Holzman (2009, p. 12) notes that the modernist culture of ‘fixing the machine’ misses out on crucial elements of being human, that is “our subjectivity (historicalness socialness, consciousness and self-reflectivity)”. The praxis of inquiry in this study needed to embrace these phenomena as part of the educational encounter – a social process that cannot be fully controlled and holds the possibility of being obstructed or enhanced (Nxumalo, Vintimilla and Nelson, 2018).

If we are **to move beyond the stuck points** of critical education theory, a basis for understanding transformative potential, that have sat with us from the past, we need the ability to say, “No, our world, the education system is not broken beyond *repair* – we may just need to listen more closely for what is needed to change it”. In addition, we do not think of repair as going back to something that was, but rather making anew (Moten, 2017, p. 168). We re-turn the way earthworms return the earth (Barad, 2014) rather than restore to some static state. In a sense, we need to understand what is required to build the *method* as we move towards the *result* – and not prioritise the one above the other. The words ‘tool’ and ‘result’ evoke a paradigm outlined by Holzman (2009) that resonates with Vygotskian thinking on psychology and education.

Understanding this emergent relationship between the phenomena of interest in this study and the methodology adopted to make sense of it requires the distinction of three interrelated elements. The first is the matter of concern, the immediate task – learning about water. This is part of processes and relations that are articulated in critical environmental pedagogy – an educational praxis responding to a problematised status quo, processes, relations and situational contexts (Leduc and Warkentin, 2006). This is the second. These two phenomena are further explored and reviewed in Chapters 2 and 4 of this thesis.

And thirdly, these in turn are interrelated and connected to my own learning and reflexivity as a researcher educator. Reflexivity, is our capacity to ‘reflex’, to turn back on ourselves and examine our actions as we do them. Reflexivity is a social phenomenon that exists by virtue of the reality characterised by emergence; relational space we occupy between things we can and cannot control. “In its most basic form it specificizes the capacity of an agent or an institution to monitor and account for its activity. It is thus intimately connected to the phenomena of the historicity of social spatialised processual change and the futurity of practice” (Bhaskar, 2008, p. 255). As both education and research are social processes, emergent from the social, reflexivity can be understood as a factor at play in both these activities.

So in social research, reflexivity is embraced due to the fact that researchers are a part of what we are studying and will ourselves transform (Price, 2016, p. 34) and that we have a responsibility to attend to “a more nuanced texturing of the micro-workings of power in and beyond research endeavours” (D’Arcangelis, 2018, p. 349). However, significant dangers, particularly in social research exist where reflexivity becomes wrapped up with the notion of the ‘liberal subject’ – an individual that can know themselves fully and therefore represent themselves fully to others, can mitigate any potential harmful power relations and can ‘transcend’ the positions they hold in society (D’Arcangelis, 2018, pp. 349–350). In fact, we cannot mitigate the power we may wield in encounters and in the complexity of the world; it is not possible to articulate our positions completely, especially because we understand ourselves to be transforming in the process. It is because of reflexivity used in this way that scholars have come to critique the concept and its use in research. Haraway (1997) and Barad (2007), for example, have rejected the term reflexivity and argued for diffraction. Thinking through the need for reflexivity in environmental education research, Lotz-Sisitka (2016a, p. 211) noted a danger, resonant to the danger of slipping into the role of ‘emancipating the other’. Thus, reflexivity can be used in a way that is against transformative goals.

I remain with the term reflexivity but understand it as accompanying the notion of the reflexive double turn: “In turning towards [our] role and responsibility ... we turn away from [ourselves], and towards others” (Ahmed, 2004, cited in D’Arcangelis, 2018, p. 343).

Through this journey I have found the term ‘radical reflexivity’ offered by Ahmed and D’Arcangelis to be an important guide; instead of seeking the impossible self-determining full knowledge of the self and the sense that one can mitigate impacts of power, we embrace

reflexivity as “a form of critical analysis, which would examine our subjectivities as windows into the operation and potential alteration of social structures in which we are fully implicated” (D’Arcangelis, 2018, p. 350). In particular, for educators and researchers interested in emancipatory and liberatory goals, our work necessitates an accompaniment of reflexivity in which we “explore [our] contradictions and contingencies, tensions and internal resistances to [our] own ‘forward movement’” (Lather 1995 cited in Lotz-Sisitka, 2016a, p. 212). In this way, reflexivity can be in service of transformative goals firstly through conceptualising a shifting nature of the social world and honouring the new emergence of every educational encounter.

This reinforces the notion of the double turn that we use reflexivity as an act towards better understanding the world and the limits of our action within it. As I write in Chapter 4, reflexivity is the ‘fifth moment’ of the learning process. If I remind that the meta-learning process of this thesis is a kind of life affirming education centred on socio-ecological concerns, then the fifth stadia – which is not necessarily chronologically ordered with the others, is the moment of reflexivity. As will be articulated in Chapter 3 and Chapter 8, reflective practice in water education gives rise to reflexive nodes in critical water education. Thus, in line with the proposal for being and becoming in the fourth generation of critical theory, the double turn of radical reflexivity and the underlabouring of critical realism maintaining the impossibility of an ossified self, I work with the term ‘reflexivity’, engaging it as a tool for learning about self in the world, doing water education.

Both my own reflexive learning and critical environmental pedagogy are necessarily interrelated because critically assessing teaching practices is part of this emergent research paradigm; in other words, the teacher learns too! Zooming in on water pedagogies is a way to locate and situate theories and practices of environmental learning in the material and historical context – this includes understanding the framings, logics, artefacts and themes that are drawn on in encounters of learning about water. Critically, water education, environmental education and educator researcher reflexivity are nested but different phenomena. It is in the way that I understand them to be connected that is critical to the approach of this study, constituted as emergent, generative and reflexive research. Through considering these emergent and constellational spheres, I am able to learn about situated water pedagogies and open up the elements at play in their emergence towards an educator reflexivity for water pedagogy.

1.3.3 Working with children and youth

I sought to extend this journey through an invitation to school learners and their associated organisations. The literature on children's geographies argues that there is a lack of space for children to cultivate voice and political agency (Aitken, 2001; Rousell & Cutter-Mackenzie-Knowles, 2020) when compared to the time and space afforded to assimilating to the unsustainable status quo. Making space for children and young people to reflect on the fragile conditions of our world in terms of how they might take action is a key purpose for children and youth organisations today (Biesta, 2007b). A review on climate change education with children notes that there is "need for participatory, interdisciplinary, creative, and affect-driven approaches to climate change education" (Rousell and Cutter-Mackenzie-Knowles, 2019, p. 191). Climate change education is a form of socio-ecological education that responds to the ecological crisis. Children and youth are a group that bring me great energy – despite my understanding that everyone is continuously learning, I was moved to work with this particular age group.

I designed an inquiry into the 2018 drought in the Western Cape, South Africa, drawing on arts-based modes bringing theatre, drawing and storytelling exercises to the phases of inquiry – sharing experience, surfacing questions, seeking answers, dialoguing further, and representing what emerged. I could feel, as an educator, that these processes enabled learning to extend beyond the boundaries of curriculum content, providing an invitation (not a guarantee!) for engagement with content rather than its transmission. My ideas resonated with Norris (2009) who noted that arts-based participatory inquiry allows for complex social, or rather say socio-ecological, issues to be explored for the multiple dimensions relevant for investigating water. The questions that guided this inquiry relate to the 'how' of engagement with complex socio-ecological concerns.

1.3.4 Research questions

Grounded in the problematic of urban water, I reflect upon learning encounters with young people [learning about water] to understand the transformative potential at the intersection of arts-based inquiry⁵ and environmental learning.

⁵ Arts-based inquiry is a research method that draws on arts-modes as a prefigurative and political position in resistance to the status quo. Arts-based inquiry "is activist, engages in public criticism, and is resistant to neoconservative discourses that

**What is the transformative potential of intersecting
arts-based inquiry with environmental learning through co-engaged learning
encounters?**

Thus, this study is guided by the following questions:

1. What are the generative themes that describe the relationship between young South Africans and their urban environments?
2. In what ways can arts-based inquiry be understood as a praxis that is responsive to urban environmental education concerns and research?
3. In what way can multiple artefacts (text, image, song, sound, story) be critically engaged with and mobilised as tools for learning about the way our urban environments and experiences are shaped?
4. How do I work towards educational encounters that are in solidarity with young South Africans?

1.3.5 How to read this thesis

The chapters that follow are a series of unfoldings in the spirit of emergent inquiry into socio-ecological education practice.

The first four chapters are a reckoning with scholarship concerned with the practice and study of critical education. Chapter 2 presents the context from which this work emerges in terms of the spatial, social relational educational landscape as a backdrop for a review of situated water education in South Africa. Chapter 3 presents the method of studying educational practice particularly drawing on the role of the pedagogista as an accompaniment to the educator, and Chapter 4 presents an interrogation of critical pedagogy as form of environmental education.

The next three chapters showcase pedagogical narrations of engagements I had with young people on this journey. The encounters differ in terms of modes, closeness of engagement and time together. They constitute the *practice* encounters that can be seen as versions of environmental education in urban South Africa upon which I reflect. In line with Nicolini

threaten social justice”. (Finley, 2016, p. 681). Arts-based inquiry considers brings research into conversation with arts-based practice and “critical race, indigenous, queer, feminist, and border studies” (Finley, 2017, p. 563).

(referenced in McKenzie and Bieler, 2016, p. 34) who argues that “the empirical study of practice is better served by *intentional movement between theoretical sensitivities*, given the inter-scalar and multidimensional aspects of practice”, each chapter draws on slightly different theoretical orientations, all aiding in reflecting upon the educational encounter and underlaboured by dialectical process. Chapters 5, 6 and 7 are structured in the following way. They begin with the artefacts relationally produced in the educational encounter as a way for the reader to get to know the expressions and voices of the participants. What follows is my process of reading and making sense with these artefacts in conversations with the critical pedagogical and socio-cultural educational theory. For all encounters there were moments of noticing, becoming stuck, moving to new levels and then working back into practice. Insights are shared on the three emergent levels and discussed in the concluding sections of these chapters (Section 5.4, 5.5.5 and 6.6); on the level of learning about water, learning about learning (critical environmental pedagogy), and the level of educator researcher reflexivity. Chapter 5 presents the play skits and drawings of Grade 4s. Chapter 6 presents the play building inquiry I did with high school learners. Chapter 7, presents a slightly different quality of empirical material, and draws on conversations with high school learners reflecting on involvement in environmental organisations and action at this time across the city of Cape Town. This is a dialogue that attempts to zoom out from educational encounters and discuss environmental learning in time and space around the city.

The final chapter discusses the transformative potential of socio-ecological environmental education when intersecting arts-based inquiry. This **transformative potential** emerges from several elements of an **educational encounter** that form part of the **educator reflexivity** produced in the reflective practice of this thesis. Following this, the chapter shares an instance of putting this reflexivity into practice through a process of reframing water education. The contribution of this work is an offering to water educators working inside and outside of formal educational institutions, in extracurricular programs and youth based organisations grappling with socio-ecological complexity in their work.

Chapter 2: Youth and children in a landscape of educational change

This chapter is literature review. It works with literature relating to the place the research is situated, Cape Town, the relationships it emerges out of, between researcher-educator, youth and children, the institution of environmental education in the South African educational landscape. It concludes with a section on arts-based inquiry research and Southern African water education.

2.1 Introduction: The situ-action of this research

This chapter is an attempt at describing context. The word context comprises ‘con’, a prefix denoting ‘with’, and ‘text’, well, is what you are reading now and much more – it is a thick and layered object or entity that we can read. So, what is the context from which this text emerges? What are the relationships with which this text emerges and speaks?

My research takes place in a context comprised of a number of dimensions, including urban ecological and material spatiality, a socio-cultural-historical-political educational landscape, social relationships between adult-educator-researcher and youth/children-learner-participants as well as relationships with the selves that are active in this inquiry. In this chapter I engage with the literature in order to situate my research practice in the context. Through this review I aim to narrate the historical roots of educational transformations in South African urban school-life and trace the emergence of the environmental education movement, its scholarship and practice. I consider some of the tensions emerging between context, theory and practice, which inform a situated South African ecopedagogical inquiry. The chapter ends by considering South African based reflections on situated water pedagogies in order to think through some of the dimensions of the social activity of learning about water.

Firstly, I begin with a consideration of the urban ecological place in which this research was undertaken. The primary data of this reach takes place in a spatially marginalised city neighbourhood, known as ‘Ekhasi’ to the participants who live there, a word originating in ‘lokasie’, the apartheid term for location in which black South Africans would be housed to provide labour to the white economic and political apparatus dominating the country. They are locked into contrasts with the suburbs where I dwell. This polarised city materiality

requires a dual acknowledgement: on the one hand, of the significant material challenges facing many communities on the spatial-margins of the city but, on the other hand, that the knowledge and experience emerging from this relational life world can and must be taken up in educational process. Engaging the ways our urban ecologies are shaped is a significant starting point for an engaged, grounded and relational sense-making experience

Secondly, I consider the social relationships present in my research practice, that between researcher-educator-adult and participants-learners-youth/children in the world. Critical childhood scholars show how, when uninterrogated, these relationships play out in the form of pedagogical processes that erase the multiple experiences of childhood in this world. This work informs a deeper ethics in research *with* children/youth and extends this thinking to how these relationships intersect with environmental learning.

Thirdly, I look at the South African educational landscape including the thread of environmental education woven within and without the formal education system. The educational landscape can be seen as the socio-cultural structure of the context which in South Africa has been in a perpetual motion of transformation, since the 1980s, and prior to that (Lotz-Sisitka, 2002; Christie, 2008b; Hoadley, 2011; Cooper and Luckett, 2017). I consider the way in which the broad umbrella of the environmental education movement and scholarship has participated in South Africa's transforming education system over the last 30 years, a move towards realising and inspiring the possibilities for cultivating socio-ecological transformative learning. This umbrella of environmental education as a 'politics of potentia' (Lotz-Sisitka, Rosenberg and Ramsarup, 2020) includes advanced understandings of critical theory, decolonial educational thought, practical indigenous knowledge innovations and most importantly, practical innovations and interventions across the school system. I also look reflexively at the ways this 'potentia' [meaning people's politics] has failed to be realised within the broader educational landscape and draw some lessons for my own intentions of exploring transformative potential in education.

Having set the backdrop of the urban ecological, social relational and institutional context, I consider examples of water pedagogy in South African environmental education literature. This section reviews a range of contexts and reflective studies on the purposes, the modes, and the institutions involved in water pedagogies. While the reflections are insightful and well developed, there is an absence of written work about anti-capitalist and urban water pedagogical concerns.

I conclude with a consideration of the work that I take up in this thesis that is a continuation of the educational struggle.

2.2 With place: Ekhasi and beyond

My research takes *place* with children and youth in educational organisations located in a township on the periphery of Cape Town. There are many and varied descriptions of Cape Town. Tourist pamphlets will describe it as one of the most beautiful cities in the world. Most recently, it made the international news as the first city to run out of water. A more realistic way to describe the city is a steep slope between the rich and the poor: both in terms of altitude and income. As a city of the Global South, the struggle for daily sustenance for many who live in Cape Town can be described as a state of emergency, and yet at the same time, we need to acknowledge the “... fullness and autonomy of ordinary people doing conventional things in extreme and mundane circumstances” (Pieterse, 2014, p. 4).

The world of a township is distinct but entangled with the world of my childhood in a historically white suburb. Both these worlds are a function of colonial and apartheid spatial organisation that have locked our cities into a warped division of labour and resources, levels of safety and dignity; some do more work, others have more stuff and greater access. In many ways, these areas are where obtaining a formal education, living, and learning more generally, accords with significant daily struggles for life’s essentials.

Philippi, where part of this research was based, is a township with a mix of formal and (increasingly) informal housing settings. Its history is a collision of apartheid – a regime which occurred in South Africa between 1948 and 1994 to segregate South Africans by race and exploit black people for their land and labour – with hegemonic and neoliberal shifts beyond 1994. Apartheid emerged from the foundations of Dutch and British colonialism from as early as 1652. Today Philippi experiences the presence of apartheid spatial planning (delineating a ‘township’ for housing black people, who were formally confined to remote and relatively small areas of land, outside of the cities known as ‘homelands’). In more recent times, there has been a proliferation of informal settlements, as rural-urban migration has increased in South Africa since 1994 (Adlard, 2014). The number of households increased by 20 000 in Philippi between 2001 and 2011. The percentage spread across the housing types (formal, informal backyard and informal non backyards, and other) remains constant for all categories apart from the informal backyard, showing that around 50% of residents in

Philippi lived in informal dwellings (both backyard and non-backyard) in 2011, an upward trend that continues. This phenomenon would account for the fact that less than 50% of residents have piped water into their dwellings, while the rest have taps outside of their houses and some (around 5 000 households) have taps more than 200 m from their house (Ngari and Brown-Luthango, no date) Piped water to the house is also not necessarily an indicator for permanent water access, as Water Management Device installations have been implemented in Philippi by the City governing structures to limit water supply according to a ‘minimum daily allocation’ of 350 litres per household per day (Nocuze, 2017). These devices limit the daily water flowing to a household and have been found to be problematic by a number of community-based organisations and housing social movements; they result in inadequate access to water due to the fact that the taps are shared by many more people than the daily allocation can serve, they are only installed in poor households, they have been installed without proper consultation or participation, and further burden the poor with the responsibility of water conservation, which results in an assault on dignity and health (Pereira and Wilson, 2012).

‘Ekhasi’ is the term that is used by some of the participants in this study to refer to where they live and encompasses a sense that as a place, the township is distinct in quality from middle-class suburban areas but intimately related to them in relationships of labour. It is a significant context in which to be asking about the transformative potential of eco-pedagogy. The intention is not to essentialise township experience, but rather to learn from that position and extend or expand to thinking about its existence as a universal concern of rising inequality. The fact that township life has experienced barriers to flourishing is something that concerns and is interconnected with the whole city of Cape Town.

Recently, in conversation with a graffiti artist from Mitchell’s Plain, I was asked, “How come you work in the gutters?” This was the first time I had heard the slang ‘gutters’ for township areas. The term invokes various images for me: gutters themselves are significant participants in the flow of water across urban space, collecting the excess, with the possibility of collecting it into a water harvesting project or to be sent out into the sea by urban water ways. Largely invisible and unacknowledged, they do essential work in urban space – which is resonant with the nature of townships in South Africa. Beyond my thoughts about the name, this question was a generous challenge to my practice. I realise that I could have easily lived a life where I did not enter township spaces, holding fast onto the idea that other parts of the city were normal. But the answer that we cannot not work in the townships is also

problematic. This question and my shifting response to it animates an important reflexive thread throughout my work. This moment and this word brought place, myself and water into a symbolic relation.

This section has described the historical and material *place* in which the educational encounters of this thesis took place. The context is an urban site characterised by significant struggles for dignity and life and yet, as all locales are, “(a) is emergently changing over time, inciting ongoing labours of thought and learning; and (b) are never simply ‘local’ but link to broader social-structural dynamics” (Zipin, 2017, p. 75). We can understand how those who occupy these urban spaces hold knowledge and literacy about these places and, from this position, about the world. Seeing Cape Flats township spaces as locales of problematic conditions, does not mean they are void of knowledge and understanding: in fact these settings are critically engaged with these issues. It is also thus an important site with which to understand how environmental education encounters play out, given the importance of place-based and context responsive aims/goals/designs of environmental education research (Tuck, McKenzie and McCoy, 2014). Thus, this place context in South Africa, the relational space of township is seen as a lifeworld, echoing Zipin, where there is a differentiation between “social spaces of cultural deficit”, that is “places from which children must be saved”, from spaces that “contain valuable knowledge and experiences that can foster ... educational development” (Zipin, 2017, p. 98). The latter is an important place context within which to listen and from which to grapple with the possibilities of realising deep and just sustainability.

2.3 With people: Research with children and youth

This section draws on critical childhood studies to describe the social relation between youth and adult educator-researchers and from this description, outlines the understanding that informs this study. This interrogation is necessary because our conceptions of children and youth matter, as described in the quote below.

[A]s adults we bring to our encounters with children a particular package of attitudes and feelings, constructed through our own personal childhood history and our contemporary perspective on childhood, often coloured by one of more of the various prevailing ideologies of childhood. (Greene and Hill, 2005, p. 8)

In South Africa children live in a polarised and unequal society and are facing the obstacles created by systems that are older than they are. There is an urgency to address these systemic root causes which partly lie outside of the world to which children are confined (Ansell, 2009).

Despite this, there is evidence that the active role of children and youth in the past and the present is shaping of South Africa and the world. Children hold knowledge of the world including its injustices. Research has shown that children are aware of complex dynamics such as the impact of unemployment and the relationship between poverty and wealth (Moran-Ellis and Sünker, 2018). In the United States it has been shown that children by the age of four years, experience the strong message in society that there are less obstacles if one holds white privilege in this world (DiAngelo, 2011, p. 63). Children have engaged with responses in relation to understanding in the world. In Cape Town, high school learners that attend school in badly insulated containers have mobilised and marched to government buildings for their right to have classrooms in which they can work (Hendricks, 2017, 6 March). Similar campaigns continue to be led by organisations such as Equal Education in partnership with the Social Justice Coalition (Equal Education, 2016). Around the world, youth have made themselves heard on the climate emergency.

The United Nations Convention on the Rights of the Child (UNCRC) (1989) (Aitken, 2017) and parallel trends in scholarship such as the ‘new sociology of childhood’ (Ansell, 2009) all point to rising attempts to enhance the active participation by children and youth in decisions that affect their lives. Despite international attempts to acknowledge children and youth and their place as active participants in the world, we are caught within socio-cultural trends that maintain the contradiction of children being unable to participate in discussions about the causes of their experiences of injustice in the world.

In South Africa, participation of children in decisions that affect their lives is limited and largely under-researched since 2009 (Moses, 2008). Moldonado-Torres (2016, p. 2), in his writing on decoloniality and youth-led social movements, alerted us to an obstruction in listening across generations, between youth and adults:

There is much talk in liberal societies about youth representing the future. In truth, however, this is considered the case only to the extent that youth seek to continue the same priorities and frameworks of understanding the world as the dominant voices in the current dominant generation.

There is a mismatch between where we ideologically place children and youth in our societies and the practices that obstruct our listening to them and obstruct the realisation of their self-determination and agency. And this is where adult educator-researchers have work to do in partnership with youth.

This mismatch can be further understood through critical interrogations into the absences and assumptions relating to the category of childhood. While this category operates discursively, it has important material effects (Nxumalo and ross, 2019). Aitken (2017), a critical children's geographer, has pointed to the complex tensions between the various conceptualisations of children in society, such as: children are neither ignorant of, nor perfectly attuned to, *nature*; seldom are children living carefree lives, and yet we cannot ask them to bear all the responsibility for the future. Despite being contradictory, conceptualisations of children and youth have a meaningful impact in terms of subjectification in pedagogical spaces and society. Burman (2016, p. 226), in her analysis of childhood in Fanon's writing, noted that there is general consensus that "models of children, childhoods and educational theory and practice have long been implicated in colonialism". I understand this to mean that our common conceptions of the relationship between adults and children, played out most strongly in educational contexts, get transferred onto relationships within race and gender dimensions of essentialised difference due to authoritarian power within the social material configurations of these relations. Nxumalo and ross (2019) wrote that discourses of childhood, especially assumptions of the child as innocent, are also products of racist ideology – they are racialised. This has the result of excluding children who do not have the quintessential experience of the child as innocent and carefree. In the world today these are largely Black children, children in the global South, or 'children out of place' as Connolly and Ennew (1996) term children who do not have the experience of western conceptions of childhood.

In the context of pedagogical research and practice, Burman (2016, p. 269) stated that "the pedagogical address to the child (or children) has been a site for philosophical subversion ... and involves attention to irrational, culturally sedimented ideas as explicit theories".

Nxumalo and ross (2019) have troubled some of the "irrational, culturally sedimented ideas" in environmental education. Environmental education has tended to avoid working in "messy and mundane urban spaces" which fall outside of the western conception of 'nature' denying the lived experience of many children in the world who are, despite their urban and concrete

surrounds, entangled with the biophysical world. Further than neglecting learning in and about urban spaces, theories such as nature deficit disorder claim that nature can *fix* the child (Fletcher, 2017), and education in the ‘outdoors’ (away from urban) colludes with other problematic valuations such as high exam scores, when other forms of well-being, such as play, are side-lined as beneficial. Thus ‘culturally sedimented ideas’ which restrict environmental education around nature deficit conceptualisations of children serve to further erase and dishonour the knowledge brought by the child of their living environments that are already ecological.

In response to these absences, Nxumalo and ross (2019) proposed that environmental education embraces a re-oriented pedagogy, “testifying to and witnessing the survival of black life amidst anti-blackness” as key to bringing an intersectional resonance into environmental learning for children and youth in South Africa. This reoriented pedagogy might be a starting point from which to develop a situated re-definition of sustainability; rather than a modern and technicist environmentalism (Jickling, 1992), sustainability is considered here as centred on removing the violence against survival through an engagement with those who are on the frontlines of this struggle (Di Chiro, 2006; Dei, 2010). Working with environmental pedagogies as testifying to and witnessing would be an acknowledgement of the notion that children and youth have agency and are affected by social structures that are older than they are.

As far as the experiences and opinions of children, researchers are mostly scrambling around in the dark, rather than better-knowing elders. However, as adults and researchers, we may have influence over the enabling or dis-enabling structures that affect world-making action of children and youth (Aitken, 2017). Through this relationship, we develop a deeper change-oriented research practice, as the mediator and messenger aspiring to a with-ness.

2.4 Environmental education and the context of educational change in South Africa

This section presents the landscape of education, environmental education and the transformative impulses that have occurred in recent South African history. It does so in order to illustrate the institutions that are significant and relevant to the lives and learning practices of the participants of this study. Issues associated with these institutions are not insurmountable but the institutions exist as structures that are older than us, with which we must comprehend and understand how agency emerges within them.

For the children and youth who participated in this study, school is a significant component of their lives. It occupies most of their weekdays and, within our society, holds their aspirations for future social mobility. The majority of children and youth in South Africa face precarious conditions (May, Witten and Lake, 2020) as they attempt to participate in the South African education system. These precarious conditions include the status of our education systems which are not serving the majority of the country. As much as 40% of learners who enter the school system do not complete the programme and only 6% complete an undergraduate tertiary degree. These numbers reflect various structural blockages. One aggravating example is that most children are not schooled in their mother tongue making literacy more challenging. In addition to this, material conditions, pedagogical approaches (Zipin, Fataar and Brennan, 2015), western knowledge paradigms (Odora Hoppers, 2017) and the emerging global ‘knowledge economy’ (Christie, 2008a) are inhibiting the potential of young South African citizens to flourish. Research into the everyday lived realities of South African learners reveals the ways in which dominant pedagogical approaches in schools ignore “the complex processes by which human beings now transact their lives, amidst racialised neoliberal living in newer class formations, collapsing infrastructures, and with desperate, unorthodox, and informalised livelihoods” (Fataar, 2016, p. 11). Long before the recent Cape Town water crisis reached the headlines, the participants in this study experienced school closures as a result of water cut-offs. This is an example of how experiences of education are both disconnected in terms of pedagogical approaches and yet embedded in precarious living conditions.

The participants who joined me in this research are growing up in a South Africa that has failed to structurally transform in a just and sustainable way. This failure is due to lack of radically reimagined economic policies, very little redress in terms of access to land and resources, and a maintenance of a neoliberal global economic regime (Klein, 2011; Radical Education Network, 2020). Some would argue that the idea of ‘transformation’ has been run into the ground in the 25+ years since the advent of democracy in 1994, by the immanent failure to realise the hoped for, deeply grounded just transition from the apartheid era. The result is that the country is seeing a rising voice of young people calling for decolonisation instead of transformation (Kamanzi, 2015).

Education within and beyond formal structures – school-life – has been a site of struggle for broader transformation. Following Bhaskar’s model of transformative model of social activity, education is seen as a kind of socio-cultural structure which holds significant weight

of the past – it is not unchangeable but is significant in informing what activity is possible in the present. “Historic dominance of the social over the personal” (Bhaskar, 2016, p. 53) is evident, especially given the reality of a world where the majority of people are surviving in a way that constrains flourishing. Through writing about this struggle, I hope to communicate what has been learned about educational ideas in practice in the South African context. I cover the following points:

1. I present the historical emergence of environmental education in South Africa and Southern Africa along with relevant origins, contextual and theoretical influences.
2. I outline the transformation of the curriculum. I compare this to a pendulum, extending the often invoked metaphor of South Africa’s post-apartheid educational milieu.
3. I draw out some principles and frameworks within the current curriculum that speak to critical environmental learning
4. Finally, I review scholarship which considers how the educational system has impacted on the lived experience of young South Africans

Taken together, these four sections attempt to cover the spread of contextual space in which young people are being, reading and re-writing their worlds. It is in this challenging educational context, that South African environmental education scholarship has laid the ground and positioned a rationale for exploring transformative environmental learning processes at the level of practice in conversation with young people.

2.4.1 Environmental education roots in educational change

This sub-section presents the evolution of the environmental education movement in South Africa as a way to understand how the practice and theory has emerged in the South African/African context.

Scholars and educational practitioners in South Africa have been grappling with how education can overcome racist and exploitative, life-erasing structures. There are rich histories of educational movements struggling for social justice and democracy (Cooper and Luckett, 2017), including a significant and well mobilised environmental education movement (O’Donoghue, 1987) and curriculum initiatives (Lotz-Sisitka and Schudel, 2007). These movements are both in the context of apartheid where efforts were resistance based as well as in post-apartheid where policy efforts were made to build the new South African society (Von Kotze, Walters and Luckett, 2016). The new school curriculum included

normative values of ‘human rights, inclusivity, diversity’, for example (Lotz-Sisitka and Schudel, 2007).

O’Donoghue (1987) described the environmental education movement as participating in a broader movement of educational change in the late stages of apartheid along with the people’s education movement. They were both forces of change, galvanised as sensitising concepts, that at some point were described as coming into tension with the institutions of education, having “outstripped the adaptive capacity of our institutionalised education bureaucracy” (1987, p. 12). While these movements were both under a broader umbrella of change in the late 1980s, and early 1990s, they were also in productive tension. The People’s Education movement did not focus on biophysical degradation and the environmental education movement paid less attention to the political and the social (see Figure 1 below). Of course, this polarisation is disrupted by the many environmental movements who engaged ecological degradation from a political standpoint (Cock, 2004). But it is important to understand the shape that environmental politics took in educational debates. This

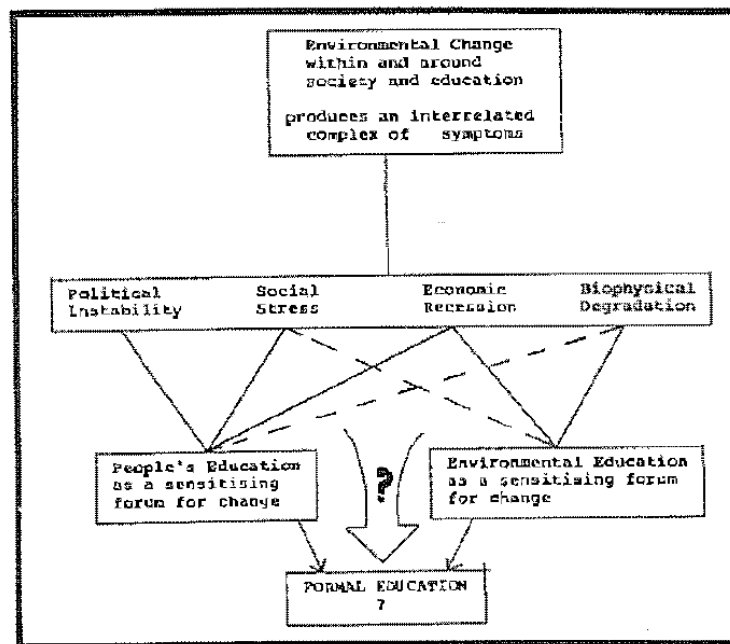


FIGURE 1 Forums of educational change.

Figure 1: Representation of educational change matters of concern (O'Donoghue, 1987)

polarisation echoes the separation of science and politics in educational and epistemological ways around the world (Kellner and Kneller, 2010).

Part of the process of educational change behind the sensitising concept of environmental education was a process of distinguishing itself from the well-established and socially, culturally and materially problematic, though somewhat straightforward tradition of conservation education (O'Donoghue, 1993). The challenge was that environmental education was still at risk of being usurped by a range of other agendas.

Critical education seemed to be a significant element in clarifying the work of environmental education. More recent reflective scholarly work by O'Donoghue (2018) has traced shifts in environmental education and the rise of critical pedagogy, especially in post-1994 educational conversations. In this reflection he wrote that "early critical education discourses began influencing environmental education in the 1980s and proliferated in the early 1990s before briefly receding to become more prominent again in postcolonial trajectories that have come to the fore in recent years" (O'Donoghue, 2018, p. 2).

Emerging from these two influences, conservation education and critical education, at a time of socio-political change, there were two opposing educational approaches that in fact collapsed into a corrective assumption: the functionalist 'let's fix our broken environment' and the critical 'let's fix our problematic education system' (O'Donoghue, 2018). There were two problems with this corrective approach; firstly, an absence of a deep engagement with context, not simply in terms of what is there materially but what "traditions of understanding" exist in the context. The second issue was the reification and universalisation of pedagogical process. The educational ideas of critical education became enacted in an abstracted process eventually synonymous with Participatory Action Research looking something like "plan-act-reflect" (O'Donoghue, 2018, p. 13). Understanding how these ideas played out in practice revealed that not enough work was being done with the reflexive, cultural and institutional context from which they emerged.

The result of these two problems was that new contradictions emerged. For example, the opposition of 'acquisition' and 'participation' (O'Donoghue, 2018 referencing Sfard). This resulted in the two influential forces in the formation of environmental education movements being in tension but also subsumed into a troubled dualistic educational tendency which tended towards a corrective process.

Following this thread into more recent scholarship, critical education's 'wrong turn' was not unique to the South African context. Developments in thinking relating to critical education have been articulated by Lotz-Sisitka (2016a). She has traced three generations of critical theory. The problematisation of critical education by Ellsworth (1989) is extended into a fourth generation that draws significantly on Bhaskar's critical realism and involves action and reflexivity as a push back against idealistic notions of democracy. From my reading into various educational theorists, this duality that emerges from corrective and contextually blind educational approaches distracts from the heart of that matter which links to "meaning making tools" (O'Donoghue, 1993) or analytical tools (Carpenter and Mojab, 2017) for reading the world; in a sense the matter of concern (Latour, 2015) will determine (and even create) the analytical tools – the content determines process – so that process cannot be abstracted.

Environmental education scholars have also made considerable efforts toward bringing decolonial thought into educational thinking. Indigenous knowledge is here defined in terms of a number of characteristics (Shava, 2016) and includes a consideration of the rift that has been created between western science and knowledge emerging from lived and local community. These works speak to transforming the South African education systems and explaining and repairing the rift between life and school. Indigenous knowledge as worked with here includes creating "space to bring into the educational processes knowledge from their own lived experiences" (Shava, 2016, p. 122). This work has been done on both theoretical and practical levels, addressing the possibility of synergy between indigenous knowledge and formal curriculum with examples (as well as a comprehensive collection of indigenous knowledge relating to multiple environmental education themes by O'Donoghue, Shava and Zazu, 2013; see also Shava, 2016). This work has been expanded through a detailed consideration for the lived experience knowledge held by children in a rural village (Masuku, 2018). Masuku's work brings post-colonial, decolonial and indigenous knowledge thinking to environmental education and serves as a significant transformative theoretical and practical impulse for the field of environmental education.

This section outlines the social and political situation in which environmental pedagogical practices have emerged. Environmental education faced a number of obstacles to realising theories and practice at the intersection of functional ecological literacy and socio-cultural-political justice: 'myopic modernist institutions' enabling conformity (O'Donoghue, 2005), top-down corrective tendencies (in both critical pedagogical influence in the curriculum and

the environmental education stream) (O'Donoghue, 2018), international influences predominating educational theory and shifting it back towards 'human capital' and the urgency to participate in the knowledge economy.

At the same time, it emerged alongside impulses that informed as well as affected change. The environmental education contended, in parallel with the rest of the scholarly world, the use of critical theory in environmental education. Southern African environmental educators have also done important groundwork for connecting environmental concerns to the lived realities on the African context.

2.4.2 The curriculum and its pendulum swings

The transformative impulses of South Africa's transition to democracy were met with neoliberal influences. This means that OBE's philosophical basis was compromised with the purpose of change being co-opted by market logics. Outcomes Based Education (OBE) (also known as Curriculum 2005) was introduced after apartheid. The intention was to replace the racist (or conservative) curriculum with a progressive curriculum. The intentions were to instigate the 'erosion of boundaries': "between education and training, between academic and everyday knowledge, and between different forms of knowledge, disciplines or subjects" (Hoadley, 2011, p. 145). The influences were partly the local impulse for change but also due to foreign education consultants introducing ideas such as 'outcomes' and 'competencies' (Schudel, 2017a referencing Christie, 1997). This curriculum change unfolded in the broader context of influences from "the neoliberal cast of 1990s 'development' and 'globalisation' discourse" (Zipin, 2017, p. 70). This strong current of neoliberalism in part led to widening class divisions with well- resourced schools better able to adapt to the changes with more resources to support OBE pedagogical practices. The effects in practice were a widening gap between former whites only and better resourced schools, and under resourced former black schools.

The introduction of the National Curriculum and Assessment Policy Statement (CAPS) introduced the pendulum shift from a focus on the 'how' (learning process) in education to a focus on the 'what' (the knowledge) in education. In Hoadley's terms, it was a re-establishment of what we see as boundaries that were attempted to be broken in the OBE phase and yet, as described above, this was not the root of the problem. Toward the construction of CAPS, a small collective of scholars who identify as social realists, argued to centre curriculum on 'powerful knowledge' – the knowledge required for entering positions

of power in society (Hoadley, 2011, p. 151). These arguments were prone to being ‘(mis)read’ in policy as ‘education needed for the global knowledge economy’, and as a kind of instrumentalist move towards growth (Zipin, Fataar and Brennan, 2015, p. 10). With the neoliberal trends rising, this shift further entrenches the challenges described above.

This swing, from OBE to CAPS, has been problematic as it seemingly addresses the wrong problem. For example, Zipin noted that there is an equal danger in both the OBE tendency of reifying everyday knowledge, and the CAPS approach to dismissing everyday knowledge, shifting the concern to relationships within educational process. Reification or dismissal of everyday knowledge firstly “weakens the knowledge and its learning” and secondly, “sustains the frame of deep grammars by which curriculum work unjustly reproduces social-structural inequalities” (Zipin, 2017, p. 73). Indigenous knowledge environmental educators also problematise processes of alienation that occur in education systems with historical and contemporary colonial influences (Shava, 2016).

How might we reimagine the polarising tensions within the curriculum to help respond to these historically and globally situated contradictions in curriculum thinking. Zipin suggested the following:

That is, ‘power sensitive conversation’ across life-world settings, furthered by educative processes, can raise consciousness to how place-based [Funds of Knowledge] carry global dimensions running across locales. ... In this process, educators and power marginalised think together, teach one another, and raise critical consciousness to ‘generative themes’ of global connection that run within and across local social space This is another kind of dialectical education that, in linking local FoK with globalising problematics, identifies deep and extensive we might say ‘verticalizing’, global connections between localities. verticalizing global connections between locals. (Zipin, Fataar and Brennan, 2015, p. 27)

What is missing from curriculum debates, according to Zipin, is power sensitive conversations which might orient us to learning processes that do not reproduce the duality of school and everyday life divisions. Instead, we might consider knowledge resources that exist within homes and communities for an engagement with generative themes that can link local experience to global connections (as has been exemplified by O’Donoghue, Shava and Zazu, 2013). In a sense, we need to present an alternative literacy of vertical knowledge, one that taps into the political ecology, spatio-temporality of the world. It is at this moment of tension,

where historical inequalities, global market forces and experiences of alienation remain at play in the curriculum, that I position my research.

2.4.3 What can we learn from research on educational experience?

The image of a pendulum can be helpful here. A pendulum is a physical process of perpetual motion. We can ‘de-abstract’ a pendulum and ask, what is it standing on? What are the forces making it swing? How might we get it to swing in more than two directions and perhaps free itself from the structure that is part of the reason for its linear movement. That many young people have been excluded and others are crying out for change by the time they reach university, indicates that we must ask what our curriculum transformation looks like in practice. Zipin (2017) named this phenomenon “coin conserving binaries”: the curriculum is a coin that gets flipped over from one extreme to the other but with similar implications overall and particularly regarding the possibility of educational justice. For this I turn to research that focuses on the lived experience of schools and their curricula in community.

An important view of curriculum is how it is being experienced (Lotz-Sisitka, 2002). Young people who have received a privileged education today expressed that even in receiving such an education, they feel alienated from the rest of the country (Gamedze and Gamedze, 2015). Masuku argued that “[t]he prescribed statements, as much as they may open doors for learning for diversity, are also far removed from the reality of the South African historical context, with the majority of poorly resourced schools situated in increasingly precarious conditions” (Masuku, 2018, pp. 32–33). This work showed, how the knowledge of the lived and knowledgeable world of young children, remains unrecognised in their curriculum. In this section I trace how the curriculum is not responding to this world.

Young people do not experience the classroom as quarantined from society (I would add that COVID-19 has shown this more clearly). Conducting ethnographic research in an urban community on the peripheries of Cape Town, Cooper (2017, p. 145) drew attention to the range of learning places that exist outside the classroom and argues effectively to avoid envisioning the classroom as “quarantined from society”. This consideration is inadequately considered in educational transformation discussions which are dominated by notions of “increasing the efficiency, regulation of assessment practice and development of more sophisticated standardised tests” (2017, p. 145). In addition to “improving teachers’ conceptual knowledge” and redistributing material resources, links should be made between

schools and institutions, organisations, and places operating outside of the school grounds. (2017, pp. 145-146).

Young people need to grapple with the contradictions of their everyday experience and their experience of school as displacement. Another view that brings school-life relations to the fore is the mobilities lens of Fataar used to explore the phenomenon of this “school choice displacement” where learners are travelling out of their township communities for school. He noted:

They [school learners] have been developing a sense of citizenship rooted in the space of the city on the move, while becoming affectively distanced from their place of living to which they return every day. (Fataar, 2009, p. 14)

It is through the realities created by learners moving across the cities to schools that educational aspirations have become hierarchically sedimented in racialised space, an obstacle to addressing the hegemonic identities brought about in school spaces. This is in part a hidden curriculum grounded in space and movement, and remains a concern for contemporary urban South Africa.

2.4.4 Reasons teachers are alienated from teaching

In the story of the curriculum transformation journey is a dominant narrative of the social realists vs constructivists. But what is largely silent is the legacy of British education in South Africa. For example, an underlying assumption of the curriculum review is that teachers at poor schools cannot handle critical thinking. We know that teachers in schools across racial divides were engaging their pedagogical practice as a site of struggle against apartheid (Weider, 2003). This is an example of how teachers in under-resourced schools will struggle to realise the full potential of their learners.

Post-colonial and decolonial approaches foreground the experiences and agency of learners, teachers and communities as part of the educational landscape. Amidst the multiple conditions that obstruct flourishing, there are reserves of knowledge, creativity and agency amongst school-going South Africans and their communities that need to and can be engaged.

Zipin et al. (2015, p. 34) described the ‘redemptive impulse’ that we need within the South African curriculum today.

We suggest the need to reclaim and move forward with the too quickly bypassed first impulse, post-1994, for culturally inclusive education. There are academic and activist forces in South Africa that have been waiting to bring this impulse again to the fore: a socially redemptive impulse that needs to come into productive dialectic with the knowledge-centred impulse that SR has brought to the table.

2.4.5 A look at curriculum principles: Enabling and constraining environmental learning practice

In this section I review environmental education as presented in the curriculum. The curriculum can be seen as a social structure that informs activity of sense-making around environmental concerns.

In her discussion of the post-apartheid ‘curriculum patterning’, Lotz-Sisitka (2002) reviewed various ways of thinking about curriculum as a phenomenon in the world. She argued against an instrumentalist approach to curricula, arguing that while it is important to understand the experiences of those who are impacted by the curriculum construction, it is also important to understand the political processes underlying the construction process. She writes:

In the contexts of uncertain patterns of **environmental risk** and the space created by **post-apartheid transformation in education, curriculum** patterning in South Africa clearly requires considerable thought from socio-political, socio-economic and socio-ecological perspectives. (Lotz-Sisitka, 2002, p. 103)

This indicates the perspective of curriculum as a mediator, rather than determinant of educational praxis.

In the context of post-apartheid South Africa, and the 1992 Rio Earth Summit, environmental educators in South Africa considered “the role of social transformation ascribed to environmental education processes, within the institutional frameworks of school curricula and formal curriculum development processes” (Lotz-Sisitka, 2002, p. 97). Lotz-Sisitka noted that environmental educators played a political role in curriculum transformation debates in a context of increasing environmental risk.

Seeing environmental education as a process of social transformation, Janse van Rensburg notes that in addition to ‘critical perspectives’ we need ‘reflexive perspectives or orientation to change’. In this way we should think about process and

not product: the development of the capacity to ‘collaboratively develop capabilities (tools, resources, action competencies) to deal with and encourage change in local contexts’. (Lotz-Sisitka, 2002, p. 101 referencing Janse van Rensburg, 1995)

Environmental themes were included across the curriculum in its post-apartheid evolutions (Schudel, 2017a): as a phase organiser in OBE and integrated across subjects in CAPS. The National Curriculum Statement foregrounded explicit principles of “democracy, social change and socio-ecological justice”(Lotz-Sisitka and Schudel, 2007). An evaluation of the “practical adequacy of these normative principles” shows that they are in danger of being assumed to occur even when they are absent. To get beyond this problem we need to engage the “reconstructive potential of school-community environmental learning activities” (referencing Janks) where learning is “contextually situated, culturally framed and scientifically rigorous” (Lotz-Sisitka and Schudel, 2007). Schudel (2017a) considers principles within CAPS curriculum as nodes of contention in relation to socially transformative environmental education. Many of these are favourable to environmental educator concerns such as “making connections; critical and active engagement and a concern for socio-ethical notions of epistemology”. These terms can also be extended with environmental education thinking. Below I expand on the challenges to realising these principles in practice.

- Making connections, not only between defined content but making connections between content, community, global, local, etc. (Schudel, 2017a). Rosenberg (2004) pointed out how the progress made in highlighting socio-ecological relations becomes lost when particular issues become taught without consideration of their connections. This reveals how despite the ‘environment’ including a large and complex system of many different teachable parts, the environmental pedagogy lies in the teaching of connections.
- Another principle is critical and active engagement with the content: An echo here is understanding environmental education in part as a process of social change which requires reflexivity alongside critical engagement.
- Tension between emphasis on socio-epistemological and socio-ethical which Carrim and Keets (2005) have noted emerges from the contradiction of a focus on human rights and democracy in the context of capitalist development (Schudel, 2017a). As we learn about the ideas of democracy, how do we unpack the obstacles to its

realisation? Schudel and Lotz-Sisitka (2006) expanded upon this by considering the way in which economic development is taught as something that occurs in ‘perfect competition’ which exhibits an assumption of school preparing learners for the ‘capitalist economy’ and a distinct dismissal of the structural realities within South Africa (Schudel and Lotz-Sisitka, 2006, p. 63).

It is generative that these principles are included in our national curriculum, a significant mechanism affecting the lives of young people. The challenge remains as to whether the pedagogical practices exist to engage these principles with the rigour and outcomes they may have been imagined to have.

2.4.6 Section summary

Normative frameworks and principles embedded within the curriculum discourse can be seen as a policy that contributes to the form of education as a social structure. They are thus relevant to an applied research project on the environmental learning process. Describing them is important in two ways: firstly, the existing frameworks and principles resonate with principles of ecopedagogical praxis on an ideological level, bringing together social, ecological justice and democracy. They thus provide a discursive realm in which actors are able to engage and make meaning of them in learning practice. Secondly, research into how curricula play out in practice warns of the obstacles to realising their potential: such as community school separation, pedagogies for making connections visible amidst distinct subjects, neoliberal interpretations of democracy and human capital.

2.5 Arts-based approaches in environmental education research

Environmental education research has been expanded by studies that use, adapt and practise arts-based methods (Barrett, 2014; Hart, 2014; Nolan, 2014). This scholarly work has resulted in a transformative shift in research as researchers struggle to develop research that is more in solidarity with experiences in the world and less in solidarity with the conventional academic project. Methodologically, this thesis positions itself as Arts-based Educational Research.

This is not only for researching arts-based pedagogies in environmental education but as a necessary congruence, engaging arts-based modalities in the research inquiry and

representation. The now common experiences of researchers feeling like text based academic representation limits their generative and creative practice flowing through both fieldwork and text work, has resulted in forms of research praxis (including fieldwork, analysis and representation) becoming more congruent with the phenomena they are studying. Nolan noted: “One does not feel compelled to distinguish either field or text but instead is willing to reside in the ambiguous space of both field and text” (2014, p. 519). This relationship between representation and research is further discussed in section 3.8 where I describe my analytical strategies.

My entrance into this study was characterised by a similar experience and struggle. I had experience in the possibility of arts-based modes for learning, dialogue and in particular working with messy situations. I knew also that these experiences included instances of collaborative knowledge production. Aware of the temptation to embrace them as step-by-step methods, and squash them into a neat solution for complex challenges in the world, it was helpful to read the ways in which these struggles are a shift in educational research that is responsive to the increasing “challenge for social, economic and environmental sustainability”(Barrett, 2014, p. 569). Nolan (2014, p. 517) observed that this shift “requires one to acknowledge and highlight the intimate connections between research and knowing and representation demands writing through (not merely about) different ways of knowing – ... education and educational research”. Barrett (2014, p. 569) further articulated this shift in her doctoral thesis as a threefold response required in environmental education practice, innovations in qualitative research as well as “discontent with colonial assumptions and practice in research methods and methodology (e.g. Tahiwai-Smith 1999)”. Thus arts-based approaches in environmental education research, as a practice of both research and learning, is an emerging space where the lines are blurred between education that is studied and the processes of research – in the end embracing a nested series of learning processes which explicitly engage the politics and impact of mode in production of knowledge.

2.5.1 Arts-based research in environmental education

There have been a number of studies in Southern African environmental education that have engaged similarly with arts-based approaches in both method, analysis and representation. It is in relation to these that I situated my study.

Burt (1999) studied the use of theatre for development in environmental education. Her study not only considered the use of theatre for learning, as a support to the new curriculum being

implemented in South Africa in the 90s, but the mode of theatre posed an interesting inquiry into the struggle for educators to adopt a genuine process approach to education and avoid the “performance of process”. Grappling with the shift from practice-based fieldwork into the write up of the masters, Burt’s master’s thesis was written as a play. Through this, her study enacts a challenge to “the role of research in society” by making her research accessible to “non-academic readers” (Lotz-Sisitka and Burt, 2002, p. 136). In Chapter 6 I share a play crafted by myself and the participants which acts as both a representation of the contexts and concern of the participants, but each scene also presents inquiry departures for understanding urban water.

McGarry (2013), in his study on empathy and pedagogies for ecological citizenship, carefully described how an arts-based practice of social sculpture can be engaged towards facilitating learning in complex socio-ecological contexts. His study moved through an exploration of puppetry to the refining of social-sculpture reflexively and carefully – exemplifying the concern and criticality that is needed for an emergent co-engaged pedagogical process that can be responsive to the socioecological complexities of the contemporary South African environmental education praxis, for all ages. This study shows a slight shift in academic work as the study of an arts-based pedagogical practice, rather than the study of people or ecology.

Kulundu-Bolus (2017), resisting the instrumental assumptions of arts-based methods wrote: “[I]n my experience it is not the tangible activities that give the work life... At best there is a depth of articulation that we step into as a result of pushing up against or immersing ourselves into those cartographies that possibly helped us to be more honest about what really matters to us.” Her doctoral study (2020), concerned with the liberatory pedagogies engaged on the ground by change drivers in South Africa, grounded in decolonial practice, required her to problematise arts-based modes in context of the ‘performative requirements’ or constraints imposed by development paradigms. In a reflection piece on methodology she wrote: “I was aware of the baggage that comes with the constructs around creativity and what it means and what it serves in ourselves and in the world. It felt like a huge part of this methodology was trying to re-claim and re-lease creativity” (Kulundu-Bolus, 2017, p. n.p.). Thus, critical for emergent and care-filled pedagogies that respond to the “pedagogical underpinnings” of a prohibitive history of “development” and allow young South Africans to flourish is thus also “[a] space where there is enough stillness and quietness for people to drop into the present”. This approach to arts-based praxis as a practice of space making for

attuning to what matters to individual learners is part of how I attempted to engage arts-based methods for this research.

In addition, Kulundu-Bolus (2020) worked with song as a mode of embodied analysis and an important enactment of listening and responding back to the way her ‘co-conspirators’ had expressed themselves in relation to her inquiry. This was both a form of analysis and member checking; she explained that when she shared an academic paper with her participants, there was no response, however sharing a recording of her song with the participants released further conversation about the study. Embedded in a decolonial framing, Kulundu-Bolus research brought to the fore the counter hegemonic and critical potential of creative approaches in educational research.

Murphy (2019) engaged narrative enquiry and through story explored environmental risk “from other species’ perspectives”. Murphy engaged story as a mode for theorising agency and its relationship to structure and meaning-making from the perspective of a penguin. Through this imaginative centring of the penguin, Murphy engaged the concern of risk images “taking over from that which they represent” and considered the implications for environmental education in an increasingly risk prone world.

As seen above, there is a strong cohort of arts-based studies emerging in environmental education in the context of Southern Africa. Each study illustrates the ways in which arts-based modes are engaged differently depending on the context, question, theory of the study. It is this difference that is critical to the emerging field of arts-based environmental education in Southern Africa; no single study looks identical but arts-based modes play a role of expanding the knowledge project into articulating the unarticulated and the unarticulatable – ambiguousness of education as a social process (Nolan, 2014, p. 519).

I consider the potential for this, as well as the obstacles to emergence and spaciousness in learning processes, as an inquiry into contextually grounded critical education as a returning to learning (see Chapter 3) and their potential to disrupt stubborn framings of environmental education as dualistic or instrumental, enabling us to surface what in the end must be learned about – the messy. Thus, arts-modes are used centrally in my education practice – wearing the educator hat, but the modes within the written thesis are adopted as responsive to how the meaning-making emerged in the study.

2.6 Zooming in on water education

This section looks at water education studies in the Southern Africa environmental education literature. Relevant literature on water education situated elsewhere exists which also explores transformative interests of this study. For example, Nxumalo and Villanueva (2019) work with small children's experiences at a river to 'unsettle extractive relations' and affective pedagogies. Also, Lasczik et al. (2020) work to refuse hierarchical forms of learning and nature/culture separations relating to water in environmental education. However, in this section I focus on water education literature in southern Africa, honouring what has come before in this context and considering where the gaps are in water education thinking in this context.

2.6.1 *A scoping of studies on water education in Southern African environmental education*

A significant amount of water education research in South Africa has been focused on the mini-sass tool which enables citizen and learner participation in monitoring rivers (O'Donoghue, 1993; Graham, Dickens and Taylor, 2004; Vallabh *et al.*, 2016). O'Donoghue (1993, p. 31) argued that using a mini-SASS and contextual observation tool kit, "school children and community action groups test and monitor local water supplies and rivers". Using simple low-cost tools, these groups can, in a meaningful and scientifically valid way, test water quality and take action to do something about the problems that confront their communities".

Emerging from this activity are a number of studies which explore and discuss the ways in which mini-SASS is able to transgress matters of fact and simple exercises in the collection of data. Looking at one such river monitoring project, Vallabh et al. (2016) explored and described how the learning curve shifted from a focus on gathering data so as to know the facts of the river, towards gathering the data as a basis for further dialogue, deliberation and social action in response to water pollution. In their examination of this shift, they argue that learning potential was related to the motive and purpose of the citizen science project which in their study was a number of educational projects engaging in practices of citizen science. As citizen science is a significant tool to building further consciousness about water in South Africa, these findings are interesting for considering the possibilities of water education to transgress the boundaries of fact findings and consider "knowledge in intervention" (De Sousa Santos, 2007)

Kruger (2020) described the use of mini-sass in an Eco-Schools project in which learners found the river to be so devastatingly polluted they took it upon themselves to draft a letter of recommendation to the Human Rights Commission. This study highlighted the way in which critical thinking cultivated by the teachers at the school enabled the confidence for self-directed learning exhibited in the expansion of this mini-sass exercise into the political sphere. It also resulted in connections between the school and the surrounding community on the matter of water pollution.

A common thread in these studies also sheds light on the dynamics between educators and learner participants in environmental monitoring projects. Hoffman worked in school environmental audits, many of which were focused on water and noted that the learning potential from environmental audits is connected to “teachers’ intentions, knowledge and skills, choreography of the audit, nature of the teaching and learning interactions, and ways in which teachers and learners engaged with the findings” (Hoffman, 2005, p. iii). The role of the teacher mattered significantly in guiding learners through inquiry phases of data collection, analysis, and discussion towards “appropriate responses for social and ecological transformation” (2005).

Shifting away from river monitoring, there has been research into the use of creative modes for water education projects. The schools water awareness programme (SWAP) facilitated the study of a catchment through engagement with the mode of story – including subject knowledge, indigenous knowledge and the learners’ own situated knowledge about the catchment (Masuku, 1999). Masuku’s study showed interesting insights into how the engagement on reading and writing of story enabled a shift in teacher learner relations allowing learners to bring experiential knowledge into conversation with classroom based knowledge.

Impey’s (2006) study, through exploring the use of traditional songs and mapping significant places, brought cultural and historical dimensions into a process of environmental learning. A series of workshops on musical constructions of place connected cultural knowledge about the environment around the significant watery space of St. Lucia wetland. Educators were involved in these deliberative workshops which enabled a “more expansive and culturally resonant understanding of environmental education” (Impey, 2006, p. 102)

All these studies in the field of Southern African environmental education have significant potential for building public knowledge about water in *Mzantsi*. Mini-sass has the potential to

enable a nation-wide citizen-led water monitoring practice, with benefits of learning as well as accountability for our water reserves. Working with indigenous knowledge and story builds capacity of learners to engage and represent their home catchments in relation to historical, cultural and science-based knowledge. The outraged response to mini-sass results from a polluted river drove learners to practice acts of voicing into formal governance structures responsible for human rights. The educators and researchers involved in these studies are eco-pedagogistas in their own right and one day I would like to write a book about them.

There is transformative potential illustrated in these studies, particularly in connecting what is learned across them about pedagogy. The potential includes transgressing hegemonic relationships between teachers and learners by honouring the knowledge learners bring to the process (Masuku, 1999). It also has transformative potential in transgressing the boundaries of the science academy, building laboratories in the context (Vallabh *et al.*, 2016).

Significantly, there is final transformative potential in the moves that actively transgress disciplines and scales for understanding water. The shifting curve of learning from simply being concerned with the facts towards thinking about how scientific literacies of water connect with mechanisms in social, economic and political systems is a significant move towards intersectional literacies of water that consider how the context is shaped at different scales (Vallabh *et al.*, 2016; Kruger, 2020).

There is little discussed in these studies, however, about pedagogical practice and strategies for integrating water science knowledge with socio-political literacies that might build more rigorous analyses of the root causes of water and environmental crisis. This could be articulated as the strategies that maintain and enable the transformative potential identified above.

Realising the potential of a nationwide public water monitoring programme, for example, requires significant collective action and the social learning work relating to establishing institutional muscle. This is especially so in a country where collectively we have been depoliticised and stripped of our capacity to collectively organise and play a role in the decisions affecting our lives. The absence of this was illustrated in the expansive learning case study by Burt and Lusithi (2017). This is part of an increasing neoliberal logic conceiving of people as consumers of water and customers of the state (as is evidenced in the draft water policy of the city of Cape Town City of Cape Town, 2019b). Despite these

considerations being in the context of adult and community education, ‘learning for participatory democracy’ in relation to water should be built into modes of engaging and learning about water with children and youth who live in these communities too.

This brings me to articulate another generative absence in connections on water education research. As much of the movement of water is dictated by the historical material evolution of colonial capitalism (Salleh, 2018; Shiva, 2002; Swyngedouw, Kaika and Castro, 2002;), there need for “radical social learning-centred transformation in relation to sustainability concerns” (Lotz-Sisitka *et al.*, 2015, p. 73). In her discussion of disruptive pedagogy with second-year university studies, Gillespie argued for pedagogical strategies that can address “systems of commodification ... – [such as] advertising, mass media, malls, disappearing public spaces – and to begin to identify strategies for disrupting, refusing and resisting the commodity form and the structures of privacy it produces and informs” (2012, p. 39). As teachers, who are so pivotal to the direction and orientation of environmental learning, we need to work more rigorously on pedagogical strategies that can enable learners to work with a plurality of knowledge types, alongside a consideration of the relationship between power and knowledge.

Honouring the significant practice and reflection on water education in Southern Africa, it is clear that there are significant approaches and understandings to be taken up in situated and relevant learning about water for both sharing it and restoring it. There is room for this work to expand, however. One such expansion includes joining together water education projects with strong foundations in science literacies with anti-capitalist and anti-colonial and disruptive pedagogical praxis. This is a conceptual platform around which scientists, activists, politicians and community members can sit around a collective curriculum table, towards reading water in the world.

2.6.2 Reading water in the curriculum

I have scoped water education projects in the environmental education literature. I now briefly review where water features in the CAPS curriculum documents. This is relevant because, as discussed in section 2.3, the curriculum plays a role in mediating teaching and learning, both in and out of school, and thus what is included in the curriculum should be considered for its link to practice.

Scanning the CAPS documents for water content gives some clues as to how water is positioned in the curriculum. Of course, this does not tell us anything about what happens inside the classroom. However, it is relevant to the concern for the emergence of implicit pedagogical cultures regarding water and how these cultures come into play with sense-making processes in the inquiries of this research.

Water content topics exist prominently within Geography, Life Sciences and Life Orientation. Geography takes a broad view examining river systems, atmospheric processes and human settlement, urban space, and resource distribution. This is predominantly technical. Life Sciences takes a micro view looking at the importance of water for human, animal and plant bodies. A consideration of human impacts on the environment is the exception.

Life Sciences includes interconnections of water, but they remain largely in the context of the biosphere and in relation to biotic and abiotic elements.

Life Orientation makes the links between water, environmental justice, and social life. This section falls under the heading of ‘environmental responsibility’. Environmental responsibility is reduced to a messaging and ideological moral culture. This subject holds potential for thinking about water in terms of ecological citizenship.

Economics does not include ‘water’. However it does cover ‘natural resources’ which includes land, forestry, fishery, minerals and mining. While water is not mentioned, it is critical to all of these areas. This is a glaring absence. In connection with the concern for contradictory economic principles in the curriculum (Schudel and Lotz-Sisitka, 2006), the side-lining of water is a particular example of how the economics curriculum prioritises particular topics, which are then the focus of teaching.

Water is located within the curriculum but separated into separate subjects. There is a breadth of water related concerns from geomorphology in Geography to water in the body in Life Sciences. However straddling different subjects, there is little concern for the contradictions that emerge between them and this obstructs understanding the socio-ecology of water.

2.6.3 Section summary

This section has examined the pedagogical dimensions reflected upon in the literature on water education projects in South Africa and the existence of water in the curriculum as a

way of understanding what is known and understood by the practice of water education in the South African context. Water pedagogies stretch between school and community education contexts and are informed by institutional cultures and social relations and can be transformed through a disruption of institutionalised power relations. Because water exists in and as complex social ecologies, it is by requiring multiple literacies towards understanding it, that one can best understand the pedagogies in situated social-cultural-ecological and political life.

2.7 Chapter conclusion: Continuing the work

Through this review, I have positioned my research within the contextual relationships that inform the social activity of environmental learning: relationship with place, relationships between myself as a researcher-educator and my participant-students, the relationship with the education system – a socio-cultural-historical-material social structure. In considering each of these, I have raised the tensions and possibilities they present to the social activity of environmental learning. In an attempt to consider pedagogical practices within these three sets of relationships, I ended with a review of literature on Southern African water education case studies in order to understand the dimensions at play in water related educational projects in South Africa.

I conclude that the story of our transforming educational landscape can be and should be understood as a story of ecopedagogical struggle. It shares tensions and debates and lessons to keep in mind as we move forward in this struggle. The RhodesMustFall and FeesMustFall movement, along with the dedicated intellectuals and community activists who have been and are still pushing at the boundaries of South African universities and institutions, have re-inspired the urgency towards radical and real transformation. This is evidence for how South African education has significant work to do towards realising transformative education practices. In this context, opening forms of education that are resonant with the experience of young South Africans is critical for enabling socio-ecological understandings. This can be done through an engagement with environmental education that considers local place and learner agency as a point of departure from which to enable young people to reflect on fragile conditions in which they might act. The transformative potential evident in experiences of water education in Southern Africa is present and water educators may well benefit from transgressing divides between teachers and learners as knowers (Masuku, 1999; Hoadley, 2011) across formal and informal intuitions. Significantly, by virtue of living in South

African urban contexts and being exposed to multiple protests for basic services, young South Africans require learning spaces that can enable them to be critical actors in this context. This is not the same as learning about water as a single issue in a particular school subject. It requires engagement at multiple levels (Brown, Jeanes and Cutter-Mackenzie, 2013) and across multiple contexts and divides (Darder, 2010). This is where the work remains.

Chapter 3: Research method as eco-pedagogista practice

The research practice described in this chapter, the dance between educator and researcher, aligns with arts-based research as an overarching methodology (Barone and Eisner, 1997; Barrett, 2014; Nolan, 2014; Finley, 2017). As described in chapter 2.5, I experienced a tension between the need to present a step-by-step method for arts-based approaches in education on the one hand and honouring the reality that arts-based education is never step by step but actively responsive to what emerges, requiring that the steps are scrambled. Arts-based research plays a role of expanding the knowledge project into articulating the unarticulated and the articulatable – ambiguousness of education as a social process (Nolan, 2014, p. 519). This aligns with a shift in educational research that embraces the uncertain challenges that characterise contemporary precarious socio-ecological realities (Barrett, 2014, p. 569).

In this study it is the engagement of arts-based research *with* learners to consider possibilities for critical and grounded environmental education in Southern Africa that is in focus. This method foregrounds children's experiences of educational encounters. As discussed in section 2.3, despite their recognition as social actors (Ansell, 2009) children's experiences have long been taken for granted in environmental education research (Cutter-Mackenzie and Rousell, 2018, p. 97).

This chapter explains 'what I did' by describing 2 phases of fieldwork. The first phase is the 2 case studies which took the form of a responsive educational encounter focused on the theme of water. I also describe the reflective interviews I did in phase 2 of the fieldwork. Preceding the explanation of 'what I did' is a discussion of how I worked as both educator and researcher drawing inspiration from the role of the Pedagogista.

3.1 Embodying pedagogista

This chapter describes the research practice that produced this thesis by drawing on methodological thought that aligns with the concern for practice-oriented research in critical

environmental education studies. It includes a description of two interconnected yet distinct roles of researcher and educator. These interconnected roles that make up the educational research practice also align with a paradigm of research which explicitly acknowledges my active role in the research process and the way in which research practices do not simply observe and describe but also “produce realities” (Law, 2004, p. 13). The challenge in this regard becomes about embodying both roles, and their interconnections but also honouring the value of critical distance or differentiation between them.

Part of the work in this thesis has been navigating and working reflexively with my role as an educator and researcher in a generative research project. The role of the researcher has been produced in the university system is a problematic. I arrived at this thesis with an awareness of (and intention not to become) researcher as the agent of the coloniser (Mamdani, 2011), the neoliberal exploiter, the masculinist abstractor (Michelson, 2015), the structural asymmetries between researchers and their participants, which is at the very least defined by the privilege of access to university facilities and could be more in terms of other axes of difference (Nagar, 2014). Becoming familiar with these debates, I found myself lodged and stuck between multitudes of critique and loud status quo researcher positions, without the ability to enact different practices.

Transgressive research practice calls upon researchers to move *with* the critique of the potential challenges of the researcher role *towards* creation of re-invented roles. This goes together with research that is interested in resisting the power hierarchies created by knowledge production and harnessing the practice of research for emancipatory goals. Scholar activists argue that there are research practices which can enact *situated solidarities* (Routledge and Derickson, 2015) which we could think about as a witness that is directed towards the common good. Similarly, scholar activists working in environmental justice argue that reflecting and reinventing the researcher role is crucial for engaged, critical, radical or transgressive research which resists dominant and predefined roles in dominant forms of knowledge production (Temper, McGarry and Weber, 2019). This resonates with argument of Sayed et al. (2017, p. 61) writing in the context of teacher education where to “decolonise ... can be understood as a challenge to give expression to an imaginary beyond existing thought and institutions that have become normalised as unchanging and unchangeable”. I needed a way to enact the changeability and realise the possibility of transformative potential in research practice. I wanted to be more humble, more attuned, less abstracted than the ‘better knowing academic’ and I needed to have time to read and think within the big

influencers of thought (the scholarship). Thus, situating research practice and allowing ourselves to enact new roles that are responsive to the ethical intent of our research, is critical work to moving this research along with ethical integrity and in better solidarity with the world.

My interest in being engaged and in solidarity with those active and affected in our education system found itself a role in the pedagogista as defined in the Reggio Emilia approach (Pacini-Ketchabaw *et al.*, 2014; Murriss, Reynolds and Peers, 2018; Nxumalo, Vintimilla and Nelson, 2018). A pedagogista is a supporter of teaching and learning whose task was to integrate the multiple components of an emergent educational system, originating with the Reggio Emilia schools in Italy. This reflexive role has been further imagined by educational researchers in the context of decolonised, anti-racist environmental education in North America (Nxumalo, 2016; Nxumalo, Vintimilla and Nelson, 2018). A pedagogista is:

... someone who works collaboratively with all the protagonists within an educational endeavour to promote critical and dialogical encounters that consider the specificity of the pedagogical project as well as its relations with the broader philosophical vision and commitments of the [...] learning setting. (Vintimilla, 2016 in Nxumalo, Vintimilla and Nelson, 2018, p. 434)

The role of the pedagogista is located in the image of the child (Filippini and Bonilauri, 1998, p. 128). Pedagogistas are situated in a school and are responsible for holding the school system and integrating its components to foster a broader system of learning, facilitating the learning of teachers, learning about the learning of children. Their job is active reflection, drawing on resources from within and without the school, to support a flourishing school space. Their work with educators relies on multi-dimensional documentation – also known as visible listening – as “children have 100 languages” (Malaguzzi, 1987; Murriss, Reynolds and Peers, 2018) and are in the process of constructing knowledge and theories about the world through these. Processes of visible listening are also about fostering curiosity about the child’s learning shifting gear from ‘assessing’ what has been learned and focusing more on what is occurring (Wien, Guyevskey and Berdousis, 2011). Knowing that their observations of learning will be partial, the pedagogistas make traceable inferences that are taken into dialogue with others.

The pedagogista was not an invention from my small field experience; I was tapping into a role that exists within an education system and is inspiring educational thinkers across the

world. Bruner noted that Reggio Emilia schools were ‘a true university’ due to the reflective practice instituted there (Rinaldi and Gandini, 1998, p. 121). I felt the role of the pedagogista captured a practice of educator scholar activist work: a role within an education system whose task it was to begin from the image of the child, reflect on practice and integrate the multiple components of the educational system so that all protagonists might flourish. In this role, I had a firmer ground and purpose from which to continuously reflect on the structures that shape the fieldwork encounters, rather than focus on my own identity, thereby enabling dialogical reflexivity (Routledge and Derickson, 2015, p. 393). In this chapter I describe the movement between and the differentiation of the pedagogista and educator that informs the research practice of this study.

3.1 Map of this chapter

In the first half of this chapter I describe the reflective practice of this PhD in terms of the researcher, pedagogista and educator roles. I draw on recent methodological scholarship in social and educational sciences highlighting why this is a chapter about *informed and reflective praxis* and *more-than-method*. In the second section, I embody the educator and talk about two areas of thought that informed the design of my workshops: the arts-based creative practice and emergent curriculum. In the third section, I describe the nature of analysis in this study which is a dialogue between pedagogista and educator.

The next half of the chapter describes the in-the-field processes of access, positionality, data generation and analysis, and ethics. These include: making contact with environmental education organisations, my entry into the primary context of this research, Philippi Cape Town, co-designing the water inquiries and a table which lists the multiple modes of data generated and the tools I drew on to ‘listen’ to and analyse what was emerging. Ethical concerns are woven through these sections and consolidated at the end. The final sections look at integrity and trustworthiness of the study followed by a consolidated discussion of the practices employed to grapple with this study.

FIRST HALF

3.2 ‘Senses of method’: Ways of being and becoming in research practice

My hope is that we can learn to live in a way that is less dependent on the automatic. To live more in and through slow method, or vulnerable method, or quiet method. Multiple method. Modest method. Uncertain method. Diverse method. Such are the

senses of method that I hope to see grow in and beyond social science (Law, 2004, p. 11).

Bhaskar's description of the social world goes straight to the heart of what educational research needs to consider: that ontological phenomena studied in the social sciences are characterised by open systems. An implication of this is that in contrast to positivist⁶ research traditions, the researcher is a part of what they study and the open system is unpredictable and uncontrollable as it is characterised by complexity, constellational and emergence (Bhaskar, 2016, p. 80). However, it is also possible to explain phenomena of the world and know them more fully for the purposes of action. This tension of embracing the complexity of reality and not lazily surrendering the ability to know it, is a productive tension that begins to lay the critical realist ontological ground for generative research.

In the spirit of research practice in an ontology and epistemology characterised by emergence, scholars built a language with which we can think about research. In their thinking about complexity in educational research, Kincheloe and Berry (2004) offered the bricolage approach to research. The term 'bricoleur' describes "a handyman or handywoman who makes use of the tools available to complete a task" (Kincheloe, 2000, p. 2). This idea is applicable to the reality that there are multiple forces shaping researcher choices and thus the research. A bricoleur takes care to be weary of 'order' that is promoted in monological reductionist research processes because it is sometimes that *order* becomes deaf to the 'cacophony of lived experience' (Kincheloe and Berry, 2004, p. 5). It is not about rejecting the importance of methods but rather about embracing the "more than method" or the methods assemblage (Law, 2004). Importantly, it is about recognising that methods must be developed in relation to the context.

The methods assemblage and the making of this study is necessarily accompanied by what McGarry has termed "reflective praxis based research" (McGarry, 2013, pp. 47–48). Reflexivity is the 'inwardised form' (Bhaskar, 2008, p. 8) of the third moment in the dialectic – *totality* - which can be understood as the moment of building a better theory or explanation (further described in Chapter 4). To bring 'bright ideas' closer to 'realities' we need to build and sustain "practices that can cope with a hinterland of pre-existing social and material realities" (Law, 2004, p. 13). Part of this practice is the sense we make as we go – the

⁶ Positivism I understand as a research approach with an implicit ontology that is assumed to be universal. Its premise is that the only thing that exists is that which can be measured and sensed.

reflexive research. The methods assemblage is located with the school-going learner in South African urban space and their experiences of environmental learning. The assemblage is informed by reflexive educator-researcher practice, arts-based inquiry and Reggio Emilia inspired deep listening to what emerges in our encounters.

3.3 Educator hat: Elements guiding inquiry processes

3.3.1 Arts-based inquiry

The workshops were designed as a process of *playbuilding*, which draws on the tools of applied theatre within a broader praxis of arts-based participatory inquiry (Norris, 2009). With reference to Norris's (2011) consideration of the various aims and objectives of arts-based education and research, this work was designed as a pedagogical encounter more than the production of a polished play. Critical arts-based inquiry has emerged to work with complex social challenges in a way that opens up possibilities for democratic processes, such as participation, between researcher and researched within the research process (Wang *et al.*, 2017, p. 7).

Arts-based participatory inquiry can be seen as a mode of learning, as well as research which draws upon artistic mediums with the aim of bringing to the surface experience, questions, and imagination as a way of generating data with participants (Norris, 2009). Through engaging arts-based modes such as theatre, storytelling, and drawing, we “may uncover stories and beliefs that further elucidate not only what one knows but also how what one knows is transformed ...” (Norris, 2011, p. 5). These data, in multiple forms, are then worked with throughout the inquiry through discussion and further representation. It is not at the exclusion of text-based artefacts or general informational media, but it is encouraging an awareness of how these are forms and aesthetic artifacts. Arts-based forms expand the tools for inquiry through encouraging play, and *poieses* (the creation of an artistic piece and the emerging meanings evoked as a result of that creation) that is the emergent meaning from process (Norris, 2011).

Arts-based forms make certain processes possible (as is argued in the literature and as I have personally experienced in training for these various forms) but can never be thought about in an instrumentalist way. Gaztambide-Fernandez articulated the discomfort I had with the notion of ‘arts-based’. His paper argues that we should move away from the discourse of the arts *do* things and instead work with a “rhetoric of cultural production” where we consider “practices and processes of symbolic creativity”. Arguing that the arts *do* things is an instrumentalist

conceptualisation that misrepresents the nature of educational encounters completely. It is a discourse established through the need to maintain a place for arts in neoliberal educational policy that privileges the sciences and mathematics. However, as expressed by Gaztambide-Fernandez (2013, p. 214):

Such arguments have painted our commitments into an educational corner by using a rhetoric of effects that discursively construes the arts as things in themselves, as elixirs that can be injected to transform educational situation and guarantee particular outcomes.

The notion that arts themselves *do* something in particular makes it challenging to study the actual experience of the arts (which can most certainly be benign). Moving to the discourse of cultural production enables us to resist Eurocentric and predefined conceptions of the arts and embrace a more multi-dimensional conceptualisation of education as a cultural practice in and of itself. Developing the work of Rancier, Lewis (2012) drew a similar conclusion that education is already a process that is aesthetically engaged (covertly and overtly) and this is one of the ways we engage with the politics of education.

This conclusion resonates with the rhetoric of arts as cultural production that “art is something people do” rather than art doing something to people.

This conceptual shift to cultural practice acknowledges that it is actual people, under real social circumstances, in particular cultural contexts, and within specific material and symbolic relations that have experiences involving symbolic materials and forms of cultural production. (Gaztambide-Fernández, 2013, p. 226)

With this in mind, it is important to differentiate critical arts-based research from the larger pool of arts-based work to make explicit the use of “arts in a project of social and political resistance to achieve social justice” (Finley, 2017, p. 561). Darder and McKenna (2011, p. 670) wrote that working with and theorising the arts is important to counter the “enormous pedagogical power of the corporate entertainment state”. In this way, art names a variety of activities in which we can experiment and enact creative acts for reshaping the world. In this sense arts-based practices need to be accompanied by critical consciousness and forms of socio-political analysis (Baxter and Low, 2017). This problematisation of the arts in education accompanies this study on questions of the work that multiple modes do in the process of learning.

Reading the literature in arts-based inquiry helped me to make sense and name processes from my own experiences in applied theatre work. I consider this pedagogical method as a space maker, a way of making space with more than text for others to take up, and to bring forth new beginnings and to join the inquiry or dialogue. So thinking with the phases of surfacing experience, raising questions, engaging with media and information, re-presenting answers, and creating short scenes, we worked across modes of telling stories, improvising skits, drawing dreams, rehearsing scenes, information seeking, and discussing. All these activities contributed towards an experience-based, socially, historically and culturally located inquiry into water.

3.3.2 Emergence and curriculum making

My role, together with the co-educators' role, in accordance with the understanding of an 'epistemology of emergence' (Osberg, Biesta and Cilliers, 2017), could be conceptualised as creating a platform on which learners could respond by engaging with educational artifacts through their own "agency, intentionality and spontaneity" (Bhaskar, 2016). This platform, aligning with non-instrumentalist views of the arts and method, is about "jumping off points rather than authoritative endings" (Ellingson, 2017, p. 4). It is useful to explicate the substance of sensibilities that need to be developed to support emergent educational processes. It is not the same, as is sometimes mistakenly interpreted, as doing nothing and the intention that 'learners lead' the process is not enough to guarantee that it happens.

Emergent educational encounters do not operate in a vacuum but in a space with socio-cultural 'rules' about what goes with education encounters so the project of enabling emergence is partly about small acts of resistance or refusal (Nxumalo, Vintimilla and Nelson, 2018, p. 436). If we do not explicitly situate our emergent curriculum practice in relation to "late capitalism", "racist structuring" and "extractive consumerism", then we are allowing it to exist implicitly in our engagements (2018, p. 436). At this point, the role of the critical educator is interpreting "learning processes" in terms of the "psychological, sociological, and ideological effects" at play (Kincheloe, McLaren and Steinberg, 2010, p. 166). In this sense, there are multiple elements that may be guiding the inquiry and paying attention to this is the reflexive responsibility of the educator.

The backdrop described above endorses that in emergent inquiry the educator plays an active role. It involves planning content and engagement processes and adapting these plans as the inquiry unfolds. It involves being open to changes of plan and changes of place. Partly it

involves power in terms of making ‘difficult decisions’ about what gets taken up and what gets left out of the inquiry (Nxumalo, Vintimilla and Nelson, 2018). This is guided by the matter of concern and the dialogical expressions and framings of that concern. This work moves into the realm of the *pedagogista* and relates to active reflection for thinking about both cultivating *and* sustaining emergence of a collective inquiry that is made of the creativity and curiosity of those involved.

3.4 Pedagogista and educator in dialogue: Listening to educational encounters

I remind the reader of the intent of this research, to trace the transformative potentials in *learning about learning about water* which is done through a reflection on practice. The first ‘learning about’ is the work of the reflexive educator who plans workshops and responds to what learners bring to the educational encounter. The second ‘learning about’ requires a wider dialogue between educator, pedagogista and the various theories about learning that exist. This is in a sense slowing down time between the learning activity, the learning, and asking what was learned, and how it was learned.

Articulations of reflective pedagogy from the Reggio Emilia approach inform the methodology of this study. This approach aligns with the ontological conceptualisation of water inquiries as *emergent* educational encounters. That is, encounters cannot be predicted for their outcomes but rather are instances of a constellational real that can be engaged and explained. This approach embraces the notion that learning has multiple dimensions and in “combining many forms of texts to make learning visible” (Wien, Guyevskey and Berdousis, 2011, n.p.) we can begin to study these processes. The researcher-teacher reviews the aesthetics and content of children’s work which means considering emotional as well as the cognitive expression (2011). It is an approach that asks us to pause between the learning event and the act of assessing the learning it produced. Between delivery and judgment, where we strive “to listen without grasping the other and making the other into the same” (Moss, 2006 as cited in Pacini-Ketchabaw *et al.*, 2014, p. 66). Importantly, this reflection has a political intent that resists the construction of children [and youth] in a vacuum and rather seeks to understand the ways in which they are active and affected participants in the “social, cultural, political and economic worlds” (Pacini-Ketchabaw *et al.*, 2014, p. 29).

This reflective practice is facilitated through pedagogical documentation or pedagogical narration. ‘Pedagogical documentation’ is the term originally developed in the Reggio Emilia approach; however, Pacini-Ketchabaw *et al.* (2014, p. 187) use the term ‘pedagogical

narration' to refer to the same thing. This is a practice of narrating educational encounters drawing on multiple forms of documentation including photographs, films, fieldnotes for "exploration and reflection, a stimulus for questioning and wondering" (Pacini-Ketchabaw *et al.*, 2014, p. 187). This practice of documentation is teacher research which is done in order for the educator to learn in dialogue with others about their teaching where the teacher/researcher is seen as relationally situated into the learning process.

[Pedagogical documentation] invites teachers to inquire, to listen closely. It is a relational encounter that requires emotional as well as intellectual empathy: 'Can we understand without judgement what these children [and youth] are thinking? Can we show them what we think they are thinking and let them alter it?' (Wien, Guyevskey and Berdousis, 2011, n.p.)

Another clarification of the intent of this analysis is important to this study. The Reggio Emilia pedagogical documentation (hereafter referred to as documentation) approach distinguishes itself from assessment. Through documentation, teachers develop a way of attuning to the thoughts and emotions of learners and from this self-reflective perspective, are better equipped to design a curriculum that meets the learners' own learning process. It is a way for educators to communicate what they are seeing and reflect on their own practice before they judge whether their intended learning outcome emerged.

Documentation is often described as listening; deep listening, visible listening. It offers the opportunity to "listen again" (Rinaldi and Gandini, 1998, p. 121). Capturing moments and productions in educational encounters enables the development of a practice of listening that can attune to learners' own modes of learning and curiosity. However, it is possible to 'listen' in a way that is content with the way things are and with a certainty of drawing certain conclusions from what one hears. We need to think about the act of listening when, as Spivak argues, "the conditions of being heard have already been set by those who construct the dominating discourse" (referenced in Neimanis, 2017, p. 58); otherwise, listening may become merely "another colonising apparatus" in our educational processes (Pacini-Ketchabaw *et al.*, 2014, p. 180). Listening must be a process of seeing ourselves in relation to others, of being attuned to the theories at play in our practice with the purpose of considering them. In this way, documentation as listening directly implicates the learning of the teacher as well as the learner.

Critical reflection, an intentional embrace of this learning, is a central capability for an educator (Dei, 2010b; Pacini-Ketchabaw *et al.*, 2014). Gaztambide-Fernandez (2016, p. xiii) warned us about a typical pitfall of critical education, where the educator assumes a level of conscientisation, and also that the learner's journey should look something similar. This trap obstructs the process of continuous and active reflection. Critical reflection should aim to understand children and youth in their social, cultural, economic, and political worlds and does engage with anti-racist, feminist thought; however, this practice must resist essentialising identities but would rather "seek new potentials and ethical relations" and look for ways of enhancing "capacities for ethical action" (Pacini-Ketchabaw *et al.*, 2014, p. 31). Like a mirror, critical reflection also relates to our own thought processes (Pacini-Ketchabaw *et al.*, 2014) where we make our own assumptions and meaning-making visible rather than conceptualising our analysis as applying theories detached from ourselves. The way I read it, reflection with pedagogical documentation is the site upon which the educator and the pedagogista meet and enter into conversation.

3.4.1 Relationship to theory

The relationship to theory in this study is articulated in the Reggio-inspired critical reflection and research on critical education practice (McKenzie and Bieler, 2016).

When developing a praxis of theory, we do not create hierarchical relationships but see our use of theory as a practice of dialogue. A 'unidirectional' and 'hierarchical' treatment of theory informing practice dismisses the possibilities of fostering "shared constructions of meaning" (Filippini and Bonilauri, 1998, p. 133). Equally, the false idea that practice is ever free of theory, puts us in a dangerous position. Instead, what is sought is that the relationships between our reflections, participant's reflections, theory and empirical observation take on a flat relationship building theory within and engaging with "... theory to bring imagination and political possibility to the data" (McKenzie and Bieler, 2016, p. 7 citing Jackson & Mazzei, 2012). Or as pedagogista Filippini (1998, p. 133) states:

[W]e reflect on our practice – a reflection that moves towards theory – or start from a theoretical assumption and compare it to what we have seen in practice to redefine its meaning. As we discuss and share reflections, we create culture.

In this way, the use of theory to study practice (of learning about water) is a reflexive relationship with those already thinking-acting-writing in ways that resonate.

3.4.2 Multiple theories

The multi-dimensional nature of educational practice as well as the relational approach to theoretical praxis, requires “intentional movement between theoretical sensitivities, given the interscalar and multidimensional aspects of practice” (McKenzie and Bieler, 2016, p. 34). With the interest of continuously linking our experience to broader structures in the world, the study of critical education requires both ‘zooming in’ on how practice unfolds, and ‘zooming out’ to understand how this practice is located and affected in time and space (McKenzie and Bieler, 2016, p. 34 referencing Nicolini, 2013).movement requires an embrace of multiple theories. Pacini-Ketchabaw et al. (2014, p. 143) agree, arguing that a singular approach should not be used to capture the complex processes of education. Instead, multiple theories are brought together to create community connecting “...actively and creatively, both individual and social growth” (Malaguzzi, 1998, p. 85). Connecting back to the bricolage of research, Reggio Emilia and literature on critical education research embrace the use of a multiplicity of theories to study educational practice.

SECOND HALF

3.5 Making contact with organisations

My interest was in addressing the research question together *with* young people who are involved in environment education projects and as a result I reached out to existing educational organisations. I experienced a clear divide between organisations working with well-resourced schools and organisations working with less resourced schools. I resisted partnering with only the well-resourced schools partly as a result of a conversation with a principal at a public school who saw contradictions in the way private schools watered their sports field intensively and yet still managed to achieve an Eco-Schools flag. I recognise now that I perhaps too quickly dismissed this as an option. I later learned that in Cape Town many schools did receive support for the Eco-School’s participation fee and in addition, the network was a powerful movement for environmental education. While I did end up working with an Eco-School in the second phase of my fieldwork, at the beginning I was seeking a model that felt more in solidarity with the reality of the majority of South Africans. Thus, I joined environmental education networks in the city to understand the landscape more broadly.

This struggle of locating one’s work in relation to political, social and economic divides is an ecopedagogical concern which is to foreground economic inequalities as part of the

environmental crisis. There are arguments for working with both sides of the wealth gap and it is the intent behind this decision which makes the critical difference. For example, working with low resourced schools should not be about attempting to rescue them from being ‘behind’; it is instead about honouring the lived rich knowledge that is located in those spaces. This alludes to Christie’s (2020) argument that lower quintile schools are the communities with which we should be working to re-imagine our education system.

The first organisation I joined up with was the South African Education and Environment Project (SAEP). Here I worked with the educators on a Grade 4 literacy programme. Remembering that literacy was a central project for Grade 4s as they develop practices of reading and participating in the world, I saw literacy practices as an ecopedagogical entry point. The programme organiser and educators were interested in merging curriculum based environmental themes and arts-based activities with their reading activities. In this case I was enfolded or incorporated into the programme with co-designed activities designed to draw on curriculum materials exploring water. I ran the same workshops in both 2018 and 2019.

The second project I joined with was Beyond Expectations Environmental Project (BEEP). I met an organiser at a Cape Town Environmental Education Trust meeting. BEEP is a youth leadership environmental project based in Philippi. BEEP’s model is one whereby older learners teach younger learners about various environmental topics which I discovered later had a strong emphasis on school support. I really liked the idea that I was working with young people who themselves ran workshops and had an educator praxis. The organisation also facilitates outdoor visits and camps. A later conversation I had with one of the educators provides further context:

...at the same time [the outdoors] is where we connect with God, for example, when we are going to Table Mountain we go there and take ourselves back because at the same time we understand who we are because we grown up in the Eastern Cape, we know that when there is a problem in the village our parents would... go to the mountain and pray there for the rain. It wouldn't even take a long time, when they are going down the mountain then the rain will be raining ...and that is where BEEP also connected us back ... because that is who we are so when we are in the mountain we go to a place that is called Tembilisweni, to pray. I will take the kids because we know that in our modern day people don't pray and that's where we take the kids back to nature where they go and connect with nature and sleep, they will lie down on the

stones and speak to their god about every problem that they have because at the same time we can mentor the kids and tell them what to do and all that stuff and then. We cannot bring every solution to their problems so that is where we tell them they must connect with nature and speak with God because that is where we believe that we are one with God and with nature so it is there that we pray so that we can have better solutions and how to build our future. (Pers. comm. BEEP , 22 October 2018)

The organisers were interested in cultivating further learning about the water crisis for their high school learners who were themselves involved in teaching the younger learners in their school and communities. In this case, I led a series of workshops together with another educator on the programme.

Part of the contextual profiling was understanding the positioning of these organisations in the local context. School and education NGOs played an important role in attempting to address the need for school support and enabling young people in marginalised and resource-poor schools to get quality support for their curriculum-based schooling. They also, however, had space for working on leadership and outdoor education encounters which did not link directly to the school programme. An important contextual learning here was that any attempt at emergent and ‘free-er’ inquiry space for young people would always be wrapped up in the urgency to get through school successfully. In this way, working within the educational cultures was a way to understand a bit about the learning cultures of the participants – I was in this way trying to be sensitive to the ruling relations (Carpenter and Mojab, 2017) that structured the local organisations and the people who acted within them.

Note on ethical considerations regarding relationship building

Collaborating with existing organisations requires negotiating some ethical concerns. First, as these organisations were operating on school properties, I needed permission from the Western Cape Education Department which I applied for and received (see section 10.2). More in line with an ethic of care, working with young people and children within their organisations aligned with the political intent of this project. The power relations between adults and children are uneven for several reasons and because of this we need to ensure that children and minors are not put into vulnerable positions in relation to the researcher. Whether I, the interventionist researcher, was part of existing sessions or co-designing new extra-curricular sessions, I was accompanied by the long-standing educators. Our co-planning and feedback sessions provided the possibility of a flexible and responsive relationship

between myself, the organisation and the children. This collaboration with educators on the programme meant there was little experienced by the children as unfamiliar in terms of time, place and relationships, and thus reduced the potential for vulnerability.

While building relationships with existing organisations has a significant ethical intent, the relationship itself is not sufficient for research ethics. As a researcher, I needed to understand my own positionality in relation to the organisations and make my goals explicit. It was tempting to continue as part of the organisational programme, as an educator, and I felt uncomfortable prioritising research goals that had less immediate results. Thus, in order to maintain transparency of the fact that our encounters were part of a research study, I reminded the learners what I was there to do at the beginning of every session: support an inquiry into water and the work with our common or joint experience to think and study education.

Trying to explain what the research would bring about was challenging. Two reasons for this were that firstly, due to a year of reading educational ideas, I had terms and tools for understanding knowledge production which were not necessarily useful to the learners. With discomfort, I acknowledged that this did not have to mean that I disrespected their knowledge but rather that these studied perspectives I brought into dialogue with the context through the act of research were something of value. This recognition is challenging in the milieu of today's knowledge production world that is so critical of hierarchy but at the same time, it is a critical exercise for all researchers – what is the value that our research practices bring? Secondly, in an emergent research process there is a limit to being able to make research practices explicit to the participants. Processes of reflecting on my thinking through educator interviews, learner one-on-one conversations and dialoguing with the theory were important here (discussed in Phase 2 of the data section, section 3.7.3).

An ethical tension of working with existing organisations is that it cannot be assumed that the organisation upholds a perfectly ethical set of relationships nor does it uphold the care relationships valued in ethical knowledge production. I did not witness any troubling practices for which I would have had a responsibility to report. However, as a researcher who sought voluntary participation in the research, it was challenging to bump up against the notions of compulsory participation by the organisation, particular adult-child, and educator-learner relations that differ from the relations I envisioned. (For more on this see section 3.7.2 where I discuss case study 2).

3.6 Entering Philippi: positionality and movement

As my contact with BEEP and SAEP had been independent, it was a coincidence that both these organisations were working in Philippi and in the same neighbourhood within Philippi, a township on the periphery of the city of Cape Town. I knew that building research relationships would be challenging and I was hyper-aware of racial and class privilege. At the same time, I knew there was value in grappling with the contexts in which the majority of young South Africans lived and learned. This is not to romanticise their positions but to honour the experiences and sense-making in marginalised localities as valued sites of knowledge production. Despite the material deficits, these are spaces with people who are being, doing and dreaming in the daily struggle for survival. I needed a practice-based ‘radical reflexivity’ to hold me accountable to my position and my intent.

There are ways in which the effects of race and class privilege show up in a delayed manner and it is challenging to work carefully to mitigate them. Halfway into our workshops I discovered that one of the organisers of the programme had been denied the use of the library space that I had been granted permission to use. This is a phenomena that allows white people to move through spaces, even spaces where they do not live and are not known, as if they are kings and queens; attached to their skin is the smell of professionalism, their English indicates ‘proper education’, their manner says ‘social mobility and authority’. If privilege is understood as a sense of comfort, or an absence of discomfort, it is often the disruptions to that in which we learn to ask question about it (Ahmed, 2015). In this sense we may often be one step behind.

I wondered what might have been had I had more of a struggle with the venue at the beginning – might this have provided the opportunity to express my vulnerability and build a closer relationship with all the organisers of BEEP? Perhaps I could have entered into solidarity with them and insisted that the public library should be available to local organisations doing education work. In lieu of being able to anticipate all the ways in which we will affect the spaces we enter into, reflecting about such obstacles as researchers is the least that can be done.

This made me think about how what is described as privilege is also a double-edged sword. Our ‘easy’ movement into certain spaces comes with the cost of moving further away from those who we wish to build relationships with. It is the ability to move but it is also the inability to move out of the expected moulds. If you gain free access to spaces that are

policed for others, then you might contribute to the social relations/the lack of relationship that is part of maintaining that.

In 2019 one of the students I knew from the Ezemvelo, our Khasi Goal school group (see section 3.7.3) invited me to see his garden project which comprised of vertical gardens between his shack and the one adjacent. As we arrived at his house he said: “You see, white people are scared of visiting us but it is fine”. I felt a defensive lurch at this – no I am fine, on the contrary I feel honoured to be invited to your house! But I also knew that James was reflecting on a more general political economy of race and space in South Africa. I think the arrival of a white person in a township raises understandable suspicions. On the one hand, it is against a flow of movement – why would someone willingly come to a township when they had somewhere better to be? In another sense, it is *with* another flow of researchers, NGOs... who fall into the trap of white saviourism where the presence of a white person is felt as if it is the answer, while it is often exploitative and reinforces the inferiority violently established in history amongst people of colour. I was, and am still, susceptible then to re-enacting white saviour subjectivities. As a reflexive move, I needed to be aware of these to establish relationships that could shift into situated solidarities.

Practising reflexive research means that those who are ‘external outsiders’ will be *moved* and become different through their research engagement. Having been raised in neighbourhoods of cultural and material difference, Banks would place me in the category of “the external-outsider” [who] is “socialized within a community different from the one in which he or she is doing research” (Banks, 1998 as cited by Merriam *et al.*, 2001, p. 412). I wanted to gently push against the boundaries of this category and noted that I had become something else from the rhythm of the albeit privileged movement between township and suburbs over time. Indeed movement around South African cities shapes identities of more than only researchers; there are many workers and school learners who make long daily commutes too (Fataar, 2009). As a result, after many years having the privilege of moving, I look at places in the city differently: I am always uncomfortable in the comfort of my privilege and still I know this is comfortable. I would not be a learning human if I did not acknowledge being moved by the experience of traveling between the disparate areas of a South African city. “Being moved by others” or “self-displacement” are part of situated solidarities which enable scholar activist transformative potential that “emerges from our deep emotional responses to the world ... our ability to transform our feelings about the world into action that inspires us to participate in political action” (Routledge and Derickson, 2015, p. 398). So, working

reflexively with the external outsider box is an evolving practice that accompanies this research.

Thus, a reflexive layer to this project, was one of understanding the barriers and possibilities of reimagining the relationship between white researcher and black youth participants in their neighbourhood. This branched into a question of how these relationships in the city affect educational experiences as well as experiences of research activity. I had to own the fact that I had a political and ethical intent or agenda which was to host a conversation across multiple spaces in South Africa. As I embarked on these case studies, I armed myself with a feeling that I would be as open as possible and aware of the ways in which my presence came with a story that preceded my character. It was important to have ways to grapple with white saviourism in practice, and we only discover these ways in practice.

I learned that it was important to equal the awareness of my social identity with a sense that these encounters were also the meeting of a woman who loves to learn with others and engage with young people, a woman who is in pain about her country and a woman who is capable of love and ‘loving the hard work’ that comes with forging relationships across structural barriers (Lotz-sisitka, 2017). Articulating the work that is involved and required by researchers, Federici (2020, p. 48) wrote “social identities are not only jails in which a hegemonic system imprisons us” and “ignoring the capacity that we have to change our social identify... is to see power only on the side of the masters”. In this way, nurturing a critical possibility of something other than structurally defined relationships is part of realising counter hegemonic power.

3.7 Data generation

3.7.1 Data generation – educator hat

The primary data generation in this study happened in arts-based inquiry workshops. The secondary data phase involved individual interviews with learners and educators about their environmental change work.

The data generated across these interactions can be described on the spectrum between process and artefact: process relates to the conditions and agency under which artefacts (workshop creations as well as interviews) were produced. Artefacts here refer to ideas, questions, images, brainstorm, drawings, pieces of writing, improvised skits, ideas

expressed. The capturing of these artefacts as well as the personal reflection by myself constitute the pedagogical documentation.

There are two interrelated emergent, but distinct, dimensions present in the data. The arts-based inquiries were both learning encounters, led by Anna the educator, for the participants and myself (learning together about water) as well as a co-engaged research process, actively observed by the pedagogista, with the participants about learning in their lives more generally (learning about learning about water).

3.7.2 Phase 1: Co-making workshops

The case studies reported on in this research (see Chapter 5 and Chapter 6) took form through a process of co-making with educators of the organisations. They thus emerged looking quite different. The one case involving Grade 4 learners had higher numbers of learners and much more direct involvement by the educators. The other case with learners from Grade 10 and 11 included a group of 13 learners and involved one co-educator from the organisation working alongside me. The flow and arc of our workshops differed across case studies: Case Study 2 looked more like a continuous process of arts-based inquiry in response to burning questions, while in Case Study 1, I engaged arts-based responses to ‘the journey of water’ more generally but no less generatively. What was common was a collaborative inquiry into water. The co-making refers to both planning and enacting the workshops where the co-educators and myself improvised in and around a planned lesson outline. We remained grounded in the purpose of learning about water, responsively and worked with the tools and modes that facilitated that.

In the sections that follow, I describe the emergent encounters with each organisation.

3.7.2.1 Case 1

For this case study I collaborated with the South African Education and Environment Programme (making contact with this organisation was described in section 3.4). Based on an agreement that I would comply with the organisation’s volunteer code of conduct, I was given permission (see Appendix 10.3.1) to collaborate with this group of learners and their educators.

Note on research ethics: I drafted letters for the learners’ parents which the organisation sent out. The first draft of this letter was shortened on advice of the organisation (Appendix 10.3.2). The letter informed the parents that I was a researcher actively engaged and

observing learning activities related to water related themes. These activities would be designed in alignment with the regular programme with a focus on reading practice but include some arts-activities. I would be working with video footage, photographs and artistic artefacts. (Under the organisational code of conduct, these would not be shared outside of the researcher and the group of learners.) The letters requested signed consent from the parents.

I joined a few sessions to observe and get to know the learners. When I was introduced, I explained that I was going to do some water related activities. While the learners' participation in the programme was overall voluntary – an extra-curricular programme, their encounter with me in this programme was organised via their educators and was thus not necessarily voluntary. However, the activities all included space in which the learners could decide on their level of participation, a feature of arts-based engagement rather than a one-on-one interview (Dockett and Perry, 2005) – for example, not to participate in a skit or not to finish a drawing was without consequence.

The programme organisers, educators and myself collaborated in designing workshop sessions in which learners would read a water related text, diagram or information piece related to their curricula. We would then facilitate arts-activity through which the learners would respond to what they had read (using theatre skits, drawing, simple writing and movement). The activities all related to the journey of water. Thus, my intervention impacted only for a short time in the overall session. The educators and I facilitated this intervention in the final 15-20 minutes of the overall session (1.5 hours). The rest of the lesson comprised a routine 'circle time' discussing tools for learning how to read and 'reading time' where they sat together and read books with an educator. I worked with 20-25 learners over three afternoons for four weeks, facilitating these short arts-based responses to their reading. Table 1 below charts the lesson plan over 6 sessions. These lessons were repeated in 2019.

Table 1: Workshop outline Case Study 1

Established phases of the lessons	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6

Circle time	Making rain	Dance circle	Curious question: how do we collect water in different places across South Africa?	Story telling	Circle time	Circle time
	Circle time	Curious question: where does water come from?				
Team reading	General reading	Reading the water cycle	Reading water purification	General reading	Reading	Reading
Creative exchange	Bucket improvisational skit	Drawing	Water purification machine	Writing amanzi [water]	Performing the journey of water	Watching our videos

As shown in Table 1, in the first session the learners enacted a short skit about water in their community, in groups using a bucket. During the second and third session we engaged with information on the journey of water and then responded to that information using drawing (Session 2: Read/draw) and machine skits (Session 3: Read/move). In Session 4 we did a chain story in circle time and after the reading session, they each wrote five sentences about water drawing on the *amanzi* [water] dictionary of words we had collected over the previous sessions (Read/write). In the fifth session we performed an extended journey of water using song, sound, movement and props. The sixth session included watching videos of the previous sessions.

While the close collaboration with educators on this project was crucial for the effectiveness of our workshops and the familiarity of the learners, I should note the tensions that related to this collaboration. The nature of the pedagogical engagements that I had planned, and their contrast to outcomes-oriented curriculum, regulated school institutional space and time, is an ethical consideration that needed to be negotiated. A conversation I had with an educator brought this notion to the surface:

As I explained the lesson plan the educator said to me, “children do better when they know the reason for what they are doing it and what is expected of them”. I felt she

was saying two things here: 1. I am uneasy about this idea, it does not sit nicely with what we normally ask from children. Where is the hidden test, where is the model of how it should be, how do we know if it is right or wrong? 2. You, Anna, need to be more clear about what you are telling me, I won't be able to do this if you are not clear and the children will be confused. As our conversation continued, I realised that this was a negotiation of cultures within an educational space.

According to her two requirements: reasons and expectations, I said, let's think these through together. Our discussion surfaced the following.

The expectation showed an important tension, the tension between open-ended engagements (particular characteristic of play) and closed-ended engagements (particular of much that I have picked up happens at the school – test oriented, and coaches wanting very precise instructions). So we negotiated. I said, what is expected of them is that they tell us a story using their bodies and the bucket prop. The educator responded, OK they tell us a story about the uses of water in their community. I said, hang on, let's make it less specific and say about water in their community: Ngamanzi eCommunity. I moved into the discussion about how often we tell learners to save water and that is all. The educator agreed and explained, yes but we do not get the chance to tell them why.

Onto the reasons: here I explained that we would like to see a bit about how water fits into children's existing worlds. As citizens in this world, they come with a kind of knowledge about water in their lives and we would like to understand that a bit. Next week we will bring the curriculum. As I was explaining this, I found it hard to hold onto what I was thinking. I felt uncomfortable about this being a white person's interest in understanding these children/s watery worlds. The educator came back to me and asked, so are we going to group them by community or what? Because we have many different communities. We eventually said no and decided to group them randomly. So while I felt like I struggled for the words to say this I was re-reminded about how important a step this was.

This conversation while it felt challenging, and on the side and not part of the main work, was actually vitally important to what it means to be thinking through these kinds of pedagogies of play and ecopedagogies within existing school cultures.

The negotiation also had race and class elements to it. In some ways, I was a white middle class woman and my psychologist pointed out that there might have been some of “well you are already up the social ladder, and we’re still trying to get there, to get these kids there so don’t come here with your hippie ideas...”. This is important, because it is also perhaps one of the mechanisms that produces a particular attitude to the school space, this space is for getting, learning to behave the way the middle class does... ?? Perhaps.

And yet, when we had finished the lesson, done the plays and the reading, the educators were beaming with excitement. They said the kids had so much fun they were happy to go on and on and on. One learner was an absolute hoot, he had the whole class in hysterics. This learner had been a shy one before now, they did not know he had it in him. I am sure this is also a function of the language, that these learners were able to do their little skits. They also said that they noticed some learners did not like the skits very much. (Reflection from 9 April 2019: Return to SAEP workshop)

This reflection relates to the critical process of building working and active collaboration with the educators. This was a moment that I welcomed as a significant way in which I could improve my communication. However, I also needed to stand my ground, not being too changeable in relation to the anxieties I perceived amongst people who I was working with. Entering into collaboration with the co-educators involved standing my ground and practising careful clarity about why I had suggested various features of the lessons.

At each session I had a video camera. Before I turned it on, I asked permission from the learners. They never objected to me turning it on. There was great curiosity about seeing themselves on camera. By alerting them to when I turned the camera on, I was inviting them into the filming processes. I imagine and hope this curiosity was an indicator of their consent for the filming, though I cannot be sure about this. In this case, my ethics of care of course extended to keeping this video footage confidential and continuing a deep respect for how I used the videos in my analysis.

A note on ethics regarding requesting consent at the end of our sessions: After the final workshop, I brought a short set of video clips about our time together for the learners to see themselves in our activities. At this session, with a very simple survey (Appendix 10.3.4) I asked them to try and remember for each session what they liked, what they did not like and

what they learned. This short evaluative survey did not work out so well as I think the expectation that they write was too much in the short time we had together. At the end I asked if I could have their permission to use the videos and drawings in my university project. If their answer was yes, they should tick and if no, they should draw an X. All learners drew ticks.

3.7.2.2 Case 2

I connected with an organiser from the Beyond Expectations Environmental Project at an Environmental Education Trust meeting in Cape Town. I was invited to their office in Philippi to talk about my workshop ideas and I found out a bit more about the organisation.

The notion of engaged research was difficult to put across and I was alerted to a number of ideas that informed how my role was received. One person said to me “let’s see what BEEP can do to help you with your research”. This made me feel uncomfortable as I was holding onto the idea that my research would rather be aligning with the needs of the organisation. Another organiser admitted to me that one of the organisers was doing his masters and had asked that they do not give me all the information. This alerted me to the fact that I was being understood as someone who was ‘taking’ information. In quite a number of conversations I tried to relay the intention that this would be a study of process and practice with the learners rather than studying the learners themselves. Being alerted to these perceptions was important for understanding the possibility of realising what I intended and what I would enact through my position as a researcher.

A meeting with the organisers revealed that they were interested in learning more about water at the time of water crisis in the city. I shared my plan for the inquiry with them and they approved of it. We arranged a meeting with the high school learners in the public library.

For the first meeting, the learners sat around a table in the library attentive to what I had to say. I felt comfortable and excited by this gathering. I explained to them that I was a PhD student and as part of that, I was interested in going on a learning journey together with them. There were two important moments in this meeting that coloured its quality. One learner told me with an air of authority and outrage, “you know, in this neighbourhood, we go to sleep to the sound of bullets”. I remember dealing with conflicting feelings here. While I am not ignorant of the violence in the area, I am ignorant in the sense that I do not have to live with it on a daily basis. I also know that many white people know so little about this that they

disregard its impact. I do not remember my reaction exactly but I remember listening to this as an important intervention and expression of agency on the part of the learners relating to our race class difference. They needed to let me know what the situation was. I could have been scared off by this, I could have responded with I know all about that (which is not true because I have never known it as a daily reality). Instead I had to understand that statement as part of our first meeting together, the play with boundaries that would establish what is possible or what is really allowed in this encounter.

Another outspoken learner said, “Are we going to get certificates?”. This took me by surprise more so than the previous comment. Despite the fact that I felt very suspicious about certificates and the problems they can cause, I could not deny that I had privileges because of the certificates I had received. Of course, acknowledgement, celebration and recognition would be important. In the phase of school life when much is organised by awards, it is important to include means of recognition.

Also at this meeting, I gave each student a written invitation including information about the water inquiry and consent forms (see letter in Appendix 10.4.3) and informed consent letters for their parents (see letter in Appendix 10.4.2) and requested that these be returned at our first session which would happen a week later.

We agreed to have our four meetings – which turned into ten meetings due to various disruptions and inconsistent participants – in the local public library (see table 2 below). I received permission from the librarians without complication. We proceeded to have ten rich sessions inquiring into water.

A note on ethics and participation: By the fourth session I had received 13 informed consent forms signed by parents and learners. One or two workshops in the holidays that were joined by new visiting learners were screened out from the research analysis.

A reflection from the first workshop reveals an overwhelming feeling of the existing ruling relations that may have been present in our workshop.

It must be quite strange on a number of levels. This white woman arrives in your community and suggests that you do an exploration of water. You are a high school learner, in grade 11, you know that this is the time of life that can ‘make or break’ the rest of your life. Because this woman is white, she might have connections. Because

she comes from a university, she may be able to give us a certificate. Ok, I'll see what these workshops are all about.

I, this white woman, felt a bit silly trying to explain, trying to impose the idea of an open-ended inquiry. Quite rightly, the fears generated in some learners were that they may not know what is going on, or they do not understand clearly where this is going, or that they may lose interest. While I have come with the admirable intention of having a learner directed inquiry deriving from their concerns, it is potentially unhelpful for this phase of life, especially in the context of a new and potentially fragile relationship across race, across age, across the space. Do they always know where they are going as they learn in the classroom? Do they direct that learning? Is it important? I guess in the short term it is. (Researcher journal. 12 March 2018)

This reflection captures the trickiness of social relations, pedagogical paradigms and contextual pressures. As Pacini-Ketchabaw et al. (2014, p. 180) note, “[e]verything we do in our practices is embedded in relationship of power, including inequities between educators and children and those that can emerge between children...”. It was an intuition into the reality that educational paradigms and ideas we aspire to must contend with the contextual relations and ruling relations with which they come in contact.

A note on ethics – reflecting on what we were doing together: The workshops were not attended frequently by all but there were a core group of 5 consistent learners. While this was disappointing on one level, on another level it indicated that these workshops were seen as voluntary.⁷ Each session included activities that stood as invitations rather than compulsory participation. Each session ended with a recap from me of what we had done and an attempt to check in and see that everyone was OK. There were never any expressions of disappointment but these may have been expressed in other ways such as absenteeism.

Table 2: Workshop outline Case Study 2 workshops

Dates	Process	Details	Activity form
12 March 19 March	Matters of concern	Co-defining matters of concern from our position as inhabitants actively experiencing our urban environments	Individual reflection through writing and discussion

⁷ Responsibility and accountability by participation in engaged generative research is something that ought to be theorised more. Arguably, one is reducing harm by making it voluntary, but if we are offering significant and generative processes for which it is beneficial to attend consistently, it could be reducing harm to individuals and the group, to insist on regular attendance.

19 March	Generative theme	Collectively agreed upon urban water as a generative theme towards further learning about our urban environments	Discussion
19 March 26 March	Co-defining curriculum content	Co-defining curriculum content by mapping out the path of urban water from water cycle to the sea. This helped us to map out the ways in which water is not just a natural resource but mediated by all sorts of social institutions as well.	Input from facilitator and discussion around a map of urban water
19 March 26 March 29 March	Initial information gathering, discussing concepts and language; and reflecting upon learning	Engaging with information in a variety of forms: newspaper articles, audio resources, activist hand books, water and climate change information, a bingo game. This initial engagement with information provided the possibility for reflecting on learning itself, unpacking the relationship between experience, information, knowledge and action.	Reading a piece of information Theatre (to present key learnings to the group) Discussion (reflection on what it means to learn).
29 March 16 April 23 April	Surfacing questions	Once we had covered a number of themes relating to urban water through the previous stage, each learner reflected upon a burning question that they would like to see answered as the course progressed.	Individual reflection and discussion around mapping questions
5 April 9 April 16 April	Reaching for answers and dialoguing around those answers	Guided by the question they selected a piece of literature from the 'Amanzi Library' and worked with information towards answering those questions. They presented their findings to the collective and engaged some questions.	Reading further Presenting newsprint presentation on the answer to the question.
9 April 16 April 23 April	Storying facts back to matters of concern	The presentation of information was brought back to the context and in relation to matters of concern in the local context of Philippi/Nyanga using story forms and forum theatre	Chain stories Forum theatre unpacking power
23 April 30 April, 7 May	Representing their findings	Animated their learnings and sentiments through short play that unpacks the water crisis: 'Does every drop really count?'	Scenes based on burning questions Practising lines and animating scenes through actions and music
14 May	Further dialogue through theatre workshop	Workshopped the scenes of this play with the assistance of Astrid von Kotze, a theatre and education practitioner.	Forum theatre Discussion Agit prop theatre

3.7.3 Phase 2: Coda: Interviews with young environmental agents

Coda is a section in a musical work which is quite different in character to the main themes of the piece but its purpose is to bring the piece to the end. As the second phase of my research took on slightly different forms, this descriptor felt apt.

Time constraints in the school year had made member checking with the original participants challenging. Conversations with my supervisor reminded me that there were various forms through which I could feed back and share my thinking. Mandilive Matiwane, a masters student at our centre, once said that the masters or the study is not in the end product but in the various encounters of sharing it along the way: not sharing for peer review per se but sharing for the purpose of considering how far I had veered away from what is understood and experienced by my participants, and getting to know their sense-making practices. This included critical friends assisting me in an ethic of care in writing and research practice. In addition to this, De Sousa Santos (2007) argued for knowledge production to be validated in intervention, not in representation only and thus I would not be sharing academese with these learners; instead I would work with my thoughts towards interventions and conversations.

In the third year of this study, many possibilities emerged where I encountered and invited young people to have an interview conversation with me. The interviews focused on their experience in environmental organisations, their formal and tacit learning experience. My criteria for selection was firstly, their willingness to speak with me based on the fact that we had encountered each other previously and secondly, I sought to interview young people from across the socio-economic strata of the city to engage with a wide variety of experience amongst young people involved in environmental organisations. The seven interviewees came from the following encounters:

- The BEEP learners were interested in doing more ‘environmental learning’ (in fact, one learner had adopted the terminology of ‘environmental learning’). The group at the Vleiland High School explained that their interest in continuing to engage connected to the fact that their school premises included a storm water pond that acted like a wetland which they wanted to clean up and which stood adjacent to a vegetable garden. This was a nice practice opportunity for me to continue being involved with these learners in 2019. From this they formed a club – Ezemvelo, Our Khasi Goal.

- I attended a weekly Eco-Schools meetings at a model C school in a historically white suburb. I participated in, and observed, their planning, discussions and implementing of projects over a period of six months.
- I presented at the Environmental Education Association of Southern Africa conference. I was both nervous and inspired by what I saw there and I managed to phrase the question to which my research was directed: What, how, why and who do we teach in a world that is crumbling into chaos and bad behaviour is on the rise?
- The youth climate strike occurred in this year too. This felt like an important event with which my research could dialogue. I had been thinking for two years about how young people in South Africa were making sense of their environmental worlds and, learning about them inside and outside of school. And here was a platform in which they had at least some form of expression. The space of protests is an interesting one. It is rife with challenges and my sense is that it was tough for the learners to be involved in and organising this protest. It is also not certain that every protest was valuable for learning about the problem of climate change. But it is a form of expression and interaction that resonates firstly, with a global movement and secondly, with traditions of resistance in South Africa.

Through the relationships I had built over the first year of fieldwork, I conducted seven interviews with young school learners who were involved in environmental organisations. These interviews are reflective conversations including talking about some of my observations and ideas over the first two years of my study work with the view toward understanding how these might be useful in relation to their environmental work and lives. These served to think with young minds beyond the locality of Philippi and think about experience across the city. This made visible some intra-city dynamics at play in the environmental learning of youth.

Reflecting on the events and encounters listed above through individual interviews with learners and educators from across, the city served as an important way to capture moments for *thinking with*, further and deeper about transformative potential in environmental learning with multiple modes in the context of youth action.

3.8 Analysis and representation

The table below captures the theories or tools for reading that were drawn on in the sense-making of the educational encounters in my study.

Rather than studying something that was static, the processes of this study were more about making encounters in which we would study practices and emerging discourses in the context of learning about water. Methodologically this involved a shift in the analytic agenda that rather "... seeks to compel, relate, or explore, and understand the inherent open-endedness of this act in contextual space and time ...[and acknowledging that one is engaging in sense-making rather than discovering]" (Markham, 2013 as cited by Ellingson, 2017, p. 151). I see it as a process of making and sense making.

Pedagogical narration is the best way to describe the focus of my analysis process. This involved narrating encounters, and through narration, entering into conversations with drawings and skits. It is from here that I make sense of the encounters I facilitated, drawing on multiple modes of documentation, multiple theories and in conversation with others.

Writing about what I was seeing in skits, conversations and drawings allowed for me to build a critical distance between Anna as the educator who had an agenda of moving an inquiry along and Anna the pedagogista who wanted to understand what was going on in our encounters. This involved putting anxieties aside and judgement aside and learning to sit with what I was witnessing. What was being said and what was it being said?

In this project, member checking was less about validating the truth about what had occurred and instead was "an additional opportunity to talk with participants and connect their responses to researchers' accounts..." (Sandelowski, 2002 as cited by Ellingson, 2017, p. 165). For each encounter, I selected an artefact from which to discuss with one or more of the educators. These dialogues allowed me to share my initial ideas and hear the thoughts of the educators who had been involved. I then entered into dialogue with a theory with which I could think further about my observations.

As described in section 3.4, I embraced multiple theoretical orientations in dialogue towards making sense of my empirical experience in water inquiries. In line with Nicolini (referenced in McKenzie and Bieler, 2016, p. 34) who argues that "the empirical study of practice is better served by *intentional movement between theoretical sensitivities*, given the inter-scalar and multidimensional aspects of practice", each chapter draws on slightly different theoretical

orientations all aiding in reflecting upon the educational encounter and underlaboured by dialectical process. Table 3 below summarises these modes and theories or tools for reading.

Table 3: Table of analytical approaches

Mode <i>Generated in our encounters, these were also modes of analysis in our process of making sense of water as they engaged with information, questions and ideas relating to water.</i>	Documentation <i>This is how the generated data was captured generating multiple modes engaging the idea that children have 100 languages.</i>	Listening guides <i>Tools with which to understand and listen to the mode</i>
Drawings	Photographs	Thematic analysis and with a concern for how the pictures in turn unravelled the themes. (Gullion, 2018)
Sociodramatic play	Video	Read with <i>theory on play</i> as a mode of children's being and becoming (Vygotsky, 2016) and dialogue with educators
Storytelling	Captured on video and transcribed	narrative analysis (Barone and Eisner, 1997)
Questioning	Captured on flip chart paper and individual interest forms	Drawn on to move the inquiry further. Engaging matters of concern (Latour, 2015) and problem-posing approach (Noddings, 2013)
Information gathering	Presentations captured on video	Narrative analysis (Barone and Eisner, 1997) and dialogue with the group (Noddings, 2013)
Improvisation scenarios	Video and transcribed	Process of analysing responses to questions in itself, narrative analysis (Barone and Eisner, 1997)
Educator experience	Written reflections	Drawn on to think reflexively about the process elements of emergence (Ellingson, 2017)
Individual interviews with environmentally active youth across the city and educators	Audio recorded and transcribed	Read for the strongest feeling in this interview, in a sense beyond words. And represented through a poem which was fed back to each learner. In addition to a narrative analysis (Barone and Eisner, 1997) exploring experience and learning in

		environmental organisations, based on the words and phrasing, these poems brought in the affective side for young people across a divided city grappling with the world they have inherited.
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A note on ethics and representation: Ethical pedagogical narration is an issue of representation;

In the artefacts exhibited in this thesis I have removed identifiers and blurred photographs to enable anonymity for the learners who participated. Nutbrown (2011) shared a thorough and in-depth discussion on using photographs of children in research and noted that there is a tension between protecting the child (through anonymity) and enabling voice and authorship, aligning with the intention to research *with* children rather than research *on* children. This tension has been felt throughout this project as the multi-modal voices throughout this project were critical threads in the thinking and writing. However, due to the overall mode of a thesis manuscript traveling outside of the research encounters, I have decided to maintain anonymity in relation to anyone who was not part of the project.

The concern for acknowledgement and authorship remains; how do I ensure that anonymity does not disrespect the voices of the children who participated in this study? In the research process itself, learners' creations were celebrated and acknowledged amongst the group through a final screening of all we did together with case study 1, a play performance we did with case study 2 and the conversations and poetry done in the final conversations (chapter 7). Despite the removal of identifiers, the contributions remain significant, the bodily expressions in the skits, the questions posed, the conversations had and the drawings portrayed. This work does not focus on individual development but rather processes of learning and listening to learning and hence individual identifiers are not critical. The participants will recognise their contributions to this work. However, the travel of this work, via this final manuscript, beyond the space of the educational encounter, will maintain anonymity to people outside of the processes we engaged.

The practice of pedagogical narration is not intended to be an exact representation of what happened but a way of making our lenses explicit as it impacts the act of observation (Pacini-Ketchabaw *et al.*, 2014, p. 188). I narrated my encounters and the artefacts from them, in order to build the capacity to reflect and observe.

Engaging the representational forms of story and play allowed for further dialogues about what was emerging in the work. In drafting the play, I collaborated with a educator friend and colleague. We worked with the play as a theatre-for-education piece. Launching off the series of scenes I had compiled based on my work with the high school learners, we built further meaning together in the process of crafting an effective theatre piece. Along with building actions into what was a text heavy piece, we brought a new scene into being, one that revealed the multiple relationships of power and money along the journey of water to the tap.

Drafting the story was a process of pulling together the multiple voices from learners in their drawings and their skits, towards a speculative fiction that could represent my wishes and hopes for what could be. The story engages Nxumalo and ross's (2019) proposal to use speculative fiction towards addressing some of the blindspots in environmental education research, including the blindspots relating to race and class. Through 'speculative story-telling' we might move away from "instrumentalist, already known approaches to teaching and learning young children" (Nxumalo and ross, 2019, p. 508). Resonating with the aims of arts-based research, Leggo and Sameshima (2014, p. 539) note that educational researchers "support a poetics of research by investigating ways that creative writing contributes to knowing and understanding. ... above all, we aim to make a story in collaborative dialogue with others always aware that the story is one of many stories, one of many versions of the story". Thus 'speculative story' and fictional creative writing are interesting modes for educational research that aims to focus on the lived experiences of learning encounters.

This story provided the channel I needed to share the creations of the children and the way I had read their experiences in the world through our interactions and their creations. In other words, it served as a way for me to bring my reading of the plays and the drawings together, in an integrated way. The plays showed a little about social and cultural worlds of water. The drawings showed imaginings of places through which water flowed – these included speculative experiments about visiting a water purification station. The form of story is thus a form of synthesis and analysis that resists abstraction and enabled me to incorporate my role in the relational encounter. (The work of this mode is discussed further at the end of Chapter 5, in section 5.7)

3.9 Integrity and trustworthiness

What are the conditions upon which we can trust that the research process is true and valid?

Integrity and trustworthiness begins in relationships: being a part of what was studied was a methodological choice of this PhD, to be part of and reflect on educational practice. The integrity of this research began with the relationships formed through the fieldwork. These relationships were not without tensions that are normal to humans working together, especially humans working across structural divides, but being attentive to these relationships was a priority of integrity.

Even though the writing of this thesis was carried out in isolation, this did not mean these relationships ended. I think that there are ways in which relationships can be honoured with differentiation in time and space. In fact, there is a value in differentiation and I found Biesta's articulation of critical distance helpful to think with: "it is as important to try to bridge gaps between research and practice as it is to keep a critical distance between the two, both from the side of educational research and from the side of educational practice" (2007a, p. 5). As I worked with my participants in an embodied way, very suspicious and critical of any form of separation, I had to learn to differentiate. Importantly, I was not differentiating for the sake of hierarchical ordering of voices; I was differentiating for the purposes of "interpretable traces" (Rinaldi and Gandini, 1998) that move "toward counter-practices of authority" that are adequate to emancipatory interests (Lather, 1993, p. 674). As I worked towards representing this research in a written thesis, which itself is a form of differentiation as critical distance, there were some elements to consider

Traceability: As I read across the documentation from our encounters, my inferences were linked to artefacts produced or moments recorded on video or reflected on in writing.

Traceability is important in research as all our observations and even the frames of documentation are partial, resulting from the need to make traceable observations which can be used in dialogue (Rinaldi and Gandini, 1998, p. 121). I always understand this data to be generated – that is with a conscious concern for the conditions in which it was created. At the same time, I am sensitive to the idea that "data is partial, incomplete and is always in a process of a retelling and remembering" (Jackson and Mazzei, 2013, p. 262).

There is both backwards and forwards traceability. Chapter 5 begins with the videos and drawings of the learners without any researcher voice present; these are followed by pedagogical narration of what I observed, dialogue with theory that helped me to understand what I was observing and finally, some lines of thought for environmental education. Chapter 6 begins with a play which is a composite representation of the context at the time of the

water crisis. This includes scenes that emerge from everyday experience. While the play is heavily framed, it was written over the time of this work. What follows is a pedagogical narration and analysis of critical moments over the arch of our inquiry. Njabulo's story is a representation of a composite child's perspective of moving between home and school space and the variety of ways water is observed and interacted with across those spaces. I trace the producing of this story, after it is shared, as writing the story was the process of making sense and only after it had been written, did I have the words for what I was achieving by writing it.

Voice (How do I represent voices of others?): Acknowledging the power I hold as the primary author of this work, I do not make final claims about voice as it emerges from talk, text, drawing, skits, but rather tentative proposals with critical reflection of the lenses I bring. I think about voices in the context of the nature of the encounter and carefully think through what the acts of narration were responding to at that time: whether it was a story being told allowing a certain degree of fictive imagination or a presentation given where there is an expectation for certain facts. Crucially, the representation of my own voice in the first person is a practice with consequences; I represent myself through this and try to be conscious of the ways I frame my thoughts and actions in the process.

Sensitivity to language and multi-lingualism: In the context of my research a sensitivity to language is crucial. While I studied isiXhosa throughout my fieldwork months, I was never proficient enough to engage on a first language basis. All educational encounters had the possibility to work and interact in isiXhosa. For example, the bucket skits were enacted in isiXhosa and the final play was rehearsed with isiXhosa dialogue despite the key messages in each scene being written in English. I worked with a translator to understand some of the isiXhosa dialogue and this working went beyond direct translation to unpacking meaning within the idioms used. For example, "save water" was sometimes translated as *masisebenzisa kakuhle*. I had a particular understanding of the save water and the meanings that came with it. *Masisebenzisa kakuhle* is phrasing which explicitly foregrounds the fact that we use water, and we need to use it carefully, rather than a decontextualised 'save water' message. This creative engagement with language is the beginning of the wish to realise the possibility of multi-lingual education which Neville Alexander (2012) envisioned for South Africa and the practice that most school learners today engage in anyway.

Selection: I was selective about which pieces of data I focused upon. I describe a number of selection types that informed my sense making in this PhD.

- I. Pedagogical selection – moments in the data which informed the movement of our inquiry and encounter together. These included questions that were difficult to answer or gaps in the information provided.
- II. Disruptive potential – re-framing water and re-framing learning about water, contradicting an assumption I had held.
- III. Substantive selection – material produced revealing substance about water in social-cultural material context.
- IV. Ethical selection: Did I have the consent to work with this piece of data?

While both case studies included a range of these selection types, in Case Study 2, I had more of the first three and Case Study 1 included some work in ensuring the pieces I were working with had full ethical consent.

Writing in the first person and the inclusion of my lived experience in this PhD neither claims to be a perfect correspondence to reality, nor a transparent narration but offers a way to reveal my “frames of seeing” and engage a reflexive dialogue with my own act of representation (Lather, 1993, pp. 675–676). By attempting to make my own frames clear, I offer insight into the body involved in this knowledge production. In other words, I try to make explicit the ‘instrument’ of research which in this case is not an instrument at all, but rather my head, heart and body that is the holding porous node of what is produced. In this way I am inviting the reader into a conversation.

3.10 Consolidating the ethical concerns of this study

There are notes on ethics embedded throughout this chapter. These are elaborated on below.

The ethical concerns in this PhD relates to the relations across age, race and culture as well as the contextual tensions that arise when a research ethics of care intentions come into contact with institutional cultures that foreground obligation and authority. This requires awareness of the ruling relations that exist in research contexts and therefore ensuring that ethical intentions are not undermined in relational encounters.

Formal trails of organisational, parental and learner consent were complemented with continuous reflection and concern on my part that no harm was done and an ethic of care was practised. The word ‘consent’ derives from *con* and *sense* which interestingly sounds like

sensing with. A fuller interpretation of consent then involves clear and honest explanations but also sensing with others into the nature of a relationship or a dialogue.

An important consideration is that the power relationships between myself, an adult, and my participants, children and youth, remained unequal. This power imbalance was intensified through the relation between race and class.

Consent is tricky in that although I obtained formal consent trails, it is hard to know whether the learners felt they could say “no”. This reservation is also in light of the fact that they already exist in contexts in which they do not do things voluntarily, school is highly regulated and their activities are not always optional. It is in this institutional context that the adult-learner power relation is established.

However, due to the nature of open-ended inquiry and the arts-based modes there was space for voluntary participation even within the sessions: learners could refuse to draw, refuse to write, and they could ask challenging questions about why we were doing particular activities.

3.10.1 South African Education Project (SAEP): Case Study 1

3.10.1.1 Parents’ informed consent and public engagement

The first case study had some consent-related challenges due to a larger than planned and changeable group of learners. Some learners who participated did not have parental consent. This was in part because some learners who participate in the programme do not return their letters and also due to the fact that some learners participated who were not initially registered. These learners would not have received parental consent forms prior to the workshop on the day. Neither I nor the organisation deemed it ethical to send these children away.

I have dealt with this through a reduction in material for analysis excluding artefacts from those learners who have incomplete consent. The video footage is always of a group of learners and excluding scenes with learners who did not submit parental consent was difficult. According to the principle of public engagement in research ethics, as there was no expectation of privacy by those being videoed (we were located in the school hall or in the school quad), the harm from the use of video was considered negligible especially given that the video is not shared publicly. I have used drawings and pieces of writing that I can trace

directly to learners who have given, or been given, full consent and these have been the basis of analysis along with my reflective notes from each workshop.

3.10.1.2 Learner informed consent process

In my reading into ethical consent with children and in-field discussions with the programme educators, it was decided that written informed consent would not be meaningful due to the low literacy levels and we would do it verbally together with the educators. Despite my verbal explanation and request for consent, it was a challenge to know whether the learners felt the space and right to say 'no'. Docket and Perry (2011, p. 231) discuss the issue of informed consent in participatory research with children and propose the idea of 'assent': "defined as a relational process whereby children's actions and adult responses taken together, reflect children's participation decisions". My process of learner-informed consent (and their assent) went as follows.

I observed three sessions prior to my intervention. The educators introduced me and at the end of each of these initial sessions, I played a five-minute rain making game with the learners. The intention was to give them a practical sense of the activities we would be doing together. I then introduced myself as a researcher, informed them of what I was researching and asked if they would like to join me. *"1. A researcher from the university who would like to do some art activities relating to water. 2. This is for my research in which I am trying to understand about how we learn about water. 3. You will have the chance to learn and share your questions and ideas about water. Would you like to join me in that?"* This was translated by one of the educators. And the response was affirmative.

For each of the four sessions which I facilitated, the arts-based response was recorded with a video camera, with the footage saved in a secure location. Before turning the camera on, I gave the same introduction, reminding them that I was a researcher who wanted to do activities with them in order to understand how we learn about water. Would they mind if I turned the camera on? I did not receive an objection to this.

The sense that no children were objecting was disconcerting for me; did it mean that they consented or was it simply that they did not feel comfortable to object? Reverting back to the process/principle of assent, I began to observe ways in which the learners resisted participation in their own ways. Often times I had 'to do a dance' to grab their attention in order to deliver an instruction. The nature of the art-activities that were facilitated provided a

way for the learners to refuse participation. For example, if learners did not want to do a drawing, were uninterested in the theatre skit, or were uninterested in writing a few sentences, they did not participate or participated without enthusiasm. This is a phenomenon Dockett and Perry (2005, p. 87) remark on in the context of using children's drawings in research: that, in contrast to interview methods, children have greater control over whether or not to participate at all as well as the form of the final outcome. I see this as a way in which they used their power to express non-interest refusal to participate in the process. That said, the majority of the learners were eager and willing to participate in these activities.

The fifth, and final session, was planned as a reflection and feedback session. In this session I wanted to give a final opportunity for informed consent after completing the activities. Here, the learners, the educators, and I would watch the videos and reflect on what we had done. I had hoped to work with smaller groups, but the educators insisted that we would have to work with the whole group at the same time due to time constraints. This was a recurrent challenge in this case study: working with more learners than I had originally planned. I saw this challenge as an insistence on the part of the educators on the common good, and I respected this as an ethical move, continuing in the spirit of the programme which sought to treat all learners equally. My request to work with a small number of learners, and obtain some intimate feedback on the process, would not have been good for the group dynamics. We thus made simple feedback forms with three questions corresponding to each session: "I liked", "I didn't like" "I learned". They finished these sentences for each video clip pertaining to each of the four sessions.

When we finished watching the video clips, I made a final request for their permission to use these videos, drawings and writing pieces for my work at the university where I was trying to understand how we learn about water through arts-based modes. "Would they mind if I used these video clips in my work?" If they were happy with this proposal, I asked them to make a tick at the top of their form. If they were not, I asked them to make a cross. (I have video footage of my asking this and it being translated to the learners). This was translated.

I have a spreadsheet of the registered learners in this programme and on it I recorded whether I had their and their parents' consent and their tick from the final session. I have carefully divided out and reduced the data that was available for me to use on the basis of this tracing of consent. In this way I have taken precautions to allow for the fact that some learners were part of the intervention but not part of the research due to absence of their consent.

3.10.1.3 Precautionary measures and low risk of harm

The context of this research had measures in place should a learner come to any harm. Firstly, we were in the school grounds and the learners did not travel anywhere to participate. Prior to the workshops I learned that the organisation running the programme had a social worker available should there be any issues arising with any learner. Throughout the process I was guided by continuous conversations with the programme organisers and educators as well as my reading on research and education with children.

The intervention of my research took place in a final 15 to 20 minute slot facilitated together with the educators on the programme. The learners continued with their routine of reading practice and therefore the research process did not jeopardise regular activities significantly. The organisation was also interested in the arts-activities as a method of complementing their reading programme. The activities were designed and facilitated to be educational, expressive and enjoyable and therefore did not pose a risk to the learners. My analysis of this case study does not single out learners by name but discusses the relational generation of the arts products for what they can tell us about children's understandings, imaginings, and reactions to the issue of water.

As a researcher I have gained some important insights as to how to manage ethical engagements with children. I am confident that the context of the interventions and my actions as a researcher remained true to the principles of 'do no harm', 'consent' and 'an ethics of care'.

3.10.2 Beyond Expectations Environmental Project: Case Study 2

I met with the organisation and shared letters to inform the learners and their parents. The learners responded to the invitation by meeting me at the local library. Letters came in at the first workshop, signed by parents and learners.

At the sixth workshop my attention was brought to an ethical concern. I decided to ask the learners whether they wanted to listen to a podcast or end slightly early. The co-educator told me that the learners will never say no to me which was equivalent to saying they would like to end early. I took this as an indication that I was putting them in a difficult position by giving them the choice. This brought to the fore a number of issues. Did these learners feel forced to attend my workshops? Was giving them choice putting them in a place of

discomfort? Did open-ended inquiry workshops put these learners in a difficult position as they were given so many moments at which to choose and thus ‘say no’ to one option.

In an interview with one of the learners after our workshops we discussed this element of upbringing. She also said to me that there is a way in which they will never ‘say no’ to an adult but often they will do what they want anyway. I felt this with my workshops. There were other ways in which the learners could express their interest or will to be at the sessions. Six out of the 12 learners were committed while the other six came and went.

3.11 Chapter conclusion

This chapter has situated my methodological orientation and distinguished the work of this PhD in terms of the educator and the pedagogista. The relationship between these two roles, the actor and the reflector gave rise to the reflexive educational praxis of interest in this study. The second half of the chapter charted the journey into the ‘field’, into text and into writing, through a discussion of access, positionality, facilitating water inquiries, processes of analysis, integrity and trustworthiness of the work and a consolidation of tracing ethical consent with the learners.

Chapter 4: Grappling with critical education: Origin, purpose and return

4.1 The playing field: Locating environmental education

A study of water pedagogy is nested within the field of environmental education research. Conceptualising water pedagogies requires insight into what it is we are navigating when we attempt to educate about our social and ecological interconnected worlds, the project of environmental education. Gaining a sensibility of the moving parts from which environmental education is constituted is important for opening its complexities and attuning to how its transformative potential might be harnessed or conservative renditions reproduced. This section opens up the field of play so to speak in which the theoretical work of this PhD is located.

In its ideal form environmental education is shaped by the “absenting of harmful culture-nature or eco-cultural relations in modernity” (Lotz-Sisitka, 2016b, p. 319). The challenge of environmental education is captured in an articulation of its central matter of concern, that is complex environmental issues:

[A]bsenting absences in environmental education is a challenging affair, as environmental issues have ontological depth; they are shaped by interacting social-ecological generative mechanisms that need to be engaged in and through environmental education praxis, often in combination with other structural interventions. (Lotz-Sisitka, 2016b, p. 320)

Education praxis spoken of here is itself one of the social-ecological generative mechanisms shaping environmental issues. Thus the concerns of environmental education are also captured in the field of political ecology of education which considers the mediation of ‘pedagogical processes’ and ‘knowledge systems’ in terms of how power is distributed in ‘political and cultural entities’. And in turn, we need to consider how these affect “access and control to natural resources”, “cultural landscapes” and conceptualisations of “nature-society relationships” (Meek and Lloro-Bidart, 2017, p. 217). Thus, education itself has impacts upon the ways we conceive of and distribute power and resources. So, while environmental education has as its focus, depth and complex social-ecological issues, it is itself entangled in these which calls for a concern for how it is used in the name of producing a better world.

Environmental education, with a concern for relations between the social and ecological, will always include an environmentalism which names the composite of cultural politics that informs how we imagine in our interconnection with others and the ecology in the world. Martinez-Alier (2002) named three environmentalisms and in doing so gave a language for ‘environmentalism of the poor’, a critical contribution towards social and cognitive justice departure points for environmental movements located in solidarity with people experiencing the most significant environmental costs. While naming environmentalisms may be useful, environmentalisms are not so clearly distinguishable; they have ‘contingent beginnings’ and are made in expansion rather than unity. It is ‘conflict and struggle’ that should replace any conceptualisations of environmentalisms as essentialised “nature, science or the earth” (Gonzalez-Gaudiano and Buenfil-Burgos, 2009, p. 102).

Educational cultures, in which environmental education emerges, struggle to reflect the plurality of environmentalisms that exist. In South Africa there is no ‘master environmentalism’ but rather “an inchoate sum of multiple, diverse, uncoordinated struggles and organizations” (Cock, 2004, p. 1). Constituted as such, it is possible to see how in South Africa, environmentalisms reflect the broader polarisation but also the multiplicity of our society. Despite this enormous potential for reinventing environmentalisms that resonate with the cultural politics of the South African public, educational institutions are at risk of taking on particular northern oriented environmentalisms, such as the one Rosenberg (2004, p. 153) referred to as the “northern individualist turn”.

As illustrated, environmentalisms interrelate with theories of education which always include social theories which might, for instance, articulate the relationship between learning and action, and individuals and social structures (Blenkinsop and Egan, 2009). This relationship can be seen by the responsabilisation of youth in the ‘age of risk’ (Kelly, 2001). Such simplistic assumptions about the relationship between society and education can be usefully disrupted by Biesta (2007b) who explained, in the context of democratic education, that one cannot educate for democracy when the society is not democratic; similarly, in a society that is actively working to devastate our natural systems, simplistic education about a better socio-ecological relationship will not bring about environmental restoration.

The complexity that I have opened up here of course acknowledges the notion that “all education is environmental education. “By what is included or excluded we teach the young that they are part of , or apart from, the natural world” (Orr, 2004, as cited in Bigelow and

Swinehart, 2014, p. 33). However, we need ways to focus well intentioned directives in environmental education because, if we frame environmental education superficially as being everything, it can be co-opted by “northern individualising turns”, and thus eliminates this progressive contribution of focusing on relationships (Rosenberg, 2004, p. 153).

Arising in the context of these potential pitfalls, recent scholarship on environmental education, draws on decolonial theory, recent articulations of critical theory and suggests the following as guides towards attuning to the implicit and cultivating the explicit intentions of environmental education practice.

Lotz-Sisitka (2016b) made an important point about the pedagogical orientations required for environmental education and that “the knowledge and new creative practices” necessary for expanding environmental education “may need to be ‘worked out’ in and through emergent forms of praxis”. She concluded,

We cannot therefore predetermine the lesson or the learning process; we need to open it up for discovery, transition and for co-creation, for mediation. (2016b, p. 325)

This is a comment on the spirit, modalities and sensibilities of pedagogy that is necessary for an expansive form of environmental education. It requires that environmental educators develop reflective capacities to observe mechanisms at play and cultivate emergence in their educational practice. This involves making space in education so that educator practice becomes governed by more than “political inconsistency and immediatism”(Gonzalez-Gaudio and Buenfil-Burgos, 2009). Instead, educators might build reflexive capacity to reflect upon and find ways to move through the unique challenges every educational encounter will bring. These encounters will include the following.

- They will bring the struggle against epistemological orthodoxy – that there is only one dominant way of knowing the world.
- Encounters will bring science knowledge ‘face to face’ with local, indigenous knowledges as well as social movement and activist knowledges. This meeting also relates to the vast and wonderful plurality of environmentalisms (understood as complex above) in South Africa and the world. (Lotz-Sisitka, 2016b, p. 329)
- They may involve embracing the structural level of change as complementary, not oppositional, moving to more individual acts such as saving water and picking up

litter, or to lovingly engage a non-reified notion of structure. (Lotz-Sisitka, 2016b, p. 322)

- Encounters may locate agency somewhere between voluntarism and determinism (Lotz-Sisitka, 2016b, p. 322), hereby working out what is possible in context with the resources and agency available.

Thus, environmental education takes place both implicitly and explicitly and building a reflective practice involves an attentiveness to dogma, interdisciplinarity, multiple nested scales and assumptions about individual and collective power.

Being aware of the relationships and theories invoked in practices of environmental education relies upon reflexive capacities that can facilitate emergence and working out. This process can be assisted by concern for epistemological orthodoxy, bringing other knowledges in, embracing scales and structure, and locating agency in real understandings and practices of the world. These might help us to embrace the ways in which environmental education is concerned with all that is in the world, and yet needs to bring focus to the intentional work of “absenting of harmful culture-nature or eco-cultural relations in modernity” (Lotz-Sisitka, 2016b, p. 319).

From describing and opening up environmental education I move to an exploration of critical pedagogy. Critical pedagogy has long included or emerged from a critical analysis of capitalism, and in particular racial capitalism (Lange, 2012; Carpenter and Mojab, 2017). Within this positioning or framing, environmental destruction is seen as a collective, systematic externality of extractive racial capitalism. Our individual and collective consciousnesses are sites from which to build emergent or reproductive power and re-make the world. Critical pedagogy has yet to merge with functional ecological literacies that are needed to make stronger arguments about ecological crises (Kellner and Kneller, 2010). It is the transformative and change oriented impulse of critical education praxis that this study engages with. Before this, however, I outline three descriptions of the depth crisis that lies behind our social and ecological crisis.

4.2 Understanding and responding to crisis in educational theories

This section offers three entry points into the structures and mechanisms of colonial capitalism and explains why they are relevant to the project of education. These are resonant with the ‘ontological depth’ Lotz-Sisitka (2016b) attributed to environmental issues, the ways in which what appears to be needs to be interrogated for how it is constituted.

Understanding the mechanisms behind the increasingly obvious global crisis is important for conceptualising a life affirming responsive pedagogy. Indeed, the conceptualisation of problems or what is often a taken for granted common understanding of the root cause, can lead to several problematic ‘solutions’ or exploitations, and therefore further divisions in a polarised world. This section probes how the crisis system emerged in our constellational reality (Bhaskar, 2016) and how we might engage pedagogy in a way that is responsive to this. This question leads us to some analytical tools that can serve to direct change-oriented action including education.

This understanding of the mechanisms is part of what Bhaskar (2016) argued in his philosophy of critical realism: that we need to make explicit and review our theory of what is real – “ontology”. When Bhaskar began his inquiry, the theory of what was real “presupposed that the world was without structure or depth, difference of context, let alone the possibility of emergence, change and development”. An important conclusion of Bhaskar’s philosophy is the “theorem of irreducibility of structures, mechanisms and the like to patterns of events (or the domain of the real to that of the actual) and of patterns of events to our experience (or of the domain of the actual to the domain of the empirical)” (Bhaskar, 2016, p. 7). This is a reality that is structured and differentiated.

Then from these we have emergence, which is the unfolding of things unilaterally dependent upon levels below but with the possibility that higher order levels might impact lower order levels (such as climate change where human activity has impacted the structure of the atmosphere) (Bhaskar, 2016, p. 32). With the concept of emergence explaining the relationship between structures, mechanisms and events, constellationality then names the notion that parts of the real are contained in other parts of the real. The example Bhaskar uses in his explanation is that the study of knowledge is constellationally contained in the realm of ontology – the study of reality (Bhaskar, 2016, pp. 92–93).

This theoretical analysis sets the scene for understanding our reality as influenced by structures that we are not necessarily able to witness in the same way as events are. It also implies that we cannot become dogmatic about our analysis or rely on the fact that our knowledge captures our ever-changing realities, always and entirely. However, building knowledge about phenomena in our world is part of living and acting in it.

4.2.1 *Demi-reality*

Bhaskar developed the concept of demi-reality which is quite useful in understanding the way in which false ideas about our reality are firstly, real and secondly, have an impact or in Bhaskar's words are 'causally efficacious' (that is, they have consequence in the world). They matter in their falseness ... demi-reality is 'constellationally' related to the domain of the real (inclusive of all other domains) and emerges contradictorily from the possibility that the real is *under, in and against* the actual as it is experienced (Bhaskar, 2016, p. 139).

How is demi-reality established and maintained? This question is like the question of stasis: How is it that dominance, or power over false ideas and their impact, is maintained in the world? The common stasis that "There Is No Alternative" (TINA) is maintained through a theory-practice contradiction. One example is that it is only possible to argue that the industrial capitalist system is the only option because it is supported by the invisible work, where women are ironing shirts and looking after children. If this work, and the resultant suffering from inequality was factored into the argument, capitalism could not be similarly argued as efficient.

This demi-reality is maintained by the domain of duality: "It is a 'meshwork of concatenated TINA compromise formations' in which categorical error is compounded on categorical error as attempts are made to patch up our theory/practice ensembles in the face of the inexorability of ontology and alethic truth" (Bhaskar, 2016, p. 156). Demi-reality is established in particular epistemological modes where erroneous categories make up more erroneous categories. These mutually reinforcing erroneous categories can be understood in part as the dominance of duality in social sciences where categories, identities and differences are reified rather than the relationality, and more generally reified over the nature of emergence in open systems.

How can demi-reality be responded to? In the light (or dark) of demi-reality there is a new/clarified way of seeing the critical education project underlaboured by critical realism as Re-enchantment: "Re-enchantment means **to see the world once again through the smog of the demi-real, as it is always already – intrinsically valuable and meaningful – and to relate to it as such in our practices**" (Bhaskar, 2016, p. 169). This sentence reveals re-enchantment as a multi-dimensional process. Firstly, it is about seeing the world. Secondly, it is about seeing the world "through the smog", which implies that it is not without the smog that we see it. The smog does not dissipate magically, nor is it blown away by an educator,

but the smog is seen for its obscuring effects. But what is it that we see through the smog? Thankfully, the answer is hopeful. Demi-reality conceals the way in which the crisis system is underpinned by continual acts of love and peace (Bhaskar, 2016, p. 171). Thus, it hides the foundational operations of good as well as the operations of bad. This echoes the notion that the demi-reality is “a meshwork of concatenated TINA compromise formations”. In this seeing of the world through the smog, we see what is “valuable and meaningful” – we do not dehumanise what we see. Finally, we relate to what we have seen “once again” as “valuable and meaningful” “in our practices” (2016, p. 169). Importantly, seeing through the smog to the love and peace that is foundational to our existence is as important as seeing what is oppressive and obstructive to our flourishing.

It is seeing, relating the smog and its effects and what is meaningful and valuable beyond it and embodying that in practice, that is a re-enchantment. With its multiple dimensions articulated in the description above, re-enchantment grapples with a number of contradictions emerging within the critical education tradition: contradictions that emerge, as Bhaskar has shown, in the absence of clarifying ontology behind a theory.

4.2.2 *Abstraction*

Demi-reality is echoed in Carpenter and Mojab’s (2017) Marxist feminist theorising of the process of ‘abstraction’. Abstraction is a key process in Marxist theory and serves to explain an underlying mechanism of capitalism which is manifest through the relationship between ideas and human experience in an historical material context. It is similar to alienation (a process whereby we are separated from our sense of becoming and in relation with the four planes, which both Lange (2012) and Bhaskar (2016, p. 72) noted constitute the system of capitalism) although ‘abstraction’ refers more specifically to the relationship between sense experience of the material and ideas which contribute to alienation.

In their explanation of abstraction, Carpenter and Mojab begin by inviting a reflection on breakfast as a way of accessing processes of abstraction. This is a grounded and tangible basis from which one can start to think about *how we think* in our world – which is otherwise quite an abstract idea. It is common today that there is a distance between the experience of breakfast, and our ability to reflect upon the fullness of relations and processes that materialise one’s breakfast, and are in one’s consciousness. The *distance* between our experience and the full knowledge of our breakfast – historically materially, socially... is

representative of both “a mode of thinking” which disconnects from “a mode of life” (Carpenter and Mojab, 2017, p. 16).

This distance is like the demi-reality smog, that is against the necessities of life itself; it is against the interdependency with others and our surrounds. This relates to the TINA compromise which hides the acts of good underpinning the bad, or obscures the real reasons for our life and survival.

Therefore, our use of the concept of abstraction is to indicate the ripping apart of social forms that are necessarily, dialectically related. This process produces a fragmented compartmentalised disembodied ontology and epistemology, hence the violence. Marx attributes to this process as an essential characteristic of capitalism, the challenge for revolutionary feminist education is the task of contending with the complexity of abstraction in which we live. (Carpenter and Mojab, 2017, p. 8)

In a way, they are explaining how anti-capitalism must struggle in the realm of ideas as well as the material and active realms.

Capitalism produces an experiential reality of a fragmented social life. It is impossible for any given individual to experience, for themselves in real time, the complexity or entirety of these relations.

Therefore, we cannot know the world simply through sense experience. So, if our sense experience is both a necessary starting point and insufficient to knowing the world, how do we engage experience towards knowing the world better? This again points to the relation between ideas and the material.

This way of thinking, Marx’s theory of consciousness in the time of capitalism and its relationship to historical materialism, is important background to the critical education project. However, Marx’s framework for inquiry (not the deterministic economic theories that have been developed in Marxist scholarship) needs to be expanded through anti-racism and feminist theoretical contributions. “We know Marx but Marx does not know us” (De Sousa Santos, 2007). Since Marx, the unravelling and expansion of the capitalist project/modernity project has been understood more deeply by what Andreotti (2011) called ‘theories of institutional suffering’, theories developed by postcolonial scholars that can bring into focus differential world experience of the global South and as they do so, highlight the geopolitics of knowledge. While Marx laid the foundation for a method of inquiry, his theory

can benefit from contact with intellectual struggles of the global South that more rigorously tackle colonial intrusions and their merge with global neoliberal capitalism and patriarchy (De Sousa Santos, 2014).

4.2.3 *Abyssal lines*

De Sousa Santos brought the idea of ‘abyssal lines’ to this conversation about the geopolitical nature of the world to which education for social change must respond. He introduced the infinite diversity within but also the universal experience of what defines the Global South as it is positioned in the current context of global capitalism.

The abyssal line is an invisible but efficacious line defined by two sides: “one side in an invisible abyss [*the other side*], and the other side, the norm [*This side of the line*]” (De Sousa Santos, 2007, p. 2 my addition in italics).

The sides are interconnected through ‘distinctions’ which in some ways mirror Bhaskar’s notion of duality upon which demi-reality rests. *This* side is characterised by the distinctions between regulation and emancipation. I understand this to mean, through regulating, such as bureaucracy, we develop a ‘free’ ‘emancipated’ society. The so-called free societies and their organisational distinction between regulation and emancipation are premised upon the distinction on *the other side of the line* between violence and appropriation. We know that in the name of certain emancipation-based-upon-regulation ideas, much violence (where violence is understood as involving “physical, material, cultural, and human destruction” (De Sousa Santos, 2007, p. 8)) has occurred when there is resistance to the appropriation (“assimilation or incorporation” (2007, p. 8)) of emancipation as regulation as the way forward. I think each distinction is itself a global abyssal line where appropriation (societies’ co-option into the regulation emancipation but always only partial acceptance) is premised upon the invisible violence, and emancipation is premised upon the invisible regulation. The regulation/emancipation line is premised upon the invisibility of the appropriation/violence line. They are holding each other up with concatenated TINA compromises.

Importantly, these distinctions organising life on either side of the line are “grounded upon the invisibility of the distinction between” each side of the line but can be understood through quality and logics of social organisation (De Sousa Santos, 2007, p. 2). So, *if you do not assimilate, you will face violent destruction, if you are not willing to be regulated you will not enjoy the benefits of freedom*. Some people in the world are invited automatically into the

emancipation regulation distinction, others receive the invitation only by being appropriated into this logic of social organisation.

This line should not be understood as a homogenising heuristic; it is rather the naming of a structural relationship (emerging from events and feeding back into events) that has established itself violently in the world today. It articulates something beyond Marx's framework which did not extend beyond class and provide a basis for engaging decoloniality, anti-racism and feminism as bound up in the system of capitalism.

Abyssal lines across space: It is my understanding that the abyssal line applies at multiple scales. As De Sousa Santos (2007) explained, those people on the *other side* of the abyssal line include those in 'developing' countries but also factory workers, people living in precarious conditions in so-called first world countries. In a way, the positioning is dependent upon what experience the world has shaped for you rather than being geographically defined.

Abyssal lines across time: These global abyssal lines have been shaken up and shifted but they are moving in "the same direction" fixed in relation to each other. Understanding these abyssal lines allows us to see how structures persist; for example, the shift from official colonialism saw the physical cartographies become metaphorical – the impact upon those on the other side of the line and the relations held fast. The second tectonic shift of the abyssal lines is happening in the world today, while the lines are still shifting in fixed position in relation to each other keeping the oppressive relations in place on either side of them, there is a larger number of people whose experiences are shaped on the other side of the line. It is in the infinite diversity of the other side of the line where one finds the potential for change.

De Sousa Santos extended this analysis to how this abyssal line structure links with knowledge in the world which brings us back to the point of this section. For example, hegemonic western science has worked with the conditions of *this* side of the line while premised upon the invisibility of an infinite number of other knowledges. The abyssal nature of the world has produced abyssal thinking and abyssal thinking reproduces a world conceptualised by abyssal characterisation and essentialisation, echoing demi-reality duality. A result that I read from this is that we do not adequately understand the world we are living if we are only given the tools of western science which holds fast one frame as the only legitimate condition of knowing, or reality, on which to base our knowing. Limited to this side of the line, we are deeply ignorant of the world and its diversity of experience.

The inexhaustible diversity of the world provides a new set of conditions upon which we might come to understand it better, but this cannot be done with the abyssal thinking. It is with a mode of thinking and practice that learns to re-see the abyssal lines at work in our world that we might find the source of resistance and change led by the subaltern who bring particular sensibilities such as an embrace of “incompleteness without aiming at completeness” (De Sousa Santos, 2007, p. 10).

Post abyssal thinking is not an argument to discard western science but a demand to use it “counter hegemonically”. A counter hegemonic guiding principle is a “preference to knowledge that guarantees the highest form of participation”. Or “knowledge-as-intervention in reality” is the measure of realism, not “knowledge-as-a-representation-of-reality”. The credibility of cognitive construction is “measured by the type of intervention in the world that it affords or prevents” (De Sousa Santos, 2007, p. 13). Post-abyssal thinking amounts to the significant task of “how can we fight against the abyssal lines using conceptual and political instruments that don’t reproduce them?” This is a generative spirit and space in which pedagogy might work.

This contribution brings an anti-racist and feminist lens to Marxist inquiry called for by Carpenter and Mojab (2017). De Sousa Santos distanced himself from traditional Marxism asking for a post-abyssal conception of Marxism, that “... (in itself, a good exemplar of abyssal thinking) will claim that the emancipation of workers must be fought for in conjunction with the emancipation of all the discardable populations of the Global South, which are oppressed but not directly exploited by global capitalism” (De Sousa Santos, 2007, p. 11). Abyssal lines remind us of how experiences, knowledges and people of the world are invisibilised and further exploited towards the ends of global capitalism’s ‘latest incarnation’, neoliberal globalisation.

4.2.4 Summary

This subsection visited three modes of inquiry into the crisis of the world today, and presented a conceptualisation of stratified and structured reality to which education must respond. The world of ideas includes wrong ideas (demi-reality), and wrong ideas are maintained by particular frames of thought that exist in our cultures. Re-enchantment involves a dual process of seeing firstly the smog and secondly, the world (the smog being a part of the world).

Secondly, abstraction describes a particular relation between our lived experience and our ideas that work to maintain the invisibility of capitalist relations. The task of education is to understand how to take our lived experience beyond its limitation to know the relational world and lessen the distance between our thinking and our sense experience.

Finally, expanding Marxist thinking to understanding the global abyssal lines highlights the expanse of diversity that has gone unacknowledged as a way of living, being and knowing in the world. These lines characterise the limitations of western hegemonic knowledge systems as they are premised on the one side of the line only, and this therefore opens up a new space to think about knowledge production and practice in the world.

As such, we begin to clarify the workings of capitalism, racial capitalism, colonialism in ideas and in the material, with frames of reference for what is being obscured and for how the workings of colonial patriarchal capitalism maintain difficult relations in the world. It is through these analytical frames that we can begin to understand the extent of the political and intersectional struggle for socio-ecological justice education.

4.3 Genealogy of critical education

The philosophy of Paulo Freire is a root of both the ecopedagogy movement and the critical and transformative education traditions. A genealogy of Freire's philosophy (1970, 1972) situates it as a political intervention in the educational thinking of its time establishing the way in which liberation and domination were produced in educational relations.

Drawing on Marx, Freire developed a southern perspective and a pedagogical arm to Marxism. Tracing power relations in educational encounters embraces the ontological position that the world is continuously in process (Kress and Lake, 2013; Noddings, 2013). Humans, as part of this world, contribute to shaping this world in their everyday activities, and thus hold agency (Macrine and Shor, 2009, pp. 121–122); however, it is also true that they exist amidst social relations that condition but do not have to determine our realities (Carpenter and Mojab, 2017). It is this understanding of learning within and for a world that is in flux, rather than for a world that already exists as fixed, that animates the transformative potential of critical pedagogy.

Freire's seminal work *Pedagogy of the Oppressed* (1972) drew significantly on the thinking of Marx. Lake and Kress (2013) argue that Freire developed the pedagogical arm of Marx's thinking. As he did this, he brought a southern perspective to Marx's thinking, thus

developing an expansive critique (Morrow, 2013, p. 75). It is of critical relevance to thinking about Freire's ideas in Africa to note that when Freire was near completion of his book, he read Fanon's *Wretched of the Earth* (1963), and then re-wrote *Pedagogy of the Oppressed* (Freire and Horton, 1990, p. 36). This connects Freire to the influence of thinkers who call themselves 'Africana Critical Theorists' (Rabaka, 2010). This genealogy and tracing of Freire's work is interesting because while he had significant western influences, his educational work was generated in the context of the South and was influenced by decolonial thought.

Thus, influenced by decolonial thinkers such as Fanon, Freire's ideas stemmed from a range of theoretical roots, and in the context of South America, and thereafter, Freire's thinking travelled beyond his life. For example, despite Freire's work being taken up within educational theory under the term *critical pedagogy*, or *transformative learning*, neither terms were explicitly used by Freire. Freire's *Pedagogy of the Oppressed* used 'liberatory', 'radical' and 'humanising' as prefixes to pedagogy. The origin of the term 'critical pedagogy' is interesting in terms of teacher-scholar-activist strategy. Giroux, in an interview with Joe Kincheloe (2008), noted that he could not remember who had introduced the term, and its emergence is multiple and obscure. But an intentional adoption of the term arose from a need for an alternative to 'radical pedagogy', which they noted had an exclusionary effect on most educators in the context of North America. Thus, critical pedagogy and critical education are the terms that have remained and been generative for this area of scholarship and its infiltration into mainstream education systems. For example, the term has been adopted by South African scholars such Cooper (2017), Gillespie (2012) and Perumal (2016).

Thus, a genealogy of Freire's ideas situates education and educational theory as a praxis that responds to obstacles to freedom, also termed the conditions of oppression. Critically, in his own practice of self-critique and written dialogue with leaders of newly independent Guinea Bissau, he insisted that his ideas should always be reinvented in each context (Freire, 2016). It is from these ideas that in the early 90s, the notion of ecopedagogy emerged in conversation with Freire and his scholarly peers.

I turn now to a critical review of critical education practice drawing on the literature to outline in what ways critical education works as a life affirming resistance to capitalism, and the ways in which it has fallen short of this task, leading to a fuller understanding of its initial claims/common renditions. I shift away from the term 'critical pedagogy' and instead

embrace ‘critical education’ as a term that might be more open to practitioners of education. I end with a discussion of what it means to embody critique as the full fruition of critical education practice.

4.4 Discovering dialectically and diving deeper into critical education praxis

This section traces my ontological shift in understanding the critical education project as background and an entry point to a life affirming pedagogy. I structure this shift with Bhaskar’s epistemological dialectic. Dialectical critical realism has been developed by Bhaskar (Bhaskar, 2008; Norrie, 2010), making an important contribution for thinking about the work of thinking! It has a range of both theoretical and practical relevance linking epistemological and ontological conceptions of agency, connecting structure and causation to the nature of change in a dynamic world, and to the relationship between the human being and nature on the one hand, and the human being and history on the other. It can be described by the following ‘moves’ that are distinct in quality (elaborated on below) as a way of tracing the dimensions of change – an analysis of change (Scott and Bhaskar, 2015). In this section I draw on these theoretical constructs to understand the movement in thinking relevant to the critical education project.

- *1 M: the First Moment* signifies something finished, behind us, determinate – a product: transfactual (structural) causality, pertaining to NON-IDENTITY; first indicates founding.
- *2E: the Second Edge* speaks of the point of transition or becoming; the exercise of causal powers in rhythmic (processual) causality; pertaining to NEGATIVITY and ABSENCE.
- *3L: the third Level* announces an emergent whole with its own specific determinations, capable of reacting back on the materials from which it is formed – process-in-product: holistic causality, pertaining to TOTALITY.
- *4D: the fourth Dimension* singles out a geo-historically recent form of causality – product- in-process: human intentional causality, transformative AGENCY or praxis.

(Bhaskar, 2008, pp. xiii-xiv)

This exploration/shift is based on my reading of the literature that critiques and clarifies various dimensions of critical education or what it means “to learn to read the world in order to change it” (Cooper and Lockett, 2017, p. 258). As I go, I represent this as a shift in familiar images – from the cycle of praxis action-reflection, uncovering its critiques and

incompleteness through to a recovery of learning in terms of Bhaskar’s dialectic which has been adapted to learning. Inspired by the idea that we need to ‘embody critique’, I present how we might think about what constitutes a critical learning process and then return to a repair of learning.

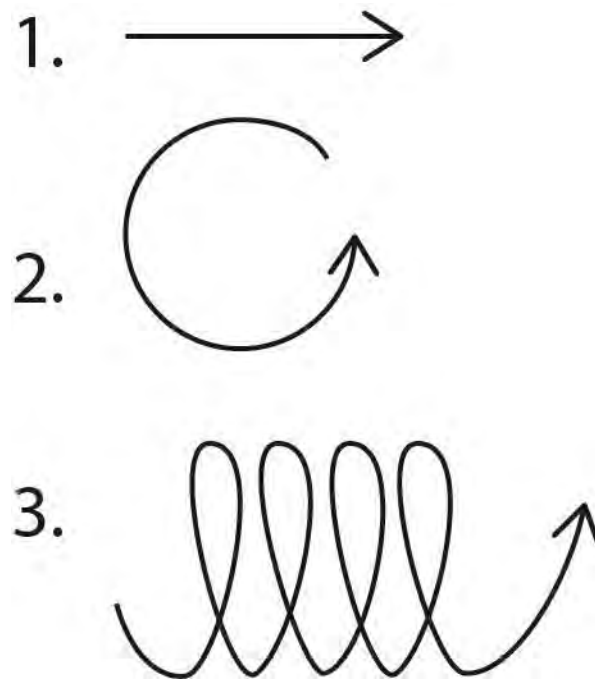


Figure 2: Graphical representation of critical education processes, neither linear nor circular but both

4.4.1 1M: what is the learning that enables change and transformation?

An action learning circle or the cycle of praxis is an interesting place to begin to unpack the praxis of critical pedagogy. It does not encompass it all, but it is a crucial entry point as it is commonly found in spaces of critical/ transformative education (Michelson, 2015). The action learning cycle (represented in the second shape in Figure 2 above) is often used as an interpretation of the work of Paulo Freire. It is an important and helpful conceptual tool in many practices of education as it moves away from the kind of transmission model which might be conceptualised as a straight arrow (first arrow shown in Figure 2 above). However, there is a danger that the cycle of praxis can become depoliticised and interpreted in ways that are contradictory to the transformative potential of its original intentions. This danger was confirmed by O’Donoghue’s (2018) critical review of critical pedagogy in environmental education: what should be a contextualised engagement, becomes a “plan-act-reflect” which is abstracted in the form of a process. Keeping in mind the aim of understanding learning in

the context of global capitalism, I draw on developments in dialectical thinking to expand the meaning and thinking behind the praxis that this cycle diagram represents, towards a way of thinking about critical education praxis. This is a basis for reflecting upon the empirical work in this PhD.

4.4.2 2E: How is it that critical education attempts have produced new contradictions?

What inspired me to learn more about the transformative possibilities of critical education was a critique of a branch of critical education known as transformative learning (Michelson, 2015). Origins of transformative learning theory and the critique thereof originate from scholarship in America, specifically of Kolb (1984) and Mezirow (1978) (Michelson, 2015; John, 2016). The area of transformative learning has been expanded by suggestions that it requires re-inventing outside of westernised contexts (John, 2016) or that “transformative learning theory is stagnating and needs to continue transforming itself” (Lange, 2018, p. 282). In an article which questions the existence of the phenomenon of transformative learning, Newman (2012, p. 18) writes that “the word [transformative] is being leeched of meaning through over-use, or is taking on a new existence associated with its original meaning [attached to grounded traditions of education in social movements]”. Taking note of these cautions, I stay with the term “transformative” in this thesis but couched in a critical discussion of how it is shaped by a broader politics.

The broader politics and the critique that drew me further into the debates about this area of educational scholarship had to do with how experience was conceptualised in relation to the other elements of learning, the relational encounter. The critique pointed out that in particular interpretations of scholarship on transformative learning, experience is treated as ‘raw material’ that would be reflected upon (Michelson, 2015). To add to this, the way in which experience is brought into learning was determined by particular rationalities – methods of reasoning – located in the particular cultures of the academy which Michelson decried as ‘abstract masculine’ versions of universality. By this was meant that experience was taken out of the context in which it was produced, and understood as being something from which the individual might learn to function better in the world, rather than a site of transgression and resistance in the way knowledge and power interact to shift the world. The treatment of experience became infused into a model of learning in order to exist in the world instead of a source for learning about the world in order to change it. I now know that Freire is positioned slightly differently (Section 3.3) to the scholarship on transformative learning as it is arising

in the US but they have in common an absence of feminist politics of experience which transgresses the hegemony of educational processes. So, here was an important contradiction in the praxis of critical education – that there are ways in which it can be used which reinforce the hegemony it is trying to tackle (Ellsworth, 1989).

In part, this is a critique of the chronological relation between experience and reflection. Of course, we learn and reflect with time but as we do that, we are also experiencing beings and whenever we are experiencing, we are also reflecting and interpreting. A counter hegemonic potential, according to Fenwick (2006), is to work with the ‘daily disturbing encounters’, the experiences that bug us and shed light on the parts of the world that are not quite right. These are encounters that shake up the hegemony in our heads – the smog or abstraction – and ask us to *think about how we think* in the context of our being in the world (a key element of critical education). Thus, in part, exploring our experiences is also about exploring our interpretive habits. From this I updated the cycle to remember that experience and interpretation are intertwined and to resist quick abstractions that would ‘purge the transgressive’ (Michelson, 2015) or transformative potential of engaging experience within an educational encounter.

A number of people have critiqued the notion of conscientisation in the critical education tradition as being akin to pulling someone out of a cave (Tuck and Yang, 2012), or to unveiling the mask over their mind (Ellsworth, 1989). Indeed, this can play out in practice and can lead to yet again oppressive forms of ideological educational situations where a ‘so-called’ emancipatory process is dependent upon an already conscientised educator (Esteva, Prakash and Stuchul, 2004). Carpenter and Mojab (2017) note how conscientisation becomes framed as a kind of output from critical education interventions in which it falls prey to becoming again an individual cognitive ability. This provides some kind of enforced education where an idea of reality is imposed upon learners, therefore “leaving learners with a language of critique but no ability to embody the critical ontologically or (to) extend it beyond it’s particular” (Carpenter and Mojab, 2017, p. 19). This is a paradox in the ways the ideas of critical pedagogy have expanded into the world.

Carpenter and Mojab asked: what is critical about critical education? This question is a very important invitation to introspect about an educational approach that claims to work on changing conditions of oppression in the world. The question foregrounds an important meta-critique of the critical education tradition. In Table 4 below I have listed four of the

problematic obstructions that affect the realisation of critical education's transformative potential as offered by Carpenter and Mojab (2017, p. 28)

Table 4: Pitfalls of critical education Drawn from Carpenter and Mojab, 2017, pp. 28-29)

1. "Resistance to critical theorisations based on assumptions about Marxism as being mechanical or deterministic" [we do not know our theory well enough!] 2. "Horizons of innovative forms of resistance appear wrapped up in either social-democratic romanticisations of participation, or leaderless mobilisations that celebrate lack of organisation" [we have adopted other people's dreams and failed to practise what it means to move] 3. "Nihilistic humanism that draws learners into survivalist mentality that prioritizes the self over the social and ecological and emphasizes critical introspection" [we focus on the self and avoid collective struggle] 4. "A body of feminist, anti-racist and post-colonial literature that is profoundly important to critical scholarship, but which is predominantly locked in abstracted frames of culture and which lacks a strong grounding in the materiality of social relations" [we forget that it is all related and get stuck in ossified identities]
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Their introspection concludes that we have ossified 'critique' and forgotten that it is also a process with an agenda or is directive for something specific. There is a danger that critical education becomes about replacing one ideology with another and in this way, masks the reality that critique is a process: an action with a context, purpose, and an analytical frame.

An example of working with the process of critique rather than shifting and replacing one ideology with another is to interrogate the conceptual tools we use in the work of trying to read and write what is going on in the world. An example is the notion of democracy which looks positive in the form of its ideals, however, has come with severe baggage if we examine its historical material emergence within the world. De Sousa Santos (2007) noted that we have undermined democracy in order to protect it. Carpenter and Mojab argued that democracy, combined with neoliberal capitalism, has become more about the right to inequality through its protection of property rights and the free market. An embrace of words without an exploration of what they mean in particular contexts is an example of taking on a

ideology and abandoning the process of critique which can shed more light on the root causes of structural challenges facing the world today.

Without this work we are left with a partial analysis (for example: we need democracy) that does not move beyond identifying the contradictions (how does democracy come to be in the world?). This can lead to what they call ‘analysis paralysis’ and hopelessness. What is clear is that we need to challenge ourselves to move beyond hopelessness, and partial critique that exists in the world of ideas, rather than in practical engagement.

Understanding these various concerns within the praxis of critical education, the treatment of experience, the process of conscientisation, the process of critique and the need for historical material analysis, left open an important question about what is this process of inquiry? How can we describe it and work with it practically in educational encounters?

4.4.3 3L: How can this be transformed?

This stage can be further unpacked in terms of the question: What should be? (Schudel, 2017b drawing on Bhaskar) – we need to locate the cycle of praxis in a critical understanding of demi-real, abstracted abyssal, and global capitalist colonial heteronormative patriarchy (De Sousa Santos, 2014) and anthropocentrism (Bhaskar, 2016, p. 132) in order to understand what gives rise to the tendency to fetishise and reify individualised experience and consciousness. In this spirit of coming to a fuller understanding of critical education, this section presents dialectical thinking rooted in Marx and extended by others as a form of understanding more completely what a process of critical learning/inquiry might be.

To expand on a historical material process of critique – de-abstract and move towards embodying critique, Carpenter and Mojab (2017) draw attention to the dialectic: “A way of thinking about social life as relationship in which social phenomena are not abstracted, separated or fragmented from one another” (2017, p. 29). This offers us a ‘framework of inquiry’, grounded in a non-deterministic reading of Marx that allows us to go beyond identification of contradictions towards understanding the inconsistencies responsible for how they are produced. It is these nuanced challenges to the process of critical learning in the world that the dialectic helps us to identify and inform our praxis as educators.

Carpenter and Mojab were concerned with the project of critical education and remind us of a key aspect of its purpose. This purpose is understanding consciousness in the context of global capitalism, which, as described in section 4.1, is understood as historically entangled

with patriarchy, colonialism and imperialism and anthropocentrism (Bhaskar, 2016). As described in the section above, the understanding of the problem of capitalism extends far beyond an economic system. One of these ways of thinking is to essentialise and fetishise individual experience as isolated from its root in relationships in the world. We are dealing with a powerful machine that has controls in the realm of pedagogy (referred to by Darder and McKenna (2011)). Bhaskar's theory of critical realism explains this fragmentation in his ontology characterised by constellationality which includes the possibility for events and our experiences of them to be contrary to real structures and the level of the real (Norrie, 2010, p. 8). What I understand them to be saying is that we are living in a system in which our experiences cannot be aware of their full reality and are even fooled into forgetting the totality of reality. Thus, our consciousness is positioned in relation to the workings of capitalism.

If it is true that sometimes our experiences are contrary to social structures: the question of how we learn about these structures that shape our world is pertinent to the questions and debates of emancipatory education/ecopedagogy. If the world is characterised as it is under global capitalism, we must pay attention to the contradictions that emerge between our experience and our consciousness. This is consistent with the idea that we do not chronologise our experience and interpretive habits, but rather draw our attention to the existence of abstractions, abyssal line thinking and demi-reality smog, in order to understand how it shows up in our experience, interpretive habits and actions.

Carpenter and Mojab noted that “dialectical and historical materialist critique directs our attention to problems in the theory we used to explain these conditions” (p. 38). Thus, part of clarifying a fuller theory for critical education is to attend not only to the material world but to the theories we use to explain our world. As theorised by Marx, the dialectic conceptualises the ideal and the material as mutually reinforcing of one another – he theorised consciousness and praxis in relation to capitalist social relations which Bhaskar (2016) extended to include anthropocentrism.

A significant point here is that Marx introduced a theory of change and consciousness which allowed for an understanding of individual agency and its role in history as related to the social. This notion was missing from Hegel's thinking which kept ideas and their resolution in the world separate (Norrie, 2010; Bhaskar, 2016). Bhaskar (2016, p. 60) also explained that “agents reproduce and transform, the very structures that they utilise (and are constrained

by) in their substantive activities”. Thus, we are influenced by structures that are older than us, those structures emerge through the agency of people. We are conditioned by our material realities and they produce contradictory experience to what exists, but this “does not have to” determine us (Carpenter and Mojab, 2017, p. 16). This understanding begins to articulate the transformative potential amidst oppressive historical structures. The dialectic, as a description of relationships and change in relationship provides a useful framework for thinking about learning in a world characterised by contradictions, abstractions, abyssal lines and the unseen.

I must pause here and reflect. The ideas I am engaging with above are not a return to a deterministic frame of thinking: that we are determined by the structures we were born into. Marxist consideration of into consciousness is a frame that regards the almost certain universality of capitalist social relations as something that stretches far beyond our lived-local experience, because it depends upon making our connections invisible. And thus, we need to read our experience as such. It is a frame that asks us to understand the fullness of our ontology as it is made up by both the ideal and the material. So we are not just interested in material forces but also in the force of ideological thinking (an imposed pattern of thinking, way of being with thought) which engages abstraction, reification and fetishisation in order to keep in place a particular method of reasoning to keep in place the world we have today, for the benefit of a few. Bhaskar would call this the realm of duality which forms demi-reality. This is what De Sousa Santos would call abyssal thinking where some dualities are made visible by invisibilising other dualities.

Marx may have missed important opportunities to understand how his theory would be deepened through a consideration of reproductive labour, and has been developed through feminist, anti-racists and postcolonial traditions. However, Marx’s thinking need not be interpreted as a “set of theoretical constructs” that bind us but rather *a framework of inquiry* for the particular historical condition that is characterised by capitalism in its various stages (Carpenter and Mojab, 2017, p. 74). And this framework of inquiry is where his thinking might be of assistance to understanding learning in complex urban contexts.

Bhaskar took this dialectic further using the philosophy of critical realism,⁸ noting how the limitations of Marx’s version of the dialectic focused on the ‘positive’. By foregrounding

⁸ The best succinct explanation I have found of critical realism is from Zembylas (2013, p. 667) who noted that critical realism is not looking at whether or not something is real but rather concerned with *how* that something

absence in his version of the dialectic, Bhaskar included an important and radical critique of positivist western philosophy: that we should not only consider what exists and can be sensed but we must also consider what is *not yet there* or *the possibilities that might be*. Norrie (2010, p. 35) outlined Bhaskar's argument by explaining that our reality is composed more of absence than of the positive and rather sees "the positive as a tiny ripple on the surface of a sea of negativity, albeit an important one" (Norrie 2010, p. 35). Lotz-Sisitka (2016b referencing Collier, 2001) outlined the difference between nominal and real absence, the former being the ills we witness all around us and the latter being the capitalist production system which thrives on the production of waste. The real absences are not always easy to see and witness or sense in a positivist sense. Thus Bhaskar provided a theory of how intangible flows of power become efficacious. Price (2016, p. 28) noted that the dialectic, although commonly associated with knowledge production and social change, is actually primarily about absence, the common thread for all processes of change: that something 'becomes' and something 'be goes'. Absence allows for an explanation of how change happens. In response to this, Bhaskar breathed space into the dialectic including a phase (3L) that would help us to understand the gaps in the existing theory that allow these contradictions (identified in the previous section 2E) to be maintained. This this multi-dimensional consideration of change, across the ideational and material, the dialectic takes account of the phenomenon of "paradigm maintenance" – where a particular reason and logic lock us into contradictions (Pillay, 2018, p. 148). The multi-modes of the dialectic enable a deepened work with contradictions beyond their identification to understanding their production.

The work to this point can be represented in Table 5 which clarifies some of the concepts that are crucial to the critical education project through an underlabouring of critical realism. This table is a distillation of the concern here which is the transformative potential of pedagogical concepts and why this transformative potential is not realised.. These concepts in relation to each other set up particular power relations in educational situations and clarifying these concepts attempts to reveal this. We get *power over* relations generally in column 1 and we get *power with* relations in column 2.

is real and therefore on which basis it might be understood further. It is a radical shake up of the positivist natural sciences and the dualistic social sciences towards an emancipatory theory grounded in what is real.

Table 5: Table of key critical education concepts considered for misunderstandings and emancipatory potential

Various concepts relevant to the project of critical education	Pitfalls in critical education traditions (Configurations here generate a Power 1, master-slave relations situation)	Repair in critical realism, Marxist feminist dialectics (Configurations here generate a Power 2 situation)
Experience From its roots in Freire, experience is a key concept for critical pedagogical approaches. Indeed, Freire noted he could only have written his seminal work due to his experience of hunger.	In the critical education traditions experience is sometimes fetishised and reified (Carpenter and Mojab, 2017, p. 59). This leads to ‘a reductionistic view of identity’ and removes experience from its relationship to power, agency and history” (Freire, 1972, p. 17 foreword by Macedo, referencing Giroux) Feminist educationalist Michelson noted that experience becomes ‘raw material’ (Michelson, 2015, pp. 79-80) to process into a type of thought or logic that is celebrated within the academy, thus enacting a practice of hegemonic knowledge production.	Understanding multiple experiences tells us more about the world and how it is constantly in process. Rather than sanitising our experience we need to explore it for the mess and thereby resist hegemonic education’s tendency to purge experience of its transformative potential; As Williams noted, “[t]hat life is complicated is of great analytic importance” (Michelson, 2015, p. 96 citing Patricia Williams). This way of thinking about experience enables experience, understood as internally related to consciousness in praxis, to play a role in helping us to identify the contradictions that enable greater learning about the world as it is manifest in ideas and material (Carpenter and Mojab, 2017).

Various concepts relevant to the project of critical education	Pitfalls in critical education traditions (Configurations here generate a Power 1, master-slave relations situation)	Repair in critical realism, Marxist feminist dialectics (Configurations here generate a Power 2 situation)
Consciousness⁹ This is a key concept in Marxist educational theory and “its transformation” a particular aim within critical education traditions (Carpenter and Mojab, 2017, p. 45)	Hegel argued that consciousness determines life. His students, the young Hegelians flipped this and argued that material determines consciousness. Marx came to contest both of these. Today consciousness or conscientisation is problematically considered as an end point or outcome in simplistic conceptualisations of critical education.	Something that is produced in praxis and material relations, continuously evolving with human agency. A process developing and evolving through a dance between action and reflection. ‘False consciousness’, so named by Freire, can be reinterpreted as spontaneous consciousness using Vygotsky’s conceptualisation. Spontaneous consciousness is an important site from which to develop scientific consciousness. False consciousness is not false when we consider its ontological basis in demi reality. Through attention to this we realise a form of consciousness that recognises the impartiality of the world and holds that impartiality presents in a particular way. Consciousness and matter are locked in a dialectical relation with one another in which they constantly form and transform their essence and appearance through struggle and movement (Carpenter and Mojab, 2017, p. 48).

⁹ Consciousness as Vygotsky (Jones, 2009 as referenced in Carpenter and Mojab, 2017, p. 58) and Allman (2009 as referenced in Carpenter and Mojab, 2017, p. 46) defined it is a node between the individual and the social materialised in activity, expressing the dialectical relationship between them.

Various concepts relevant to the project of critical education	Pitfalls in critical education traditions (Configurations here generate a Power 1, master-slave relations situation)	Repair in critical realism, Marxist feminist dialectics (Configurations here generate a Power 2 situation)
Role of the educator Critical education takes the stance that the educator is not the provider of information. Freire's proposal that teachers must also be learners and learners are teachers is not always clarified.	There are claims that the educator is considered necessary for emancipation (Esteva, Prakash and Stuchul, 2004) or that educator leads the process of seeing more clearly what the world is (Schugurensky, 1998; Lewis, 2012). The educator is assumed to have a higher level of consciousness (McKenzie and Bieler, 2016). These claims are found to be contradictory when we understand that behind them is the assumption that the educator is necessary for emancipation.	The educator is not necessary but can contribute to removing obstacles to the “unfolding of the enfolded” (Bhaskar, 2016, p. 165). Educators work at the level of developing a practice of analytical tools aimed at unpacking capitalist abstraction (Carpenter and Mojab, 2017). Speaking from the perspective of emergent curriculum Nxumalo et al. (2018) comment on the pedagogista role in a way that is relevant to processes of critical education. They warned against the sort of privileged position held by the new movement of emergent curriculum in North America and troubled the task which is sometimes reduced to “following the lead of the child” (Nxumalo, Vintimilla and Nelson, 2018, p. 444) The work of a careful pedagogista includes an awareness of the obstacles at play in the midst of capitalism and settler colonialism. It includes deciding what should be in and out of curricula – often a difficult decision. It is not a role that is idealist and well defined; it is one of struggle in the context we find ourselves in today.
Chronology How are educational concepts arranged in relation to time?	Experience, then reflect then become conscientised. This is a form of abstraction that reintroduces hierarchies in knowing (Michelson, 2015).	We cannot separate the act of experiencing and the act of interpreting, they happen together each forming each other (Michelson, 2015, p. 38) Learning at any one time to pay attention to the <i>distance</i> between our experience and our consciousness of the world (Carpenter and Mojab, 2017).

Various concepts relevant to the project of critical education	Pitfalls in critical education traditions (Configurations here generate a Power 1, master-slave relations situation)	Repair in critical realism, Marxist feminist dialectics (Configurations here generate a Power 2 situation)
Critical thinking	Critical thinking is “rarely defined in practical terms” (Noddings, 2013, p. 90). Thus, subject to be used for particular agendas that are about maintaining status quo.	“[T]he important thing is the continuing transformation of reality, in behalf of the continuing humanization of men”¹⁰ (Freire, 1972, p. 92). Critical thinking is clarified as “thinking which discerns an indivisible solidarity between the world and men and admits no dichotomy between them – thinking which perceives reality as process, as transformation, rather than as a static entity – thinking that does not separate itself from action, but constantly immerses itself in temporality without fear of the risks involved (Noddings, 2013, p. 90 referencing Freire).

¹⁰ Freire’s work is infamous for being anthropocentric as well as sexist in its language and arguments and this quote is illustrative of that (Corman, 2011). However, his distinctions for these concepts are still useful to clarify original conceptualisations.

The critical realist dialectic offers us an analysis of change (Scott and Bhaskar, 2015, p. 34) that helps us to work across the constellations of reality as it is conceptualised in critical realism (the real, the actual, the empirical and the demi-real). This is a process which might underlabour critical forms of environmental education. Scholars in environmental education have engaged with the dialectic to analyse environmental learning and knowledge production (see Table 6 below). Lotz-Sisitka (2016b) illustrated the possibilities this offers for reframing and expanding environmental education praxis through absencing – removing absences – a conceptualisation of environmental and societal ills. Of particular value is the work of the dialectic to deepen rather than reject, on the basis of it not being ‘transformative enough’, practices of picking up litter. Schudel (2017b) traced the stadia of the dialectic to consider environmental learning and its connection to the lived experiences of food insecurity and how this could be absented in a rural South African classroom. Burt et al. (2018) used the dialectic to show the absencing work done by theorists of the Global South – their projects of knowledge production that served to absent what was absent in philosophies relating to cognitive justice. This was a basis for understanding the knowledge production processes of community based water activists (Burt, 2021). Mukute, (2016), studying learning processes related to sustainable agriculture in South Africa, Lesotho and Zimbabwe, traced the underlying dialectical modes from contradictions or obstacles between agro-business and principles of sustainable agriculture and power relations relating to knowledge and land ownership (2E), towards tools for facilitating learning processes that assisted in the identification of these (3L) and the activation of relational agency between multiple institutions including schools and agricultural sector (in Zimbabwe) and the initiation of a campaign promoting agriculture as a socially valuable career for young people. What all these studies show is how the dialectic has provided a kind of analysis of environmental learning which requires engagement with multiple levels and dimensions of reality, engagement with the material and the conceptual with a concern for justice particularly in the global South where education and knowledge production has been used as a tool for further oppression people. In addition to engaging dialectical critical realism in this chapter to work out and into critical education project, I engage with the analysis it offers for learning processes both with learners and my own reflexive learning process.

Table 6: The use of the dialectic in environmental education research

Context	Burt et al. (2018)	Schudel (2017b)	Lotz-Sisitka (2016b)	Mukute(2016)
	Thinking with global south thinker knowledge production as dialectical processes for cognitive justice. They describe the shifts that occur in each dialectical stage.	Classroom context of transformative learning in terms of Bhaskar onto-episto-axiological chain. This paper considers the four “knowledge interests” relating to food security in a South African classroom.	Context of an environmental education programme focused on waste (Lotz-Sisitka, 2016b, pp. 320–321) (Note this account works ‘backwards’ from 4D – starting from praxis towards bringing 1M into being more rigorously. These phases are not prescribed in a particular order; they do descriptive and explanatory work).	Looking at sustainable agriculture learning processes through the dialectic in three contexts South Africa, Zimbabwe and Lesotho
1M	‘What is happening?’ It is a relooking at something in social life that has become normalised.	‘What is and what is not?’ This knowledge interest focuses on “the structures and mechanisms from which world events and experiences emerge” (p. 173)	“Absence of a waste- free society and closed-system production that is based on benign nature-culture relations and social-ecological justice where the flourishing of one is related to the flourishing of all life forms.”(p. 321)	“Provision of ontological depth – the real layer of reality that lies beneath the empirical and the actual.” (p.200) Also, here the potential lies in the “ability to provide an explanatory critique, with ontological depth, that goes beyond the actual and observed to the causal mechanisms that are invisible”. (p. 195)
2E	‘How has this come to be’ This is a stage of digging deeper and reaching “truer explanations” through unpicking contradictions as well as understanding how and why those contradictions are maintained.	‘What could be’ “[T]he teachers’ knowledge at 2E necessitated a recursive return to ills, absences, compromises, contradictions or inconsistencies as foregrounded at 1M. This led to consideration of what absencing processes and alternatives could possibly resolve these absences” (p. 174)	“2E a absencing the absent waste management system (e.g. picking up litter); that involves, 2E b absencing the absence of a culture that values the re- use of waste (e.g. through building a recycling station in the school and re- using materials); and more so 2E c absencing the absence of a culture that values waste avoidance (i.e. zero-waste), that ultimately requires the bringing into being” (p.321)	“Paying attention to deeper causal mechanisms and structures and explanatory critique in order to explicitly identify absences.” This took the form of identifying contradictions, ideological and material obstacles to sustainable agriculture and power. Relations linking cognitive justice to land ownership.

3L	‘How can this be transformed?’ This is “a creative and generative process in which we speculate on what is required to resolve the identified contradictions”. (2018, pp. 495–496)	‘What should be?’ “This knowledge interest in relations between ourselves and others and between these and interacting mechanisms in society embodies the central feature of [totality].” (p. 174)	“3L a waste- free society, closed cycle production, benign nature- culture relations.” (p.321)	“Change that is differentiated and stratified, and conscious of the underlying matters, and therefore laden with transformative intent.” This took the form of the production of learning process tools particularly towards “‘absenting the absent’ people and their concerns in the identification and analysis of contradictions as well as modelling solutions, especially in terms of who to work with and how.” (p. 207)
4d	‘How can we embody transformative praxis?’ This stage is where we integrate absenting of contradictions into our practice (Hartwig 2007 as referenced in Burt, 2021, p. 209)	‘What can be?’ In a context of severe drought and land degradation was a blockage to the knowledge of healthy eating to translate into agency. The knowledge interest here involves “knowledge of specific contexts, resources to address and resolve challenges, and the application of knowledge in practice to those specific contexts”. (p.175)	“4D the environmental education programme or project seeking to enable agency that absents the ills of nature-culture relations that produce waste that damage environments and societies creating public health risks, ecological and earth system degradation and social injustices” (p.320)	“A more deliberate engagement with causal structures and mechanisms as part of addressing the invisible parts of problematic situations. Moral agency which seeks to absent societal ills and absences such as social ecological and/or cognitive injustice.” (p.200) This phase in Mukute’s analysis moves from the learning encounters to enacting relational agency for problem solving and the initiation of a campaign promoting sustainable agricultural careers to counter the stigmatisation of agricultural work.

4.4.4 4D: *the fourth leap: Learning as transformed transformative action.*

By becoming aware of these nuanced dimensions in the process of removing obstacles, absencing absences, we are framing a deeper understanding of learning as change, or the dialectic of absence and emergence (De Sousa Santos, 2014; Lotz-Sisitka, 2016b). In the context of practical educational encounters, in which I as the educator am better able to identify how we get stuck or make progress using dialectical thinking, is the new transformed practice of an educator trying to understand how we might practice a critical pedagogy of the environment in South Africa. A practice that is aware of the danger of reifying experiences, emerging contradictions, producing language of critique and the danger of failing to embody critique. The fourth leap in the context of learning praxis that affirms life is the embodiment of critique (the phrase used by Carpenter and Mojab); it is the transgressive and messy exploration of experience in relation to ideas; it is the movement between the concrete and open-ended abstract and through this, a more complete reading of the world that can help us to participate in it.

The final dimension of the dialectic can be sensed when we read Bhaskar's claim that we are always implicated in agency: "thus one can neither not intend, nor not act, nor not act basically or spontaneously" (Bhaskar, 2016, p. 131). Norrie (2010, p. 28) wrote that "the dialectic is submitted to the importance of praxis" which for me clarifies the ways in which we take our theories forward in conversation with our practices resonating with the idea of the "fourth generation of critical theory rooted in transformative praxis acts" (Lotz-Sisitka, 2016a, p. 220) and it feels incomplete if we do not. Thus, we are already always in action and it is about understanding the relationship of that action to our thinking and subsequent action, that is important. This leads us back to action and reflection but at hand we have a few more dimensions, edges, levels and moments to work with.

There was another contradiction in my thinking vs experience in the world that was clarified through learning about the dialectic. I had steeped myself in reading about critical education which in a sense left me with little to imagine and made it hard to remember that learning is still a phenomenon in the world and perhaps the most important one. Despite the critique of education, Freire's pedagogy was a pedagogy for learning about the world more fully. I often came across instances and examples of really exciting learning with learners. Understanding the dialectic as a process of change which included an awareness of absence gave me a way to think about processes of learning that include both critiques of the world (why do the

wealthy not get told to save water) and learning about something a new (how to propagate a rosemary bush).

Bhaskar presented a conceptualisation of learning in his development of meta-reality, the phases of which are shared in Table 7 below, which was an extension of the dialectic described above. This conceptualisation draws resonance between processes of learning and processes of creativity. This links to the possibility of expanded educational encounters through arts-based inquiry touched upon in section 2.5 and 3.3.1.

Table 7: Table representing Bhaskar's (2016) stages of learning and the cycle of creativity, (taken from pp. 166-167)

Stages of learning: 4 stages and a 5th level	Cycle of creativity
First stage: “you cannot do it, but the knowledge or capacity to do it is enfolded within you as a potential”	“The moment of calling”; “the state best characterised by inner emptiness”
“Second stage: you see how to do it, but haltingly”	“Moment of creativity”; the “I see it” moment; “you get a first glimpse of this new world opened up by this learning”
“Third stage: you practise, explore play with it until...”	“Formation or shaping”; “gradually mastering the techniques and rules for this skill or activity”
Fourth stage: “you can do it spontaneously. Then the knowledge is part of your being and you can perform the activity or skill relatively effortlessly – the way you speak your mother tongue”. At this stage you do not need to carry around the instruction manual.	“Making or objectification”; “the moment at which knowledge becomes part of your being so that it can be produced spontaneously when the occasion demands”
Fifth stage: “you can see your accomplishment reflected in your production or accomplishment in the world”	“Moment of reflection, when you can recognise your intentionality reflected in an achieved result in the world”

A similar kind of re-enchantment can come equally from learning to ride a bicycle and from understanding capitalist relations in the urban water system (the learning that it is not simply the fault of humans generally that there is a shortage of water and we can understand a lot about the world through that). Our learning, understood together with the critical realist dialectic, looks a bit more like the third arrow in Figure 2 which is both linear and circular, moves with time and experience but constantly between abstract and concrete. It is at this stage that I returned and recovered what learning is in the world. It is a process of engaging absence, inner emptiness (whether being about plants growing or about finding analytical

tools to understand the wrongs of the world) through a force of life – creativity – towards the fulfilment of seeing our agency at work in the world! I also returned to what is one of the great injustices: that people are inhibited in their learning and thus unable to reach their full potential.

4.4.5 Section summary

If we are to use this understanding to inform a deeper conceptualisation of what happens in transformative learning, Bhaskar's dialectic is an analysis of change and thus important to help us understand how change occurs across the realms of the real, and whether or not it crosses all of them. Working in the visual I can reinvent the action learning cycle into four dialectical leaps (originally visualised by Burt, 2018) that characterise Bhaskar's dialectic. If we rotate that circle in Figure 2 on its bottom at 45 degrees, we can see its deepening as a series of leaps. I liked the way this visualisation added another dimension of movement. We do not simply move around and around in circles in the cycle of praxis, but we move in a third dimension, towards knowing the totality and building that knowledge in to our praxis intentionally and actively while moving between the concrete and the abstract. I discovered the dialectic over and over and each time it deepened my thinking about knowledge production and learning. The first discovery was a better understanding of how we move from problem identification to embodying and practising a resistance to what we have problematised. The latest discovery was its application in a simple but essential process of learning. Thus, the dialectic gives us a fuller theory of what praxis is in the world and how we can think about it in terms of learning in a world characterised by contradictions.

What is presented here is a form of educator praxis; it is concerned with a reflexive view on what education might look like in the context of global capitalism. Working through the questions, absences and expansions of the theory of dialectical knowledge production and learning, it has attempted to recover an understanding of critical education beyond ossified critique and into learning practices themselves, equipping educators and educational researchers with a framework from which to understand the possibilities of analysing educational encounters/learning experiences and expanding them.

4.5 Embodying critique and transformative potential in environmental education

This chapter has attempted to clarify a praxis of environmental education in a particular context of global capitalism. With an understanding of environmental education praxis in the context of demi-reality, capitalist abstraction of ideas and material life and abyssal thinking,

we can think *with* the dialectic for understanding the multiple dimensions of change in learning and knowledge production; We can see the unfolding of transformative environmental education praxis and name it and reflect upon it. We can trouble simple understandings of transformation by locating transformation in a material historical context, in relation to a problem and in relation to what type of transformed transformative praxis is necessary to respond to this context. In other words, we can ground the dialectic in practice.

Capitalism is often stated as a challenge in relation to environmental issues, but what is often seldom practised is an engagement with theories that explain how capitalism and our educational practices are linked as a site of confirming capitalism or resisting it. This does not mean throwing ‘isms’ about in educational spaces but thinking through generative themes towards relations in the world that characterise what we have come to name as global capitalist colonial heteronormative patriarchy (De Sousa Santos, 2014) and anthropocentrism (Bhaskar, 2016, p. 132). Reminding ourselves of the radical interconnections is crucial to pedagogies that affirm life.

An important question for learning in the dark of global capitalist colonial heteronormative patriarchy (De Sousa Santos, 2014) and anthropocentrism (Bhaskar, 2016, p. 132) might be: What is the mechanism that enables us to put aside our relational organisation? And how do we begin to “shift laws and politics, monopolies, unregulated trade, over privatization tendencies, property exclusions and the like” (Lotz-sisitka, 2017, p. 69)? Carpenter and Mojab (2017), drawing on Harvey’s (2003) analysis of ‘accumulation by dispossession’, presented an answer to this in terms of ‘learning by dispossession’: where we might experience cognitive shifts, acquire skills to participate in society but we are being alienated from ourselves, our contexts and our relationality. This is an approach that produces the demi-reality that our heads and our bodies are separate which in turn sets a precedent for the separation of many other things (categorical errors) even though this is *against- in contradiction with* the real. Vygotsky “believed that the separation of intellect and affect” (where affect is understood as including feeling and emotion) was “one of the most basic defects of traditional approaches to the study of psychology”, and those who do so are left with thinking as “divorced from the full vitality of life, from the motives, interests, and inclinations of the thinking individual” (Holzman, 2009, p. 46). This ‘divorce’ or separation is another abstraction or fragmentation as described in Section 3.1.2. Carpenter and Mojab argue that we need instead, a *learning by reparation* – involving repair and returning (2017,

pp. 143-145). This is a generative call to further debates on versions of transformative learning as a learning response to capitalism.

While critique of the banking model of input output in schools is significant and relevant, it should not take a dogmatic form in which we prevent the possibility of learning which, as Bhaskar reminded us is “inherent in the dialectic” (Lotz-Sisitka, 2016b, p. 326 referencing Bhaskar 1997, p. 141). In deference to the banking model critique, Bhaskar’s dialectical learning model begins with a moment of ‘inner emptiness’, a calling for something that is absent to presence itself. These returns to and repairs of learning lead to an additional clarification about the sharing of information. If we see this process as removing an obstacle, responding to a calling or inner emptiness, then it is relevant; then we will not be handing over information for the sake of it. We can rather reclaim the transformative potential of the literacies allowed by working with knowledge collectively.

4.6 Chapter conclusion

This chapter has located the field of environmental education, established the grounds upon which critical forms of education are necessary and engaged a dialectical critique of the critical education project in relation to environmental education. Working carefully with dialectical underlabouring of the concepts relating to critical education, we move more carefully and responsibly between the poles, avoiding polarisations that creep up in the demi-reality of abyssal capitalism.

Chapter 5: Playing and drawing water (Case study 1)

This chapter is the first data chapter of the thesis and presents the results for case study 1.

This case study took place with a group of grade 4 learners in an extramural program (described in section 3.7.2). We worked together for several sessions and I captured two sessions specifically for this chapter. The first was a session where the children did improvisational skits about water in their community. The second session was reading curriculum diagrams depicting the journey that water takes to the tap. The children responded to these diagrams through drawings with which they imagined themselves somewhere along the journey of water. I read these sessions through an engagement with theories on play and a thematic analysis. I conclude in the form of a fictional story.

5.1 Exhibit A: Bucket skits

From videos into a triangular conversation of photographs, descriptions and impressions

5.5.1 2018

We are gathered in the school courtyard. The hall is being used by the choir (a last minute declaration by the principle) and the classrooms are crowded with desks and we need space for the skits.

Table 8: Play skits 2018

Description	Researcher thoughts emerging
Skit 1	
	
Five learners line up next to the bucket, two girls are kneeling, washing clothes and three boys are standing, washing their bodies. The girls walk away, turning their backs to hang up an imaginary item of clothing and one of the boys tosses the invisible water out of the bucket. The girls return, marching, arms folded: “What are you doing? Save the water,” they scold.	<i>I observe a division. It is the boys who are the naughty ones but also the boys who are doing less chores. I am also aware of how their naughtiness was produced in relation to others and activities in the skit. The boy who tossed the bucket is ‘naughty’, but also a bit powerless against the fierce righteous position of the girls.</i>

Skit 2



There is a very short moment when three learners are crouched over a bucket before they toss the water out of it. Two girls come up and begin to shout. The first: "You must clean the house, don't do this". The second shouts: "You must save the water" and repeated it, with more anger the second time. Then they begin to chase the three around the courtyard with great speed and excitement. Near the end of the skit, one of the 'adults' picked up the bucket herself and made the action of tossing the water out of it, onto the fleeing 'child'.

This skit, while wildly dramatic and a bit alarming, has some contradictory moments. The approach by the two girls, the 'telling off' is such that flight occurs and in the 'fury' the 'adult' does the action that they were telling the children off for.

Skit 3



The third skit begins with a large amount of time busying around water chores. Two learners are cleaning something that is head height: a taxi or windows? One is doing a stirring action and the other is washing clothes. At some point one tosses the water out of the bucket

The others stand back aghast and almost like they are giving up. The tosser goes to the tap and then tosses the water again.

A boy steps forward and says: “Hey! You waste my water, this is my house!”

The others laugh.

I’m wondering about the power in this skit, are they all trying to show how one person is in charge? Is this a skit where there is semi-enthusiastic participation? I’m struck by the phrase “this is my house”.

Skit 4



A boy is washing clothes while the others watch him. He turns around to hang up some clothes. While his back is turned the water is tossed and the bucket returned to its place. The washer boy gets to the bucket and puts his hands in, pauses and looks up at the tosser. The tosser responds by putting her hands out like: ‘It wasn’t me’. The washer boy refills the bucket and continues to wash and hangs something up.

This next person washes some windows and then tosses the water out herself. There is no comment here.

The bucket is passed to the next person, who fills it up and then takes a drink of water as she is in the drinking pose the first washer boy approaches her and says “What are you doing? Save the water”.

Not too much notice is taken over this and the final learner claims her turn to use the water, she cooks pap, stirring the pot with her entire arm to indicate the strength needed for that particular activity.

This skit is a string of vignettes of water use. The tossing of water reoccurs sometimes in a way that is comedic and sometimes in a way that seems purely functional. It ends with what feels like the ultimate contradictory moment. When the third member actions out the drinking of water, as basic human need and most likely consuming less than the other chores, she is scolded. Things fall apart.

5.5.2 2019

We are in the area of the school where there is grass and trees. Again the hall is being used by the choir and we need space for the skits.

Table 9: Play skits 2019

Description	Group reflections
Skit 1	
	
At the start of the video the learners are very spread out. ‘Uya kamanzi umtwan’. A boy gets up to his feet and carries the bucket: “ok Tata”. He walks to the imaginary tap and makes the sound of flowing water with his mouth. He holds the bucket on his shoulder and walks in a way that shows the bucket is heavy towards a girl who is standing next to a short bush – an object she has engaged as her chore station. Two girls were standing at similar bushes alongside her. The last half of the skit the three women doing chores take it in turns to demand something from the boy: first a bucket of water, next a piece of soap from the shop; the skit ended before he could serve the last girl. Throughout the skit it is Siphamandla who moves around while the ‘tata’ sits on the ground and the three girls/women remain at their chores, one cooking, the others washing.	<i>The way these learners made props out of what existed in the school grounds. We reflected after the skit:</i> <i>Ubona ntoni apha?</i> <i>We see an action!</i> <i>Which action?</i> <i>Washing</i> <i>Cooking</i> <i>Utenga istena sisep. That’s like a big bar of soap. And they were cutting.</i>

Skit 2



Two very animated ‘men’ are in the foreground. One is sitting down the other one sits down via a drunken stumble... *“Daddy watching soccer and smoking”*. There are two children running around throwing water at each other in the background: *abantwab bebedlala ngamanzi*. The one tosses the imaginary water while the other reacts in mid run as if she has been doused in water. Eventually the men shout at the children and tell them to stop playing with water.

In our post skit reflections it is noted, usebenzisa amanzi nomongi/ they used water for a drink. Two educators are amazed at how animated a boy who hardly speaks is. One educator is surprised by how these children (playing the role of fathers) are aware that the playing of water will result in a cost of which they cannot be sure.

Skit 3



They start to talk to each other in a way that the audience cannot hear and we ask that they turn towards us.

“Mfazi – woman, fetch water. What do you want? I want you to wash my clothes.” [translated]

Two boys (father figures) watch soccer after asking ‘Godin’ (the young boy) to go and buy them

While the girl with the bucket is situated in front of the father figures, who gave her the instruction to fetch water and wash clothes, they (father figures) are the ones chatting and talking while the washer is silent. It feels like the task is

cigarettes. The woman (girl) sits with the bucket, in front of the seated father figure (boy) and washes the clothes. The father figure makes some comments about the soccer on the invisible television.

backgrounded despite being in the foreground.

Skit 4



Umtwana (the child) in this story was playing with a stone. She was quite quiet but working artfully at her stone throwing tricks, trying to flip her hand around over while the stone is in the air. The *tata* figure who is sitting down, much like those who came before him ... is asking for the boy to buy something from the shops and the women figure asks if the *tata* wants tea: *ufuna kwenza iti?*

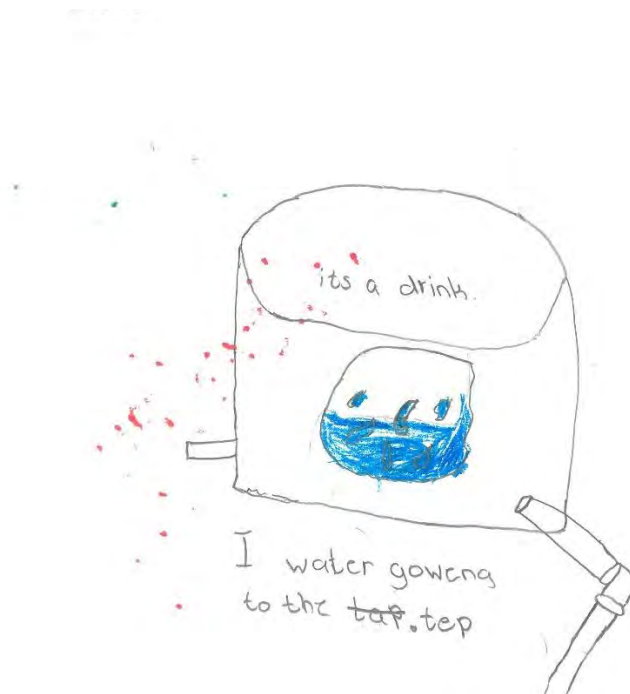
That a male figure who calls the shots in the house is unable to understand a drink may be too hot for him, makes me wonder what these children are communicating here.

Yes: *ewe*.

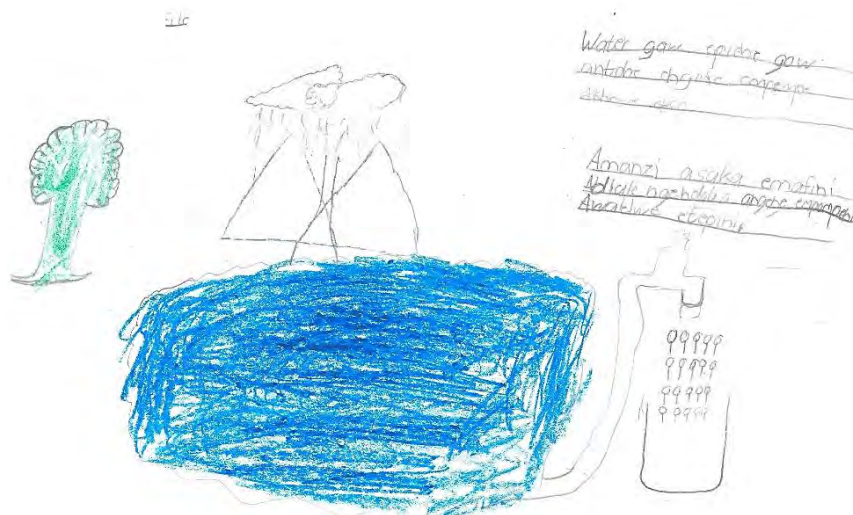
She asks how many sugars. He says two. She hands him the drink. He takes a long sip and then spits it out! "It's too hot!" He puts his arm out towards her and demands: "Put some more cold water in it". She does this and he takes another sip, he is satisfied this time.

5.2 Exhibit B: Drawings of watery journeys

I invite the reader to read the drawings of the children presented here .



Drawing 1: It's a drink; the water is going to the tap.



*Drawing 2: Amanzi asuka emafini. Adlale ngendaba angene empompeni. Avaliwe etepini.
Water comes from the clouds. And passes by means of ... and enters the taps (Empompeni).
And closed in the tap.*

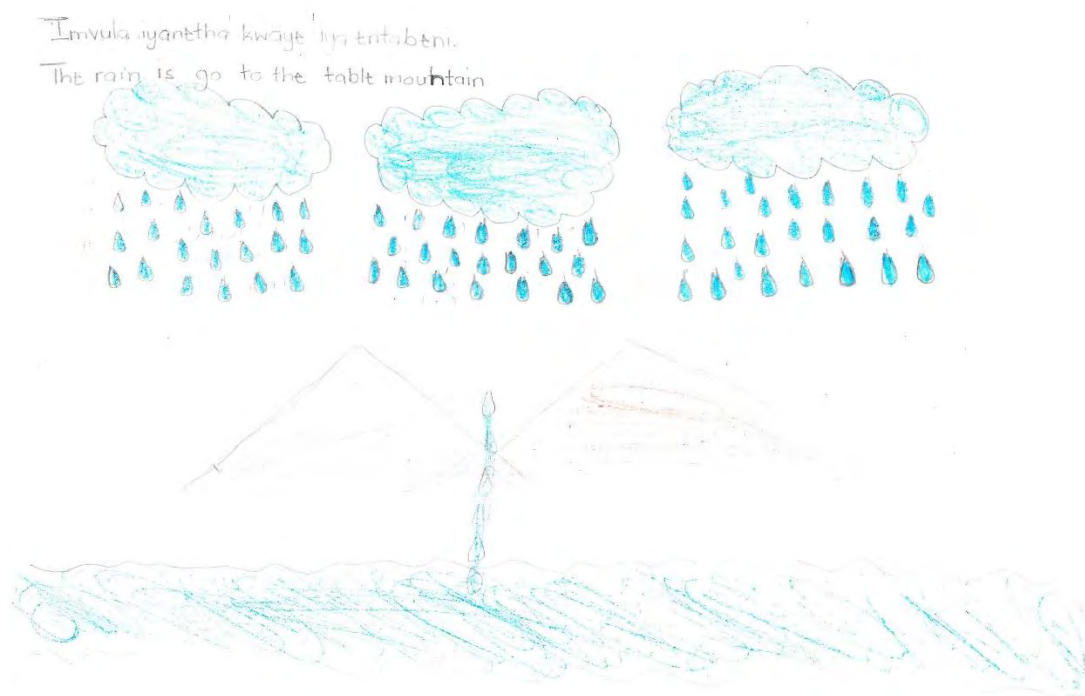
I am lookeng at the river



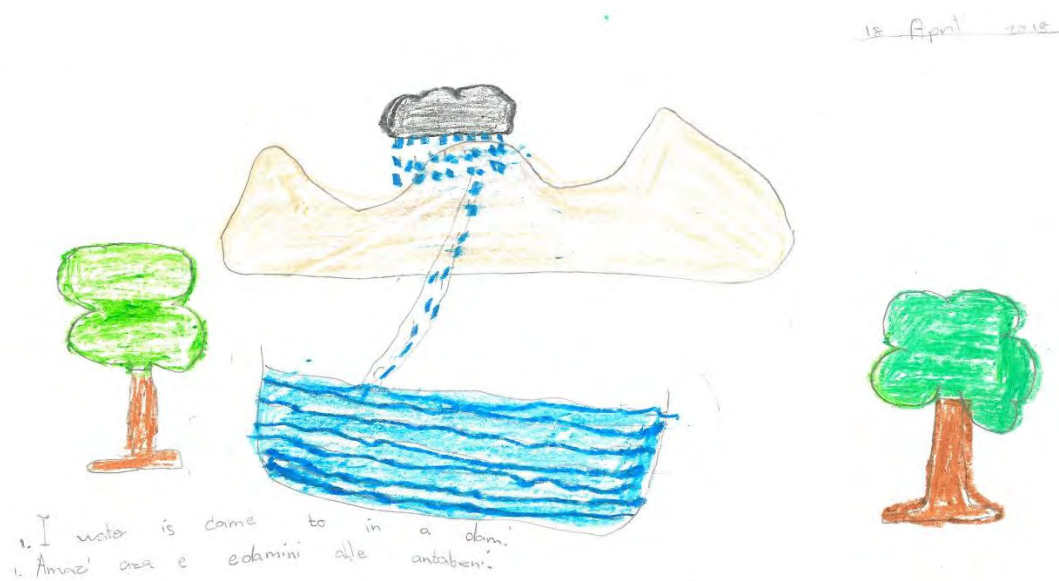
Drawing 3: I am lookeng [looking] at the river



Drawing 4: Clouds, trees, grass; I'm in the mountain because I love it.



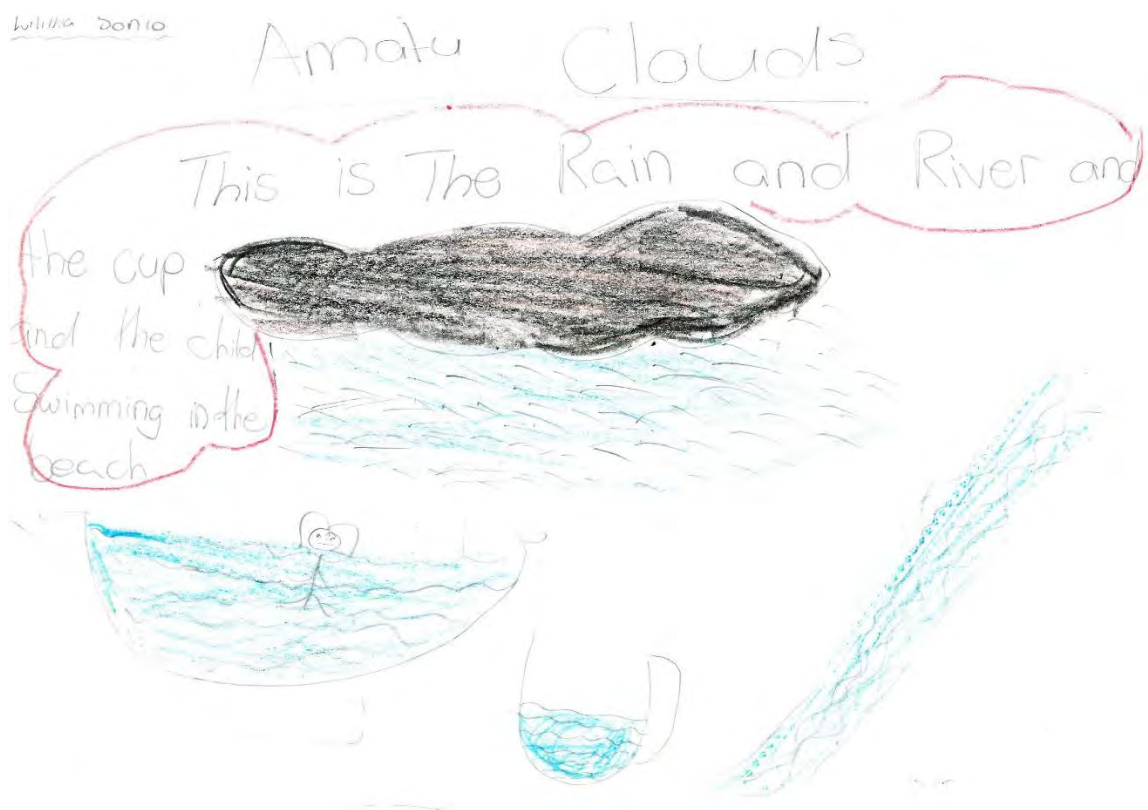
Drawing 5: Imvula iyanetha kwaye iya entabeni; the rain is go to the table mountain.



Drawing 6: I'[the] water is come to in the dam. amazi awa e edamini ahle antabeni [and go down the mountain]



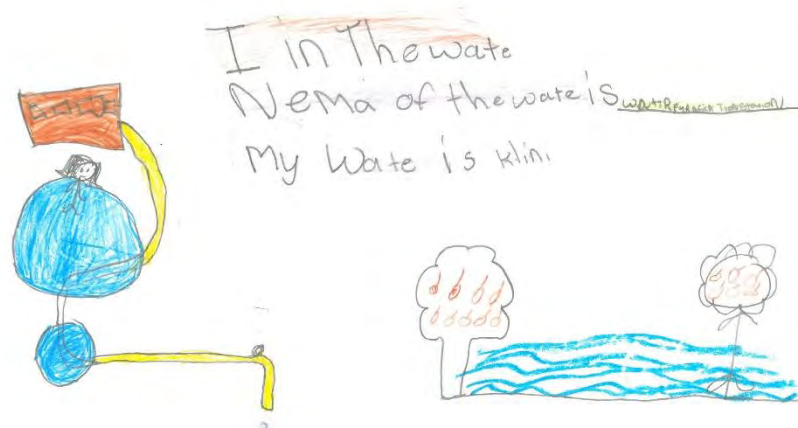
Drawing 7: I'm in the pool, I'm happy.



Drawing 8: This is the rain and river and the cup and the child swimming in the beach



Drawing 9: I'm happy. I'm happy. I'm wash your body



*Drawing 10: I in the water. nema [name] of the water is water purification station.
My wate [water] is klini [clean]*

Si

1.



I am swimming
Ndiya ngqubha

Drawing 11: I am swimming; Ndiya ngqubha

Abdull

Dam



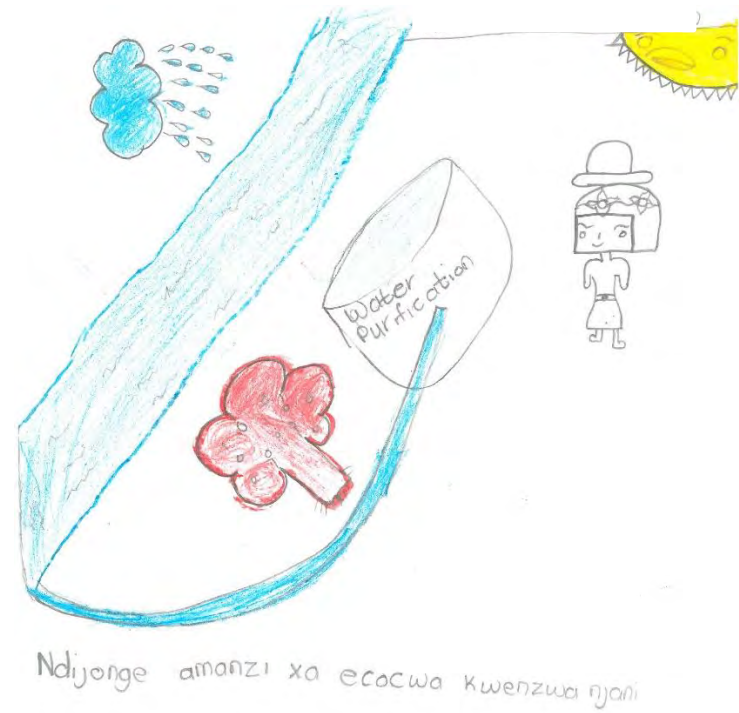
Abdull ndiPhakathi kweDama ndiya ngquda

Drawing 12: NdiPhakathi KweDama Ndiya ngquda [Ngqubha]

Litha 12 April 2012



Drawing 13: Ndimilandisehlathini



Drawing 14: Ndijonge amanzi xa ecocwa kwenzwa njani



*Drawing 15: ndim lo ndiphandle. ndiyahamba kunetha phandle
[This is me. I am outside. I go in the rain outside]*

Ulwandle/beach

I Swimy in The beach.



Drawing 16: Ulwandle/Beach: I swimy in the beach



*Drawing 17: This is a pool for the people:
I draw me i am on pool and i swimming with my friends*

5.3 Thinking with play

This section presents the theory on play which I used to think with when reading these skits.

5.3.1 Skits as a form of play

I see these skits as the Grade 4 learners' response to some parameters that were set by the educators and myself. The way these skits differed between groups and over the two years of facilitating this exercise, indicated to me that there were a variety of ways in which these learners, in their groups, compared with, and against, other groups forming themes and variations on the given day of skits. As such they *filled out* the request to improvise with a bucket with their own story lines and improvisational actions. No skits were identical and yet there were echoes and repeats across the skits. These 'actions' include inaction or resistance

to participation. I sought to understand and read into the expression and stories these learners were offering in response to our call.

Reading the theory on play helped me to progress in understanding about these skits and what they expressed. According to Vygotsky's theorisation of play in childhood (2016), play is the mode through which individual development occurs, in a context specific and self-determined manner – herein we find a root and source of play in the lives of human beings. Engaging with Vygotsky's theory of play enabled a few things for this pedagogista (me):

- To think and reflect on my own thinking about children and their activity,
- To see multiple dimensions of the skits - a fuller ontology and,
- To 'read' what was expressed in the skits about water.

It was through reading about different kinds of play, and diving into Vygotsky's theory and concept of play, that I managed to find a way of thinking that was expansive enough to think about play in context, and one that engages with the world of children, and for why their 'age' matters rather than their age being the essentialised matter. Although, contrary to dominant assumptions, play is not limited to early childhood (Holzman, 2009, p. 53), play takes on a particular role in relation to individual development in the child stage of life (Vygotsky, 2016). It is a negotiation, a sense making and a communicative activity. Children are fluent in the medium of play.

5.3.2 Ground clearing

I was first drawn to discussions in the literature about socio-dramatic play, which is described as the following in an emergent literacy teaching guide: "Where children act out imaginary situations and stories, become different characters, and pretend they are in different locations and times" (Education and training: Victoria State Government, 2019). So, socio dramatic play includes 'assigned roles', 'implicit rules' and sometimes has children playing roles 'beyond their years' (UKEssays, 2018). The terms 'rules' and 'roles' link into Vygotsky's work on play and warrant two clarifications about what play is not. In a lecture on children's play, Vygotsky (2016) argued that 1. Play is not merely pleasurable and free and simply a time filling, care-free exercise. 2. We should avoid abstracting play and rather ground it in the "needs, inclinations and incentives to act" of the child.

The notion that play is always pleasurable and free is contested by the fact that in empirical studies there seem to be other activities that are more pleasurable than play such as eating.

Vygotsky's theory explains that a better basis for understanding about play is the common denominator of rules and roles. This is a radical shift from thinking about play as a pleasurable time filling activity that only children do. Rather it is as a phenomenon of social quality that is part of being and becoming (developing) in the world.

The second caveat is that if we do not ground play in the child's "needs, inclinations and incentives to act", we run the risk of intellectualising play and locking play into particular age-based theories of predefined stages of development. It is not only children who play, but it is in the childhood phase that play leads to development (Vygotsky, 2016). A South African case study by Joseph *et al.* (2014) emphasises the culturally specific developments of play and argued that play was a space of reinvention and cultural reproduction by children learning from children. Vygotsky's socio-cultural perspective on individual development within society, requires us to emphasise the cultural context of play. Aitken (2001, p. 176) agreed that "there is no universal form of play any more than there is a single monolithic children's culture". Releasing play from this abstract and age-based theorisation, grounding it in context and in the child's "needs, inclinations and incentives to act", allows us to see play as a participative, context-dependent enactment in the world.

It seems ironic that we move away from thinking about play as a pleasurable activity without meaning towards the more serious sounding notion of 'rules'. However, the notion of rules signifies something different to the kinds of 'rules' obeyed in an authoritarian manner. The way in which rules make up the particular relation of play reveals a liberatory and self-determined quality of 'rules' rather than the conformist sense of those things adults ask children to obey.

5.3.3 The essence of play in a non-essentialised way

Vygotsky (2016, p. 9) noted that no play occurs without rules nor without children's dispositions – emotional responses – towards those rules. Sometimes these rules are predefined as in a game of tag and sometimes these rules are taken on through roles and pretend socio-dramatic play. Thus, tag and pretend play can be seen as composed of similar components but they can be seen as different kinds of games. In both cases, counter-intuitively, games with rules include the exercising of will power: to resist immediate impulses to break the rules is necessary for the overall satisfaction of the game. So, in an act of play, those participating are commonly invested in the game. In this sense, the rule 'wins' over immediate impulse. Vygotsky explained, that this will power occurs when the concept

of the game, captured in the rules, turns into a ‘passion’ or something that feels worthwhile investing in. Thus, the engagement with these rules or the child’s relationship to these rules has a quality of “self-restraint and self-determination ... not a rule that a child obeys” (Vygotsky, 2016, p. 16). This notion of rules is an important consideration because it allows us to embrace the rules of children’s socio-dramatic play through a quality of freedom rather than obedience for the sake of it. It allows us to see agency instead of mimicry or over-determined views. In this way, dramatic play is more than a time-filling, pleasurable activity. Although it might include these things it is also an expression of a relational and co-developed understanding of a concept.

Understanding play in terms of rules and roles or an agreed upon game allows us to see the activity of play further in terms of two interacting planes. Specifically the ‘*dual affective plane*’ to refer to the double experience in play situations which makes it possible that one can be ‘weeping’ in play but revelling in reality (Vygotsky, 2016, referencing Nohl). To understand what is going on in play we can thus think about both these planes: the game – rules and story line (which will be interactive and co-defined with others); and, child’s experience of playing the game – roles (linked to rules) and acting. Somewhat paradoxically, that “when children are pretending, they are least like what they are pretending to be”, as they are doing it by virtue of their own agency (Holzman, 2009, p. 53). A simple example is to think about how children might find playing ‘school’ a different affective experience to actually being in school.

5.3.4 *What does play tell us about children’s experience?*

It is important to think about what we can infer, interpret or ‘read’ when we observe play. In socio-dramatic play and play more generally, children can make meaning of their worlds (Cutter-Mackenzie and Edwards, 2013). Children’s geographer Aitken (2001, p. 176) echoed this when he wrote that “play is the active exploration of individual and social imaginaries, built up in the spaces of everyday life”. It makes sense to think about play as “reality as it is encountered in practice”, as articulated by Vygotsky (Joseph *et al.*, 2014 quoting Vygotsky). In Vygotsky’s words, “play is memory in action rather than a novel situation” (Vygotsky, 2016, p. 19). Thus, while play exhibits the dynamism of human activity in the world, it might also be a space for meaning making and imagination.

Another construct relating to play that is useful for the purposes of reading these skits is that of *remarkable play*. Remarkable play is where ‘play coincides with reality’: “Play at what is

in fact true” (Vygotsky, 2016). Here a guiding question is: What is the difference between being a child in the world and playing a child in a game? The answer in some way captures the essence of play. The child playing the child is representing what they have internalised about child behaviour in their social, cultural, historical and material worlds and the child’s relationship to others. Similarly, a child playing mother is representing their internalised understanding of a mother.

5.3.5 Play: A mode of communicating meaning

Play has an important role to play in individual development and the construction of social lives. Vygotsky argued that ‘play leads childhood development’, through enacting will power, passion and where the ‘meaning’ of actions becomes a focus rather than the action itself. (The action is a pretend act of cooking... and because the end does not produce a pot of soup, it is the meaning of the action in the context of play that is the ultimate purpose in the end). As an imaginary space in which meaning subordinates action, play allows children to practise a kind of ‘abstract thought’. This practice is not necessarily logical thought but rather in a ‘method of movement’ that is ‘situational and concrete’ (Vygotsky, 2016, p. 17). The way I understand this is that in play we not only see actions but understand a bit about the reasons and the consequences of actions in particular situations. Thus, play has an important role to play in the development of children (not because of an essentialised understanding of age but rather because of the prominence of play), which is of consequence here because it describes this as a mode, a language familiar to children as they develop to engage their life-worlds.

The point of delving into the concept of play is to emerge with a nuanced understanding the mode of play. What it is, what it communicates, specifically delving into the developmental theory of play, allows us to understand it in relation to the lives of the children in this research.

5.4 Reading the skits with play

5.4.1 Exploring emergent roles and relations in play

5.4.1.1 Unpacking my observations.

The activities of washing or cooking, making tea, collecting water seemed to be largely taken on by girls. Boys took on roles such as washing themselves, instructing that water should not be wasted in “my house” (skit 3, 2018) or worrying that the children were playing with water

and wasting money. In skit 4 (2019), a male role emerged which was only involved with water in the form of a cup of tea handed to him by one of the girls. Or as in skit 3 (2019), the male action was unrelated to water, but rather to watching soccer and requesting a boy fetch cigarettes from the shop.

I was interested in the moments when the trend of aligning activities according to gender, was disrupted. Skit 2 (2018) is an exception when two girls are not working with water but scolding and chasing others (children perhaps?) for not cleaning the house. In addition, skit 3 (2018) includes a boy who is washing clothes.

The roles of children appeared in the 2018 skits when tossing water out of a bucket with a sneaky intention or throwing water at each other in a playful way. In the 2018 set of skits, they were there washing their bodies, tipping over the bucket shortly before being reprimanded to 'save the water'. In the 2019 skits a variety of children's roles emerged; playing joyfully with water (skit 2, 2019), dutifully carrying out chores for their mothers (buying soap from the shop, fetching water) (skit 1, 2019) and their fathers (buy cigarettes) (skit 1, skit 3, 2019).

To unpack the layers and implicit assumptions in my observations I needed to understand a bit about how I assumed age is performed in these skits. In the 2019 skits, which were much more verbal, the age of the characters was more obvious through the words 'tata' or 'mama' or 'Godin' (the word for child). For the 2018 skits I realised I had to consider the assumptions I was making about adult roles. My position in this school was that of an outsider in two respects: I did not work at the school, I was not part of the community that this school serves; I am white and English speaking. But I did have a few insights that allowed me to think about my observations. The school allocates 20 minutes at the end of the day in which the children clean their own classrooms. I have seen children hanging in windows and lathering them in soap, others sweeping piles of dust, pencil sharpenings and small chip packets out of the classroom door and into a dustpan. I think it is likely that many of these children do domestic chores in their homes. Thus, I may have been seeing children doing the work that children do and the relationships that form between older and younger children rather than between children and adults.

5.4.1.2 Thinking about relations:

I realised that the relationships of power between characters were another element informing what I was understanding in the skits. This informed observations of age and gender.

In skit 4 (2019) there is a direct interaction where a child-playing-woman hands the child-playing-man a cup of tea which, after taking a sip from it, quickly gave it back demanding that it needs more cold water. There is a sense in which the child-playing-woman seems subservient but also a sense in which the boy is ridiculing the male character he plays (skit 2, 2019). Could the male character in skit 4 (2019) not have added this water himself or have waited some time for it to cool down? How is it that a man does not take a sip carefully from a cup of tea? Is he looking for excuses to further control the woman, or did the skit need a comedic instance and it decided to rely on this rather skewed relation between men and woman in the household?

In skit 3, (2019) the men are smoking and watching soccer and a girl is in the background washing clothes after an instruction to do so. She fetches water placing the bucket on her head and sits in front of the male figures. They continue to watch soccer, commenting and performing and taking up space with their sound, the girl playing women continues to wash the clothes silently. While she is situated in between the male figures and the camera or so-called 'centre stage', she feels backgrounded and backgrounds the work of washing clothes.

Skit 1 (2018) and skit 2 (2018) show woman roles (girls) with power over the boy characters (boys) who are washing their bodies and suggest to me that they are children. This power plays out over a recurring event in both skits where the 'children' tip over the bucket creating a 'cue' for the 'adults' to shout, "What are you doing? Save the water!" The skits ends with a show of adults having power over children but I have two feelings about the power the children hold in these short narratives. On the one hand, within the story line of the skit, the move to toss out the water is a powerplay by the child roles. On the other hand it feels more like they have been instructed to do this in order to set up for a demonstration of what is right and what is wrong, referring more to the moral message the skit is set up to share.

In skit 2 (2019) there is a more convincing children-in-power instance. There are two *tatas* [fathers/ older men] talking and they see a distance away, the children tossing water at each other, acting very realistically as they run around playfully. The *tatas* worry together about how much this is going to cost them. This is of great humour to the audience. While the *tatas*

are engaged in dialogue in the foreground and the children play in the background, it feels more like the children have some control over the adults who feel fear at the thought of how much they will have to pay for the water that is being tossed away. This contrasts with the 2018 skits referred to above, where it feels unlikely that the children will toss the water again.

In skit 4 (2019), a ‘child’ sits and plays with a stone while their ‘*mama*’ and ‘*tata*’ role interact. She is silent but throws a stone up and down, turning her hand over in the time that it is in the air. She is artful and quiet, perhaps deciding that she does not really want to be part of this skit – what else might she have to say?

5.4.1.3 Reading deeper with another

Watching the videos together with the educators was part of this analysis process. And key insights emerged here. Lerato (an educator who ‘read’ the videos with me) noted that the ‘men’ are in control: “they are in control of the story”. I realised that as we viewed what appears to be the same configuration of gender roles in relation to chores, this configuration did not always determine who held the power – there is another power wielding element in these skits, and that is the narrative.

Lerato added: “they know gender relations better than we do.” This nuance of power relations in the context of play mode shows how in a way, by deeply knowing their situations, children can mimic the relationships they see, but in that mimicry, they can also poke fun at them by ridiculing them.

Lerato’s comments confirmed the presence of a ‘dual affective plane’. There is a switch in what Lerato was talking about. She was explaining that even if the girls were playing along, the narrative was being controlled by the male characters. From what I can see, this underlying level of who is controlling the narrative is an interesting space from which to understand the nature and content of socio-dramatic play.

5.4.1.4 Exploring the water relations

While the message “Save the water” emerged and re-emerged across the 2018 skits, the way it emerged varied across the skits. In skit 4 (2018), the statement “save water” is a bit out of kilter as it responds to someone drinking water, the basic non-intensive, perhaps innocent, act of drinking water. This differed from the well-defined differences between water wasters and water savers in the first two skits – Skit 1 (2018), and Skit 2 (2018). Only the final skit of 2018 included a slightly humorous/playful relation where the washer boy had to put his hands

in the bucket to realise the water was no longer there. In the other skits, it seemed like the ‘adults’ knew immediately that the children were being naughty – the naughtiness was constructed.

While “save water” was verbalised four times in the 2018 skits, not too much water saving was acted out. I infer that this was because daily water chores are not necessarily the places where we can save a lot of water. For these daily reproductive chores, it is necessary not to skimp on water so as to ensure healthy living.

What these skits show is something about the quality of the water saving message that has been internalised and is being externalised by the learners: It feels like a command and I may even extend this to the fact that the children used the English phrase. And there is a contradiction between the request and the action.

In the 2019 skits, the closest we get to the ‘save water’ statement is the fathers who are concerned that their children are wasting water and costing them money. Here we have a deeper reason for saving water, that the cost of children playing with it will be enough to concern the adults. But the statement is a worry for adults rather than a form of control placed over them.

There is an absence of other ways of engaging and relating to water. I wondered about relationships to water bodies and perhaps folktales about water. I am not implying it is absent in the learners’ lives (in fact, other ways of relating are present in the drawings) but more that our instructions and the bucket may have resulted in household related discourses represented in these skits.

Taking these absences into consideration, the performances might have been shaped by the presence of a researcher and educator adults and the site of the school: perhaps it was for the audience of adults that they performed power of adult over child in terms of morals – the kind of relationships adults want in order to be in control of children. (Just like in school we often do the kinds of things the teachers want to see us doing). Their incorporation of the “save water” message may have resonated with the messages received in their classrooms and been compounded in the English language. I was struck by a sentence one of the children wrote in a later session: “Masisebenzisa Khakuhle”. I understand this to be translated as “Let us use it well” which is a subtle, but qualitatively different, request to the “save water” request, which excludes any acknowledgement of its use.

5.4.1.5 Summary and reflection

Modality of play is a form of communication, expression and power. It has the potential to reveal significant detail about children's relational, imaginal social worlds and it might also show an active resistance to participate in the play. Children through their enactment are showing us knowledge of how we participate in the water cycle and in some cases, how our positioning of the human in relation to water is skewed.

5.4.2 Discussion: Lines of thinking mode and content

If one believes that educational processes need to engage with lived experience and lifeworlds in order to be more just, and are interested in the methods that allow these to surface, one needs to be prepared to listen to the multi-dimensionality of that response.

What is clear is that water flows between gendered relations in the home and the children know this well! They use it to make fun of actions, they use it to demonstrate what is 'right' – we must save water – in relation to the 'wrong'. What stands out here is how these children are externalising the gendered nature of the world they have internalised – gender divisions they know “better than we do” (Lerato noted). Contrary to a developmental explanation, children do not passively learn gender, but, according to post-structural feminism, children instead, actively negotiate the discourses that animate their worlds (Pacini-Ketchabaw *et al.*, 2014, p. 150). It is in this way that we can see the children's world with more accurate complexity that does not obscure the way social justice and equity issues pervade their understanding of their worlds (Pacini-Ketchabaw *et al.*, 2014, p. 146). The use of water in the home is interlinked with the presence of particular family relations that play out through household chores.

Socio-dramatic play brought to the surface a concern that is often talked about in environmental education but hard to get at empirically. It showed the quality of the relationships surrounding the moral messaging around water. In the 2018 skits this message, 'save the water' takes on a simplicity with an all-knowing adult and naughty child, ironically juxtaposing saving water message with the basic need of drinking it: the nonsensicalness of these is relevant and significant in light of the fact that our water crisis is not solvable at the individual level.

While I would not necessarily expect children to understand this complex social relationship, what emerges in skit 2 (2019), is that the children play the parents who are concerned about

the money they will have to pay for the water that the children are playing with. This adds a layer of complexity and might introduce the idea that the moral of saving water becomes conflated with saving money. While this is not wrong, it shows a different root source of morals sensibilities. The characteristic of the relationship from which this messaging emerges is of better knowing adult and naughty child; a command and control of water where the necessary use of water such as drinking is backgrounded or unacknowledged (or in the case of one skit, sent to the background with the mother figure). Playing with water is present but confined to the position of the children. It comes out with the children playing with water in the background, who continue to do so even after they have been reprimanded. The question arises as to how reasons for valuing water are tacitly taught through phrases of messaging, being variously received across vastly unequal social contexts in a South African city.

These children, through their play, have shown that they know the power between adults and between adults and children. The enactment of this is an illustration of their own power to mirror this back and make fun of it. The dominant father figure and dutiful mother figure does not necessarily play out between themselves as children – in two skits the girls were in control of the narratives directing the actions of the boys (for example, skit 1 and skit 2 in 2018). But it shows an intense embodied knowledge of the adult world.

I must acknowledge the influence of the audience which included two of their educators and myself, the researcher. This might have been different if we were observing ‘free-er play’. As a researcher working across cultural barriers, a significant concern can be the way in which ideas of learning move into a space. Banks would call me an “external outsider”, someone who was raised and socialised in a community other than the one in which the research is taking place (Merriam *et al.*, 2001). This categorisation is relevant in that I have had to be constantly aware that I cannot take assumptions for granted and this is part of the reason I worked closely with other educators and suggested open process activities.

I am cognisant of what Osgood and Giugni (2015) called ‘liberal-feminist fears and anxieties’ that can obstruct us from reading the fullness of the children’s activities that at first sight seem to mirror structural oppressions and, particularly in South Africa, can be an inappropriate distraction to other complex intersections of race, class, ability, age and others. At the same time, I am aware of the severity of gender-based violence that occurs in this country. So how do we work with this as eco-pedagogues? Bringing it back to reading the place where these learners are in terms of their learning, what I learned from these skits

makes me wonder how to equip teachers with the ability to deal with what Zipin (2009) called “dark funds of knowledge”, a concept arising out of the fact that children do not bring positive knowledge from their lived experience only but also difficult knowledge about the world and the worlds they occupy. If we leave dark funds of knowledge out, we skip out on the possibility of meeting the learners with the curriculum we hand them. The way children represent their experience of water in community shows water to be locked into what they have understood about power relations in the home and community. It shows the emergent social politics relating to this resource.

The dual affective plane is an important consideration for thinking about socio-dramatic play in terms of **the ways it can be mobilised for learning about our urban environments and how our experiences are shaped**. In this context it is very much about how children narrate their own socio-cultural-material contexts within an educational encounter. It raises existing knowledge: i.e. that water costs money and that the use of water is organised around gendered lines of difference.

Reading play in this way gives the teachers and pedagogistas a glimpse into the socio-material lives of these learners which is an important part of realising the learning process as a two-way dialogue. The ability of the children to surprise the teachers by how well they knew the relationship between money and water resonates with the transformative potential noted in the Reggio Emilia approach. It was also illuminating for the educators who lived in similar socio-economic-spatial situations, that the learners surprised their teachers by showing what they know.

This brings me to thinking about play in context and the positionality of myself as an observer:

Being cognisant that some children are actively and frequently involved in work in the household is about pushing against the northern/ western false conception of childhood and a false conception of play. Interrogating the ways in which our history and mainstream ideas influence our observations is part of the work of a pedagogista. In the context of the Global South, this concerns projecting ideas that are not appropriate.

Such an interrogation is an essential process of observing reflexively: in making these observations, I am learning as much about the lenses and assumptions I am bringing to the data as about the data itself. I am learning about myself. But also, learning about what a

research relationship produces, what I become in the research process and relationship, and what that becoming inhibits, but also what it might enable in terms of seeing things differently and listening differently.

It is also important for other socio-economic-spatial parts of the city: for example, I realised that my selection of the bucket as a prop had been because buckets were a reality across a city in the water crisis, and used in suburban households to collect water. But the association with buckets is not the same across the city, more specifically the prominent use of buckets is not particular in times of drought in all areas, but rather the norm. I heard at least one learner telling another that they fetch water (in a bucket) for their mothers from the tap outside their house. Thus, I needed to be aware that even the selection of a bucket as a prop came with some unexamined assumptions. Buckets were very much a part of these children's daily lives, crisis or no crisis. This resonates with the general feeling across the city that the drought was a drought for the wealthier segment of society, while those who live without sufficient water access did not feel a difference.

5.5 Drawing water and imagining its journeys

In this section of the chapter I share drawings that were done in the second workshop. These drawings followed the reading of curriculum images on the water cycle and urban water journey. I share the children's drawings and my 'reading' of them. The first section to follow presents thinking on children's drawings in research. I then describe the process of reading these drawings in three phases drawing on the *analytical idea of diffraction* (Gullion, 2018) as a way to occupy 'threshold space for possibility' and maintain data is "always in a process of retelling and remembering" (Jackson and Mazzei, 2013, p. 262 as discussed in Chapter 3). While I use categories to make sense of the drawings, I also allow the drawings to speak back to the categories in an attempt to *flatten* out the relationship between the data and the theory. Through this discussion I pasted reminders of the drawings that are referenced back to their originals in section 5.2. I end with a discussion of lines of thinking emerging from the data, and consider these in relation to environmental education.

5.5.1 Data context

The drawings discussed here were generated in response to a reading and discussion of water diagrams from the South African national curriculum. We looked at and discussed two diagrams. One of the water cycle illustrating evaporation, condensation, precipitation

(figure 3) and another on the journey of water from rain to tap illustrating urban infrastructure (figure 4).

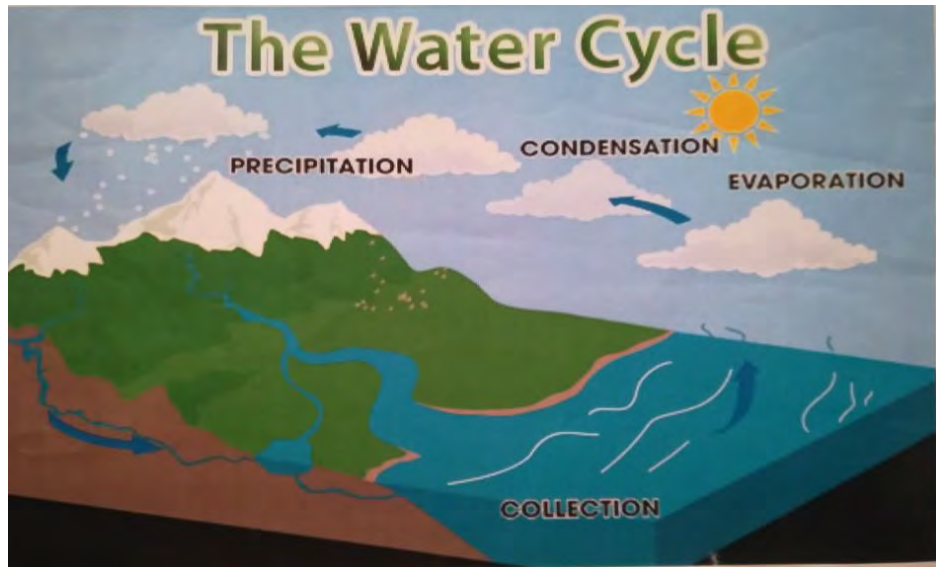


Figure 3: Water cycle curriculum image

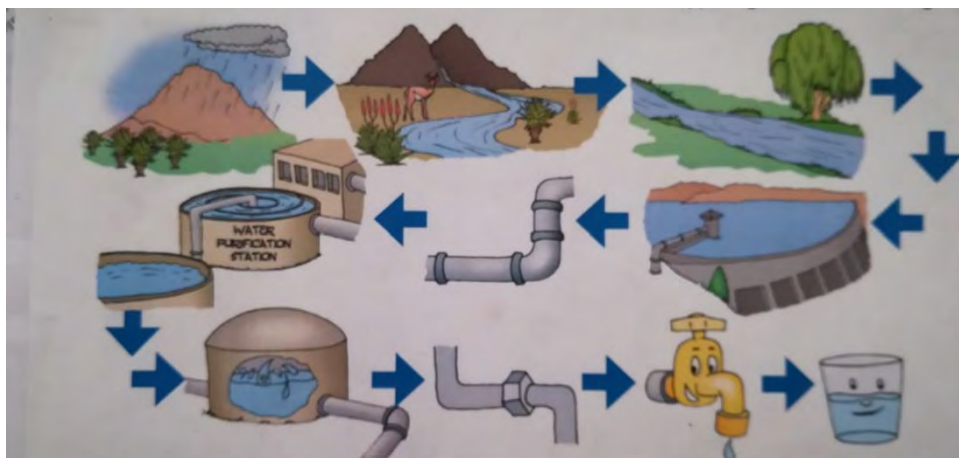


Figure 4: Curriculum image urban water journey

In what follows I describe a process of ‘reading’ the children’s drawings; this process includes presenting an awareness of what I bring as a reader to the drawings and generating a multiplicity of learnings that came from this exercise of educator reflexivity. Seventeen images were generated for which I had complete consent.

5.5.2 *The mode: Children's drawings*

The most apt sentence I have found describing children's drawings is this: "children's visual productions are seen as social rather than individual creations, and as sites of cultural production, rather than as mere reproduction" (Mitchell, 2006). To break it down, children's drawings are produced as artefacts of the social worlds that children inhabit. They are not individual creations unaffected by the world. Yet, they are not simply, as some would put it, a 'copy' of the world which Mitchell (2006) termed "reproduction"; they are a utilisation of various factors towards cultural 'production' and in many ways a form of participation in the world. This resonates with a socio-cultural paradigm of research and moves away from developmental research paradigms which engage children's drawings as 'a printout of the children's brain' for the purposes of assessing a child's ability. While a socio-cultural approach holds a concern for the individual child, this concern is in unity with their surrounding environments and the interaction between these. The drawing itself is in dynamic relationship with the worlds through which it travels, from the artist onto the researcher's study desk; drawings as data are "always in a process of a retelling and remembering" (Jackson and Mazzei, 2013, p. 262). In this reading we see the importance of understanding the ways in which drawings expand beyond the intention of the artist and enter into dialogue with those who read the drawings.

Researchers use children's drawings for a multitude of reasons. Drawings are a mode in which children have a significant amount of control, including participation in the form of non-participation (Dockett and Perry, 2005). They represent a less intense interaction with the 'stranger' researcher when compared to an interview. Research with children's drawings does not only engage drawings but engages drawings in context combined with other modes. This honours, first of all, the child's interpretation of the drawing (Dockett and Perry, 2005). Thus, they are understood as a mode in which children have control and with which they are able to express.

The idea that drawing is a 'pre-writing' tool must be problematised. There is the argument that children cannot read or write so we will work with their drawings. The implied hierarchy of modes here disregards the idea that drawings can be more than language and that language has limitations of its own. Drawings, depending on the open-endedness of the instruction for their generation, can engage imagination inclusive of hopes and dreams. Marshall (2013) used drawings in this way in his exploration of 'beauty' together with children, in occupied

Palestine. He argued that the focus on beauty in the context of violence and trauma, allows for a greater commentary on the present injustice by the children themselves as they articulate what is beautiful and, importantly, what might be more beautiful about their lives. His focus on the idea of beauty, and exploring it through drawing, was a counter hegemonic move to the discourses focusing on the theme of trauma that pervades multiple engagements and representations of these children and the NGOs that work with them. It is not to say that writing cannot do this, but even adults have trouble utilising their imaginations and words are often restrictive in expanding and exploring using one's imagination. Thus drawing is not a substitute for text; it is a different mode that is not necessarily less than text and might be more.

Critically, notions of how children's drawings as ideal modes for childhood research should not be taken for granted. In arts-based research conducted in the Philippines, Mitchell (2006) reflects on the multitude of problematic issues arising in the use of drawing in children's research. Her study challenged the possibility of drawings as 'child-centred'. In their research they brought the children's parents to observe the drawings and the parents began belittling the drawings and apologising to the researchers for the ways their children were not "as clever as theirs" (2006, p. 69). She related this alarming experience and devastating ethical quandary to the danger of assuming all children engage with drawings in a way that has become common in the culture of North American children. She invoked the discourse of a child who was brought up and encouraged to express themselves with parents who would dote on them no matter what. This also brings awareness to the interaction of the researchers, in this case white, and from North America, and the parents from socially marginalised communities, who may not have the time to offer such attention to their children. Mitchell concludes in her case that the drawings and their engagement in the research project showed less about the children and more about the adult-child relationships present in that community. This has something to do with cultural positioning of the drawing mode and what we imagine children's relationships to be with them.

This reflection and my own experience working with the effects of difference in multiple dimensions, made me question the claim that drawings are effective methods to work across cultural difference (Dockett and Perry, 2005, p. 5). I think that nothing 'works' across cultural difference if the dynamics of the said context are not taking this into account. Thinking about educational encounters as sensitive to the collision of multiple cultures, what are the new cultures that emerge between a particular configuration of actors engaging

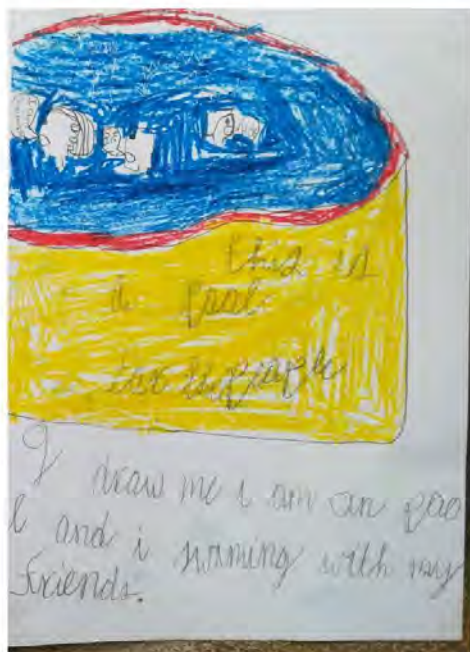
particular modes? We might, as researchers, question the existing tradition of the modes we work with in the contexts in which we are working.

5.5.3 Reading children's drawings

Below I describe the reading process in three phases.

5.5.3.1 Phase 1: Getting to know the drawings

In this phase, I looked at each drawing and wrote a narrative description of the image. I was writing a script that would allow a blindfolded person to know the drawing. In doing this, I was paying attention to detail that I was not able to see when I merely looked at all the drawings (overwhelmed by the variety, expression and what my reading them enacted). As I wrote I attended to the tacit analysis my eyes brought to the drawings, interpretations and inferences I brought to my reading. This allowed for a meditation on how slippery and non-linear the conversion of drawing to text was. I wondered how many of my impressions might be beyond what the original artist intended. Writing these narratives was in a sense slowing down and deepening the reading process.



'This is a pool for the people' is written on the outer wall of a pool in which three children are swimming. "I am swimming" says the one. "Me to" says another. "help" says a third. I feel a bit anxious about the third person: He is slightly apart from the other two and facing the other direction. Do they hear his cry for help. The third person, from what you can see, his head, seems to be a bit smaller than the others. This anxiety is not captured by the caption below: 'I draw me I am on pool and I swimming with my friends'.

What surfaced in these narratives were not only descriptions of the drawings but my own interpretations of and projections onto the drawings. For example, in an image where municipal infrastructure stood unconnected by any drawing lines from a river, I wondered if this was the obscurity of urban-rural connections we experience daily but noted that it may simply have been a result of the learner running out of time.

What also surfaced was a reminder of practicalities and emotions involved in the practice of drawing. In one image, a person has an incomplete arm. I remember how as a child I didn't like to draw hands because they always looked a bit out of kilter. This reminded me that even in the act of drawing there are ways in which we feel more or less capable in relation to our peers' and our teachers' expectations. Or, when two trees were drawn completely in a red pencil, it might have been that there were not enough green pencils to go around.

I also noticed patterns and resonances between the drawings such as a common way of drawing a face or a cloud with sunglasses on. These made me aware of the way the act of drawing is also an act of sharing codes and influences from peers, establishing a kind of shared language in drawing.

This initial reading brought me into a deeper understanding of what I was looking at, reminding me of the conditions under which they were produced and suggesting meanings I might read into them.

5.5.3.2 Phase 2: Unravelling themes

I drafted an initial set of themes that emerged in Phase 1 and considered these themes across the 17 images. The themes emerged from the narration exercise and were considered in at least two dimensions. For example, the drawings *contained* 'representations of connections in the water journey', but also this content is related to the drawing materials and time available. The 'complete' set of themes provided a way of representing these drawings in my research with a sensitivity to the drawings as generated data and the conditions of that generation.

The emergence of these themes brought into conversation multiple aspects of the reading process; the images, my narratives, the literature on children and my original research objectives to explore the ways in which multiple modes might present transformative potentials for ecopedagogical orientations amongst South African learners. Drawing inspiration from Docket and Perry and other research utilising children's drawings (Mitchell,

2006; Marshall, 2013), I expanded the idea of a *theme* to include ‘absences’: what did not emerge in the drawings, that emerged in all of them, or in only some of them.

As I thought about each theme in relation to all the images, I was aware that the theme was made more meaningful as it entered into dialogue with each image: expanding a theme, troubling a dichotomy; introducing an ambiguity. In a sense, the drawings spoke back and unravelled the themes. The themes played a role in reducing complexity in order to find an entry point to reading the drawings, Yet, when the themes were brought into conversation with the drawings, the complexity re-emerged inviting me to read deeper.

This method for reading the drawings I have understood as resonant with diffractive ethnography as it maintains a sense of thinking *with* theory – rather than allowing the theory (the themes I developed) to think for the researcher – which holds an intention of moving away from learning what things *are* – an essentialisation – and rather are the dynamic interactions between time, space and material (Gullion, 2018, p. 104). This way of reading became a way to keep alive these drawings as emerging from a relationship, having something to tell and yet not allowing for a *demi-real* (Bhaskar, 2016) certainty to be drawn. In this process, it is not only the data that moves through the theory, but it is all elements, theory, data, ourselves that become ‘deterritorialised’. Instead of producing themes of certainty, we use the themes as places in which the data can refract, keeping in mind the fluidity of data and the researcher-child relationship.

5.5.3.3 Phase 3: Reading with educators

Two educators and myself sat down and read the drawings through a repetition of phase 1 and 2. It is important to note that one of the educators is also a mother and librarian within the community. Her perspective was an important one to include as she may be familiar with codes emerging from the world of children in Philippi. In what follows I discuss the diffracting themes before drawing out some lines of thinking for environmental education.

5.5.4 Results: Diffractive themes from images

In what follows I consider the drawings in the light of the dialogue with the various themes we generated. I refer back to the drawings exhibited in section 5.2, some of which are re-presented below.

5.5.4.1 Connections and disconnections

Six pictures showed one watery place with no explicit connections to other watery places. Two pictures show quite clear disconnections: one (drawing 8) listing clouds, rain, river, cup and a child swimming in the sea. The other (drawing 10, represented in figure 9 below) showed the water purification infrastructure as a completely separate system to a river with trees.

Six pipes feature either linking different watery places (drawings 2, 9, 10, 14) or running off the page, their connections being articulated in the captions (drawing 1 and 12). Pipes were prominent in the discussion with educators – pipes drawn sometimes in meticulous detail at times (such as drawing 1 re-presented in figure 5 below).

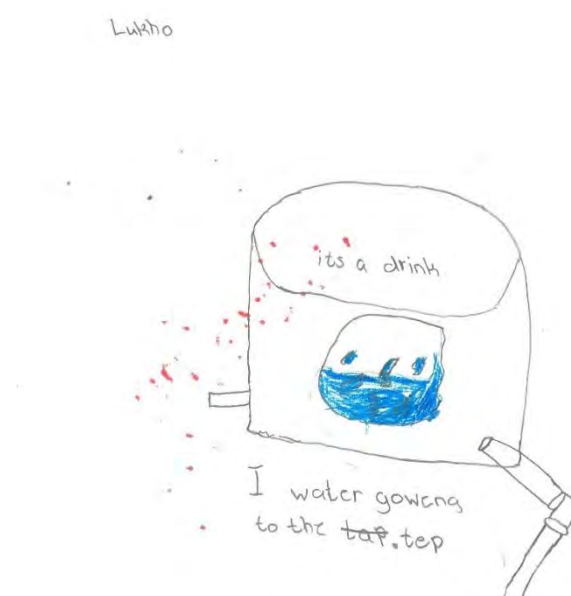


Figure 5: Drawing 1 re-presented

The girl standing outside in the rain (drawing 15) might include a connection, showing that the rain discussed in the water cycle image is linked to her lived experience, when she gets to flaunt a rainbow umbrella. However, standing in the rain also troubles my original conception of 'connection' which was to connect consecutive watery places in the chronology of water provision rather than a body in the rain. I took note of this disruption.

Going back to the curriculum images (Figures 3 and 4) that were provided to the children, and to which they responded, I am reminded that the connections between the stages is only depicted visually through arrows. Arrows are an abstract visual representation of a

connection. There are visual depictions of pipes, beautifully imitated in the learners' drawings; however, they are not drawn as connecting different water infrastructure systems. I, as an environmental educator concerned with how learners understand urban ecological connections, was looking for these in the children's drawings. It was then retrospectively surprising and impressive that material connections emerged in the drawings. The absence of connections in children's drawings is less a reflection of their understanding of water's journey than it is a response to the image. The presence of connection then, in an image, is almost a re-interpretation of the abstraction in the curriculum image.

5.5.4.2 Relation to water

Even though the instruction was to draw themselves at a watery place of their choice, only 12 of the 17 learners drew themselves into the drawing. The majority of these were girls. Six drawings (drawings 7 (re-presented below in figure 6 below), 8, 9, 11 (re-presented in figure 7 below), 12, 16) depicted children in the water of which five (drawings 8, 11, 12, 16, 17) were captioned as swimming or in the pool. Two drawings (14 and 3) were captioned as 'looking' at the watery place. One (drawing 15) was 'standing' in the rain. One was washing her body (drawing 9). One child was simply in the mountains "because I love it" while it rained in the distance (drawing 4, represented in figure 11 below).



Figure 6: Drawing 7 re-presented

Looking across the drawings, I wonder if my request was ridiculous as some learners literally drew themselves inside the water purification station. Perhaps the idea of these water infrastructures is too strange, and it is being merged with a place for swimming; others are observing it from a distance. One of the educators mentioned that “every child wishes to have a pool” (Educator 1, 2018). Drawing 12 is captioned as a dam seems to show the type of pool that the educator identified as common in the area, a plastic tarpaulin held together with a wire structure. Thus, for some children, the visual images in the curriculum diagram were to be reclaimed as a pool.



Figure 7: Drawing 12 re-presented



Figure 8: Drawing 17 re-presented

I was drawn to the image of a pool with the caption: “This is a pool for the people” (drawing 17, re-presented in figure 8 above). When I first read the words I immediately thought about an ethic of public/common good: The people’s pool! One of the educators had a similar but cautious feeling, that the child had a sense of social justice. But thinking back to the curriculum diagram, I realised that nowhere in the curriculum images the learners discussed, was there a pool! And yet many parts of the curriculum images are quite similar to a pool. The learner who drew a pool for the people (drawing 17) may have wanted to correct this ‘absence’ in the curriculum diagram and recover the bodies of water that he knew and had fun in. Reminding us about ‘pools for people’ is, in a way, adding to the visual depiction of the journey of water. This is echoed in drawing 10 (re-presented in figure 9 below). The caption clarifies any ambiguity about purification stations stating it is “a pool for the people”

– not for something else. This also relates to a relationship with water; water bodies can be places where we have fun together rather than simply being for delivery or conservation! Perhaps, for this learner, a significant injustice of this last DayZero summer was that there were no public pools open to play in.

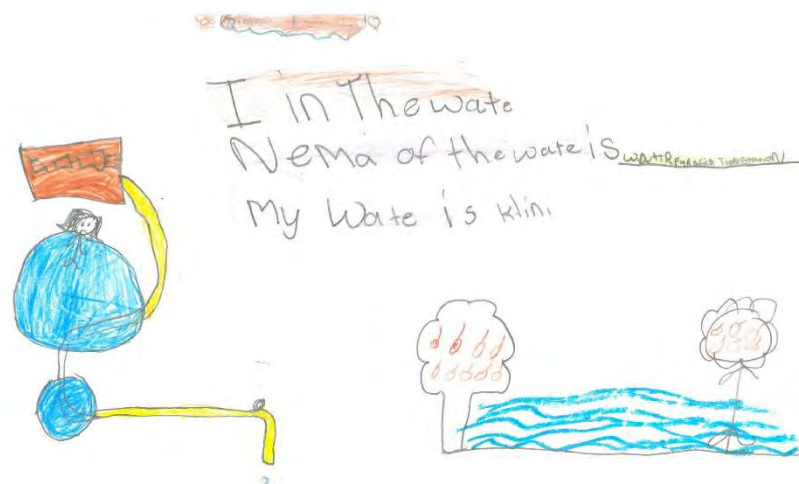


Figure 9: Drawing 10 re-presented

5.5.4.3 (un)Familiar places

This theme was inspired by thinking about what it means to learn about the journey of water and the concept of place in children's geographies. Children geographers such as Ansell (2009) trouble the place-based focus in childhood research noting that children's immediate surrounds are not the only places impacting upon their lives. Research concerned with the well-being of children generally, should not lose sight of these 'child-free' places. What if children wonder about and imagine these places? Would they still count as child-free? I found myself wondering about what the familiar and unfamiliar places are along the journey of water, particularly inspired by a drawing depicting a learner looking on at a water purification station (Drawing 14 re-presented in figure 10 below). She drew this after inquiring into where in real life this purification station is

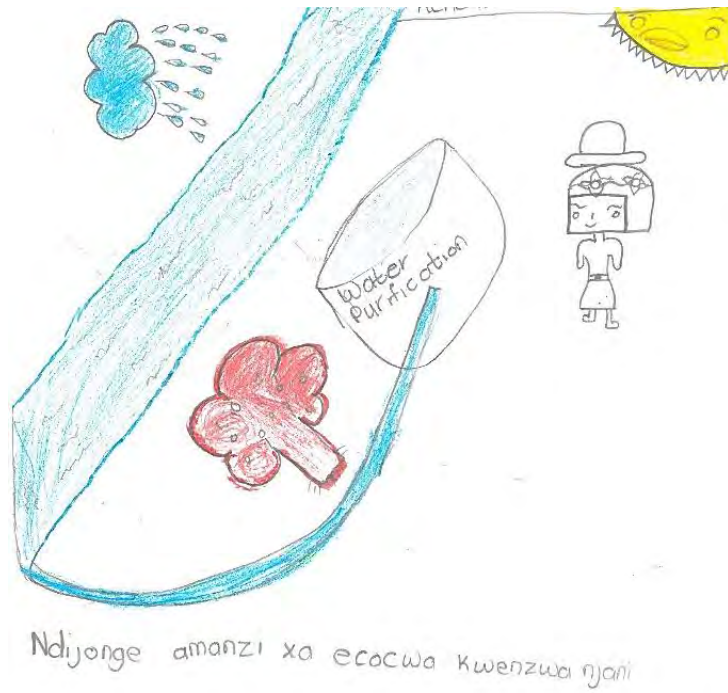


Figure 10: Drawing 14 re-presented

Based on my observations about the context, six places with which the children depict familiarity in their drawings are: swimming in the pool “the pool for the people” (17), swimming at the beach (16), swimming in the river (11), outside in the rain (15) and (I think) in the mountains as the caption read, ‘I am in the mountains because I love it’ (4, re-presented in figure 11 below)).

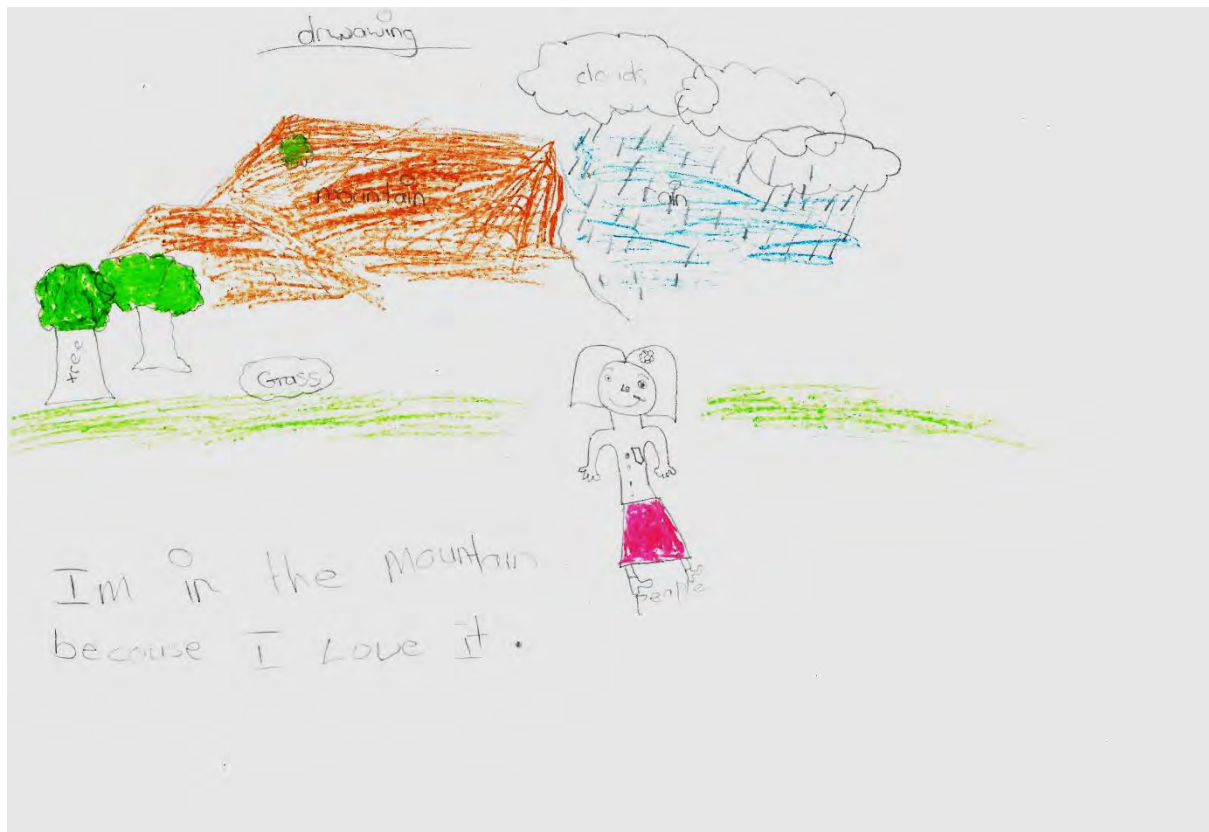


Figure 11: Drawing 4 re-presented

This theme was, however, troubled by a merging of familiar and unfamiliar places. Drawing 14 (re-presented in figure 10 above) depicts a replica of the water purification station, complete with municipal buildings and then the learner placed herself in the water purification station as though it was a pool. The caption included: “I in the water, name of water is water purification station my water is klini [clean]”. Here, the unfamiliar space of water purification station is reimagined as a familiar space, a swimming pool.

This positioning/relation to water making it familiar is in contrast to drawing 14 where the learner is positioned outside but looking onto the water purification station. After we read the curriculum images and asked the learners what they had learned, a few expressed that they had learned water must be cleaned. The learner who drew herself looking at the purification station (drawing 14, represented in figure 10 above) had asked the question: “Where is the water purification station?” I see her picture as a continuation and almost imaginative quenching of this curiosity. *Ndijonge amanzi xa ecocwa kwenza njani*, which translates to “looking at the place where they clean water and she is looking at how they are cleaning it”.

These exchanges in the discussion and the caption stating that the water is clean, alerts me to the knowledge of water quality on the part of the child, and a wish for it. And also, a curiosity about where and how this cleaning happens – a logical concern for an urban citizen.

The journey of water is about a combination of familiar and unfamiliar places. This is not only in terms of whether a child has been to the mountains or not, but in terms of ‘invisible’ watery places; it is more a case that children (and adults for that matter) do not necessarily belong.

5.5.4.4 Visual depictions of water

Two observations surfaced in my discussions with the educators. All the water is blue and there is a fullness of all the depicted water bodies, except for “a cup half full” as Educator 1 observed.

5.5.4.5 Absences

In contrast to the skit we did with a bucket prop, these images included very few references to daily chores involving water with the exception of a cup half full (drawing 8, re-presented in figure 12 below), a girl washing her body (drawing 9) and a bucket sitting below a tap (drawing 2).

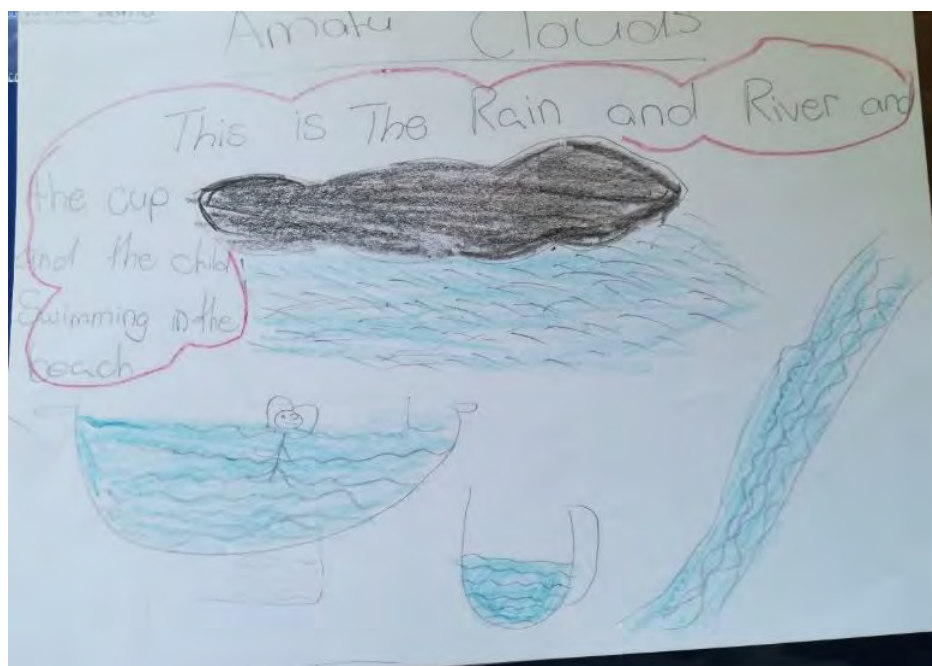


Figure 12: Drawing 8 re-presented

Our sessions often included invocations of the phrase ‘save water’ or ‘conserve water’. It was even present in the discussion of the curriculum diagrams just prior to the activity of drawing. The educator asked the question, “What did you learn from the drawings?” One learner response was [directly translated from isiXhosa] “We learn that we need to carry it well”. [Video 1 Wednesday 24seconds].

In my reading of the images, I found that none included suggestions of water conservation. However, one educator drew our attention to a drawing of a cup that was half full and said “I think there is a sense of economising”. Thus, this absence might not have been total. This absence, among all other absences, comes up as significant because the ‘save water’ motif was present in all our other interactions.

5.5.4.6 Discussion: Lines of thought emerging for environmental education

I see the exercise of getting the children to visually respond to the curriculum images as engaging in a dialogue on three levels: firstly, a dialogue about discovering water and its journey; secondly, a dialogue about what is communicated through the visual mode; and thirdly, a view of the world and themselves as it emerges in the consciousness of these learners. This is inclusive of commentary on the topic of water but also commentary on the mode of representation we worked with.

Commentary on the curriculum images we read together

Through the unravelling thematic analysis, I am drawn to several ways in which the children were commenting on the images from the curriculum. Reading their drawings as responses to the curriculum images constituted a process of re-looking at the curriculum drawings through learner lenses, lenses crafted through their drawings. There were a number of ways in which these drawings ‘dialogued’ with the curriculum drawings: reinventing the drawings; completing incomplete representations of connections; expressing curiosities about watery places strange to the learners; and finally reclaiming water for the activities that matter to them. Whether it was a resistance to the instruction to draw themselves at a place on the journey of water or a reminder that there are watery places that were left out of this drawing, swimming pools featured prominently in the drawings of the learners. This addition is a reminder that water, while needing to be delivered, used, and conserved, is also there for play and fun.

Reflecting on the lack of visual representation of connections. One drawing reproduced the split between ecological biophysical spaces such as rivers and urban infrastructure. Many of the drawings included pipes, either running off the page with a caption that communicates its connection or connecting one or more watery place. As the curriculum images represented connections in the forms of arrows, I realised that the drawings have further developed the curriculum images by imagining and representing the connections in the worlds of their drawings. This is a process of re-grounding something that has been abstracted.

The images also expressed curiosity about the journey of water, imagining a reduction in the distance between themselves and unfamiliar watery places such as the water purification station (drawing 14).

Possibilities and limitations of the visual mode

This process of reading learner drawings brings to light a number of ways in which views and notions of water can be produced and reproduced through visual modes. The engagement allowed me to see that the visual mode comes with some possibilities but also limitations.

The problem with the notion of blue water is something that Krause and Strang (2016) have written about. They argue that often representations of the hydrological cycle privilege blue water at the expense of other valuable water reserves that take on other shades; water that is underground and brown or water that is murky in wetlands. Blue is the visual tool used to communicate the presence of water in the children's drawings. We can see this as an example that brings up the ways in which the visual mode comes with a particular politics, in this case, the politics and bias of blue water. This is a limitation of how we imagine our water reserves overall including ground water and wetlands.

A possibility is the reinvention of images such as putting people into spaces represented as 'people-free' in relation to water infrastructure that is in fact affected by human activity and directly affects the lives of urban citizens. This is both in terms of witnessing strange watery places and reminding of other places where water and humans play.

Importantly the images showed few signs of water conservation concerns which is different to what emerged with the skits. This would not be interesting were it not for the fact that in the discussion of the curriculum images we had asked the question, "what did you learn from this image?" A learner reported that she had learned we must "carry water well" [*wapata Kahle*] [Video 1 Wednesday 24seconds].

The mode of drawing comes with structural codes and rules but also the space to be playful.

Reading images as children's dialogue with the world

As I sat with two educators looking at the images spread out on the table, all of us took a while to notice the small child swimming in the pool calling for help via a speech bubble. While there was a strong message across the images about the importance of pools, this small detail tells of underlying fear that exists for some children around water. While much of what was portrayed in the images was positive, this small detail reminds us about the negative emotions linked to children's experiences of water. Indeed, the instance of a child drowning was recalled in a piece of writing a learner did in workshop 4. Docket and Perry (2005), in their careful work with themes in images on school experience, note that the absence of negative dispositions in the images might say more about the conditions or expectations perceived under which the images were created.

One educator commented that "all children would like to have a pool", noting the prominence of swimming pools across the images. In the context of this research, private pools are rare. We discussed the fact that many public pools were closed the last summer (2018) and it occurred to us that most of the water bodies appeared in the drawings to be full. In this way, drawings do not necessarily reflect what was available to the learner but a desire or a wish for the availability of water.

5.5.5 Concluding drawings

Exploring the journey of water through visual modes revealed a few ways in which learners engage with curriculum content. Re-writing, resisting, playing, reinventing, being curious... despite the set 'rules' of communication in this visual mode (such as water is blue), there is space within this mode for a questioning commentary by the learners. The drawings are a response and engagement with the curriculum image that allows for the emergence of things beyond the representation, repositioning it within daily life, completing the connections, adding to the functions of water shown in the image.

Reading these drawings as adults we are inherently limited but in understanding our limitations, we become more sensitive to how we read these drawings. We falter by missing important signs or rolling our interpretations far beyond the intentions of the learners. One example of the former was the image of a cup with water, which was read by an (in community) educator as a representation of water conservation. A glass half full for me feels

like yet another warped example of water conservation as it locates water conservation at the level of drinking water. This was not something I had picked up when I first looked at it. The limitations of our authority as adult researchers here need to be considered with care. However, the engagement between myself and the learners constitutes a dialogue and rolling our interpretations out beyond where they may safely be accounted for or confirmed by the learners, was important for us to begin to understand where these differences lie and the mechanisms at work in our inferences.

This exercise constituted a re-view of curricula content. Through this exercise I was able to locate an example of complexity reduction in the image (Biesta, 2007a). Complexity reduction is not necessarily a bad thing, but it must be accounted for. From the perspective of ecopedagogy, this complexity reduction – of water being blue or of connections being abstracted to arrows – is obstructive to understanding connections to our ecology... and perhaps the pipe, its quality and size that links the storage and the tap is worth learning about. Then we need ways of representing those connections that are anyway obscure to urban lives. Drawings produced by the learners filled these in using pipes which is one step closer, more material, than the arrows.

5.6 Chapter conclusion: Njabulo's story

To work consciously with the expressions and experiences of children as central to generating theory, in this chapter I used two learning modes through which I engaged with learners in the process of learning about water. The learning directive was to explore the workings of water in urban space. The first mode is the children's dramatic skit of water in community. The second is children's drawings of a place in the journey of water. In this chapter I have shared my analysis of these two arts-based modes, socio dramatic play and drawings. They are analysed or interpreted here in the spirit of Reggio Emilia documentation as a means for 'deep listening' by educators and a form of educator research towards a responsive curriculum approach (oriented toward in my method/praxis chapter).

For each mode, I drew on theory for thinking *with*: The dramatic skits were listened to with the scholarship on socio-dramatic play in children's lives (Joseph et al., 2014; Vygotsky, 2016) while the drawings were read with thematic analysis of drawings in research (Dockett and Perry, 2005; Mitchell 2006) and the concept of diffraction (Gullion, 2018). Thus, as I presented what I read, I presented how I read.

Working with the artifacts offered by these learners and reading them for meaning and experience in the context of how they were generated constitutes a reflexive act. The work of this chapter is a reading of as well as a reading with as I worked with the learners' drawings as responses to the curriculum drawings. I draw the chapter to a close with a story.

One day, Njabulo was watching his mother do the washing.

He gazed into water as it splashed onto the side of the bucket, changing shape and colour as it did so. It was a hot February morning. He longed to touch it, to feel it move, to make a muddy puddle and feel the cool with his feet. But, we knew that this upset his parents as water costs money!

He could not resist! When his mother turned to hang up a piece of clothing, he tipped the bucket over and watched as the water flowed over the ground, making little pools and rapids along the uneven ground as it flowed away from the house towards the pavement.

"Hayi, Njabulo!" His mother shouted. Knowing that she was cross, he grabbed his school bag and dashed out of the garden, along the pavement to join his friends walking to school.

Yoh! Adults were so tense about water. When he was in Grade 4 they had said that we were running out of water, that we must save water but it is hard to save water when the household tap closes before the day has finished.

Later, after school they are working with a researcher on the journey of water.

The educator researcher asked, "Where does water come from?"

The learners responded:

"I know water in the tap and in the rain."

"I hear it comes from the government, municipality, mountains, rivers..."

"Ndim lo ndiphandle ndiyahamba kuyanetha phandle."

The researcher then asked: "But how does the water get to the tap?"

The learners responded:

"A pipe links the tap to the 'water purification station'. Here the water is stored and cleaned."

“I imagine myself looking at that water purification station.”

But she was not done yet, the researcher asked then, “How does the water get to the water purification station?”

One learner pointed out: “The water comes from a dam.”

“But how does it get to the dam?” the researcher asked.

One learner said: “The water comes to the dam from the mountain.”

Another said: “It flows in the rivers.”

“I am swimming in the river,” another learner shouted.

“And how do the rivers form?” the researcher asked.

One learner noted with seriousness: “The rivers come from the mountain when it rains.”

“I’m in the mountain because I love it,” another learner exclaimed.

“And what brings the rain?” the researcher continued.

“The clouds!” several learners shouted.

“When the clouds get heavy, the rain begins to fall. Imvula!” (the children sang).

“And how do the clouds form?” droned the researcher.

“The sun shines onto the sea.”

“With the heat of the sun, the water vapour rises: Evaporation/ umPhunga!” the learners sang.

“This is me swimming at the beach,” one learner shouted.

“And that is the journey of water,” concluded the researcher. Then the children sang “Capa Capa Amanzi lokwe yam.”

The journey of water seemed never ending... Just as school had that day. So many questions coming at them from the teacher... And sometimes, when she asked a question, the class seemed to be more quiet than ever.

Njabulo felt a bit uninspired by the water cycle journey that they learned repeatedly at school. As he caught up with Lukhanyo after school, to revive his fallen spirits, he suggested that they play Matadi boatman on the walk home.

This game was inspired by a story told to them by their favourite librarian:

Long ago, before white people came to Africa there was a group of people known as the Matadi clan. They were maritime people who travelled between Congo and the Atlantic Ocean in wooden boats. The Congo River is the second longest river on the African continent, just shorter than the Nile. It has depths unknown.

This river had rapids and high waterfalls, which Europeans say are unnavigable, but they did not understand the fullness of navigation.

The Matadi boatman long ago made a pact with deep river spirits who gave them sole rights to sing vessels from the river into the Atlantic unmolested. They used their songs and poetry as maps to navigate the river and survive its rough journey.

“Ewe, let’s travel along the deep Congo river. OK, you can be the water spirit.”

Njabulo jumped in front of Lukhanyo and made his arms ripple at his sides. “Good day Matadi boatman Lukhanyo. Are you looking to chart this river out into the Atlantic?”

“Greetings water spirit, yes. I ask for your guidance and protection as I go.”

“Of course! Just remember to sing the songs as you get to the rapids you will pass through unmolested. When you enter the ocean, remember to read the stars. “

Lukhanyo and Njabulo paddled their boats along the pavement, past other school learners on their way home. As they neared the communal toilets (which they preferred to rush past because of the smell), they readied themselves for the rapids and they began to sing the song about the river Emlanjeni

Phew! They made it through the rapids – or the terrible stick. They continued singing cheerfully paddled past Nomzana’s fruit stall. “Molweni abantwana!”

“Molo Mam Nonzana.”

“Njabulo, here comes the next rapids.” They passed the butcher stall with the dog that sleeps under the table waiting for some scraps. They started to sing as they raced through the rapids, passing the butcher stall with great speed.

Turning into a smaller road, they breathed a sigh of relief at having survived yet another rapid. Lukhanyo! There is the Atlantic! Njabulo was pointing to the soccer field.

“Whoopi!” said Lukhanyo.

They paddled their boats onto the grass, dropped their bags and joined some of their friends for the game that was about to start.

THE END

5.7 Postscript: Reflecting on the work of story in representing educational research

It took me a while to understand the work that this story was doing in my thesis. The first version was an attempt to compile what the learners had communicated in skits and drawing into a children’s story. I was preoccupied with trying to produce something for the learners – but it felt clumsy and the resources and work required to publish a book did not feel worth the small amount of engagement I had had on the topic.

The story was left on the backburner as I wrestled with the meaning I was being asked to make. I revisited it a year after it was initially written as a result of reading Nxumalo and ross’s (Nxumalo and ross, 2019) demonstration of the use of story in educational research literature (previously discussed in section 3.8). But I realised that this story did something important for educational researchers, in terms of understanding educational experiences, reflecting on them and imagining into better pedagogies.

Importantly, reading this story a year later, I realised that its first rendition reproduced the linearity of water’s movement. It is focused on the reverse from home to sea. It also left out the messy sewerage journey of water, a version of which Njabulo and Lukhanyo walk past each day. With this retrospection, rather than correcting it I am going to sit with it and think a bit about the ways we story or erase this part of the journey of water from our educational engagements with water – an ignorance contract about the messy parts of water. The story fed back a critique of my educational session.

Njabulo is a fictional composite (multiple truths and ways of knowing) character that tries to embody the experience, thoughts, and world views of children over the time of my PhD fieldwork. The story is informed by my study and pedagogical documentation of skits and drawings as children's own inquiries into water. It tries to show that Njabulo's childhood is one that is wrapped up in the concerns of his parents of which he is attentive; it is not carefree, and yet, he plays, dialogues with his friends, follows his impulses and inquiries into his world. It is my own piecing together through story of the knowledge these children already hold from the worlds they inhabit and have generously shared with me. It is an accompaniment to Nxumalo and ross's call for "new pedagogies in response to young Black children's uneven inheritances of increasingly uncertain ecological futures" (2019, p. 520). This imaginative act is inspired by the speculative fiction exercise of Nxumalo and ross who imagine educational futures for black children in North America and the afterlife of segregation, which also applies in the context of South Africa as we continue to battle the existence of colonial and apartheid structures.

Underlying the writing of this story is another melancholic and nostalgic imaginative act. I was writing the story as a way to imagine getting through the multiple obstacles to knowing these children more intimately and fully – the parts of their lives that are both good and bad. Thus writing this story, imagining into the experience of the child, informed by my interactions in and documentation from situated water inquiries, was a wish to be much closer to these children. I feared not knowing these children well enough to reflect on my educational encounters with them. I do not live in their community and I did not spend large amounts of immersive time with these learners.

The story is a moment of imagining into the daily experience of these children moving in and out of school. This imagining is a piecing together of my observations and learner offerings in our inquiries. They include both concerning things that are uncomfortable to know, for example, that parts of my sessions with them were experienced as dull, but also the curiosity and imagination that the children expressed through their skits and drawings.

The water cycle journey alludes to the drawing exercise we did and storying some of what was shared through drawing. Njabulo's boredom with the questions reveal my experience where the children were really not that interested always in answering the many questions that educators posed in the hopes that children would "use their own voices". In fact, there is

a lot more to posing questions: the educational space, history and relationships need to be interrogated for bringing forth voice.

I used the story to imagine more expansive water pedagogies that push at the boundaries of their existing school curriculums. Developed from an article by Owuor (2019), the Matadi boatman game is a wish for children to hear more stories about Africa outside of the colonial enclosure of its stories – as a basis for physical, social and spiritual ways of knowing and relating to their worlds. The story can be helpful for understanding entanglements between the ocean and African peoples that are not dominated by Europeans or the myth that African people only reached the ocean as slaves.

Finally, the Matadi boatman story is also a new way of getting to know a river. In Geography we learn about fluvial systems and there is not a human in sight, apart from perhaps the work of pollution. Shiva (1988) condemned the way in which we have constructed ourselves to be outside the water cycle and how violence is done to the water cycle through this conception. The story of the Matadi boatman includes features of the river but also embodies a non-hierarchical relationship between the river, river spirits and the boatman.

Thus, the story, as a mode that captures the relationality of my time with these children combines in a dynamic way the offerings through the skits and drawings, the experience of being in education programmes run by adults and the presencing of different historical and cultural ways of knowing. It is an act of critical pedagogy, offering space for both the voice of children but more importantly the room for expansion, for the ‘not yet’ in our water education encounters.

Leggo and Sameshima (2014, p. 540) urged educational researchers “to compose and tell our stories as creative ways of growing in humanness. We need to question our understanding of who we are in the world. We need opportunities to consider other versions of identity. This is ultimately a pedagogic work – the work of growing in wisdom through education, learning, research and writing.” In writing this story I was not only observing more rigorously my relational experiences with these children, I was also observing myself in wholeness, beyond the anxious confines of my differences but with a more acute account of my offerings and potential harming.

Chapter 6: Making (non)sense of urban water (Case study 2)

6.1 Introduction

In this chapter, I present the co-engaged inquiry process I hosted with a group of high school learners in an environmental education organisation. I share the empirical and co-produced material from our workshops. The empirical material is presented and discussed in relation to its context of production – an arts-based inquiry towards knowing water more deeply.¹¹

The chapter is organised as follows. After this introduction, I share the street theatre script, workshopped with the participants and representing a portrayal of what we learned and grappled with together. The sections that follow this script share an unfolding of the multidimensional processes behind developing the script. The second section *situates* the collective inquiry in context by describing the relationships between myself and the learners, mapping out existing knowledge, and exploring different sources of knowledge about urban water and the 2018 water crisis: across school, community, and the media. In the third section, two dialogues are presented and discussed as forms of collective analysis. These are focused on the concerns of wetland conservation and water access and are presented and discussed. The fourth section presents and discusses an improvisational theatre exercise in terms of the social and relational processes and responses to a water shortage. This material is brought into conversation with Bhaskar's dialectical process (discussed in section 4.4) in order to understand the unfolding of knowledge and learning about complex socio-ecological challenges.

These sections can be seen as nested and emergent where the material generated in section 6.3 and 6.4 are emergent from the conditions and relationships we were working in and the script is emergent from them all as represented in the diagram below (Figure 13).

¹¹ The first time I wrote with the empirical materials from this encounter was for a paper in the *Sustainability Journal* (James, 2019) and included in section 11.3, Appendix B. It was a contribution to the special issue on transformative and transgressive learning. Thus, while some of the empirical material (section 2 and 3 below) has been written about elsewhere, it is returned to in this chapter, as part of a broader process.

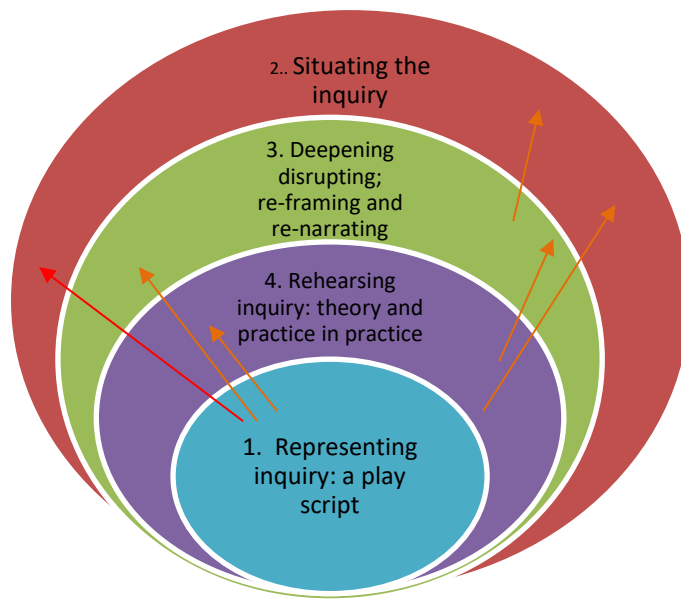


Figure 13: Map of play building process

6.2 The play: Representing inquiry

Setting: This play, in the style of street theatre, can be done anywhere, with a 2 x 3 metre rectangle stage, with a semi-circle audience and a ‘backstage’ of actors, and with minimal props positioned non-distractingly on the edge.

Props:

- A tap stand
- A washing line with two stands to hold the line up
- 5 buckets
- A soccer ball

The educator notes are included as prompts for processes that can be conducted to reinvent the scenes so that they can become relevant to the group who is involved in the inquiry.

Scene 1: *Talk crisis*

Scene: Introducing the rectangle and actors

[Scene development exercise: Host a conversation with the participants about the water (or other type of) crisis and ask what they have heard about it in the media, in their homes, at their schools....]

Actor 1: [walks to the centre of the stage, stretching both arms out to the side, and shouts to the audience] “Day Zero! Day Zero! Day Zero!” [walks to the opposite side] (Keeps shouting the slogan as the others enter the centre.)

Actor 2: [walks to the centre of the stage and opens arms] “*Together we can save water.*” [walks to the opposite side]

Actor 3: [walks to the centre of the stage and opens arms] “*Water crisis, water crisis!*” [walks to the opposite side]

Actor 4: [walks to the centre of the stage and opens arms] “*Every drop counts*” [walks to the opposite side]

Learner: [walks to the centre of the stage and opens arms] “STOP!! What is all this noise!? What is this crisis that we are all going on about?” [walks to the opposite side]

Scene 2: Show the crisis behind the crisis and unpack the issue

Scene: It is early morning and there is a hustle and bustle of people lining up at the communal tap waiting to fill their buckets. Actors all make the sound of drops in a rhythm, as the buckets slowly fill up and people shuffle forward. The area around the tap becomes muddy.

[Scene development exercise: This scene could be reinvented through an exercise: Act out a response to a tap running dry.]

Nikiwe: Kawuleza sisi. Ndilate, Hurry up sister, I am late.

Zikhona: Wena! Can't you see these drops dropping into my bucket... I can't go any faster.

Nikiwe: Eish, my customers are waiting for their cars to be washed. If I don't get back soon, they won't pay me... If only I didn't have that device at my house, I wouldn't need to be here.

[school learners join the line and splash the puddles of water].

Zikhona: Hayi! Izihlangu zam (my shoes)! They are all muddy. Be careful, this is my one clean skirt. What a mess this stand pipe is. Here I am waiting for these clean drops while there are puddles and puddles of dirty water all around... Hang on! Why are you lot not at school?

Learner 1: Don't you know, they closed the school because of no water.

Zikhona: Hayi khona, how are you going to pass matric now? All these days lost to no water.

Learner 2: Ewe mama, I wanted to ask my maths teacher something but now I can't and our test is tomorrow.

[Finally Zikhona's bucket is full and Nikiwe steps forward and turns on the tap. A few seconds later she shouts:]

Nikiwe: Aphelile amanzi! The water is finished.

Everyone: Gasps!

Lukhanyo (standing behind Nikiwe): Let's share.

Nikiwe: Share? But that is too little for my car washing business! Is this going to be a day with no income?

Noncendo: How can I do my washing? How can I share when someone in the suburbs is not sharing her pool full of water?

Lukhanyo: We're not talking about suburbs here. We want water and we're going to share.

Nikiwe: I'm not going to share. Go to the suburbs and ask them for water.

Odwa: Hey lady. We must share man.

Joker: Freeze! I want to ask you something before we go through it again. Whose fault is it that we have no water?

Lukhanyo: It was our fault.

Joker: You couldn't have finished it. Not all of you even got water? How come?

Odwa: It's the government because they switched it off.

Lukhanyo: But they switched it off because we are wasting it.

Noncedo: Oh no, but water is a need! It is our human right to have water. How can they switch it off?

Joker: Wait a moment but there has been no rain. How come there has been no rain?

Noncedo: That's because of climate change.

Joker: So is it the government or is it climate change?

Odwa: Government.

Joker: Why?

Nikiwe: Because he's the one who closed the taps.

Joker: But he had to close the water because climate change and there was no water.

Lukhanyo: But climate change is our fault.

Joker: Freeze! There are lots of arguments to make. Think about what you want the audience to believe. What do you believe?

Lukanyo: I believe that we are the reason why we don't have water It is all our fault.

Odwa: But it is the government that is at fault because in our community taps are closed, but in the suburbs (shrugs, nothing.)

Noncedo: But they are paying the water.

Joker: That's right, they can afford it because they have got income. Why have they got income?

Nikiwe: Because they have got big businesses... big businesses from history. (Who is history?)

Noncedo: Ya. They are the ones who are causing the climate change. The factories.

Joker: What are you going to do about it? I can, as the poster says, use half a cup of water to brush my teeth. But that is not going to change the business?

Optional audience engagement: What do you suggest we do?

Scene 3: Unpack the proposed solutions to the crisis

Scene: Learners are kicking a soccer ball around in a group after school. sounds of urban township space – hooters, welders. The conversation emerges.

[Scene development exercise: Find some resources on proposed solutions to the water crisis and invite the learners to present and discuss their advantages and disadvantages]

Learner 1: You know, there is something fishy here. I learned in school that water goes in a cycle: evaporation, condensation, precipitation, collection flowing back into the sea and then evaporation again.... But how is it that we have no water?

Learner 2: I know, even though water travels in a cycle, the city does not get its water directly from the rain. We get our water from a dam beyond the mountains over there. The rain that falls of the city mostly gets flushed out through the gutter and rivers. Because this city relies mostly on just one dam for its water,¹² if the rain does not fill that dam, the city is in trouble!

Learner 1: It is like, we have broken the cycle. And there go some of us, using it recklessly! We need to wake up to the fact that rain is scarce!

Learner 4: Even so, we are surrounded by the ocean! Why do we have a crisis if we can just get water from the sea?

Learner 5: Sis! We can't just drink saltwater!

Learner 4: But there is desalination: A process where they take the salt out of the water.

Learner 3: Hey! Watch out. Desalination is incredibly costly. News24 said one plant would cost R240 million and also, it is very energy intensive¹³.... You know it will probably mean we have to pay more for our water. Also, remember where all our wastewater goes....?

Learner 4: What about boreholes? I read in the 1998 Water Act that ground water is a public good!

¹² Describe this situation. Most of Cape Town's water comes from the Theewaterskloof dam. While other dams do feed the city, this situation leaves the city vulnerable to lack of rain in the Theewaterskloof dam catchment, as occurred in 2018.

¹³ Rountree, M., 2019 September 12. Cape Town is choosing desalination plants over creating local green economy jobs again: <https://www.dailymaverick.co.za/opinionista/2019-09-12-cape-town-is-choosing-desalination-plants-over-creating-local-green-economy-jobs-again/>

Learner 5: What do you mean? Those public boreholes on private land? When they made water a public good, they did not account for all the water on private land. Anyway, the water under the ground is not infinite. By the time we get a borehole, there will be no water left under the ground, all these people and businesses are digging boreholes at such a rate.

Learner 4: Jeez, I am tired of all these solutions becoming non-solutions.... This problem is complex; the less money you have the more complex it is.

[optional audience engagement]: Any ideas about where we can get alternative water?

Scene 4: The cost and the value of water

Scene: Washing line stretches across in the middle of the rectangle. Mama is pegging up washing. It is Qhama's birthday. Her friend throws a bucket of water over her.

[Scene development exercise: A question for dialogue here is, in what ways does this crisis affect our culture and traditions in life? What practices are inhibited by this issue? How can we adapt to those changes?]

Mama: [Shouts] Hayi! You are wasting our water! The water tariffs are going up this month and we could have used that water to cook tonight's dinner.

Learner 1: Sorry mama.

[later P1 and Qhama sit with their friends. P1 is sad.]
Washing line and mama move off onto the side.

Learner 1: You know, water is our right! Where does the government get the right to sell the water to us!?!???

Learner 2: Also, they ask us to pay for water because they want to manage the water wastage in our country. If people know that they pay for water, they will conserve water because they work for money knowing that they have to do something with the money so they...

Learner 1: But, there is such high unemployment in our community and country: 50% of our youth are unable to find jobs... so what about those who don't have money to pay? Must *those without ties*¹⁴ go thirsty?

Learner 3: And some people have so much money that they will fill up their swimming pools. I get shouted at for throwing two litres of water while Lukhanyo is splashing around in his pool which is always full.

Learner 1: That's a good point: They say we have a crisis, but I see those green lawns, golf courses and cricket pitches in Rondebosch... Did they forget to put water management devices on those houses?

¹⁴ Direct translation from isiXhosa referring to those who have wealth.

Aunt: You know, my dears, we South Africans are so used to resisting the government. The other day Cyril was reminding us that we pay our water bills for the benefit of all.

Learner 3: When water is cheap for some and unaffordable for others, it does not help us to save it... We need to rethink this...

Joker: Water is life, you can't put a price on it but you can value it!! How do we value water when for some of us, our lives are cheap?

Dreaming in song

Scene: All actors move onto the stage and start stomping rhythm with drops. One by one, learners read out the following demands also written on placards.

We want water for our daily needs and sanitation so that we can live in the way that our creator asked.

Those with ties to have the same water as those without.

No to privatisation and paying for our national resources. Getting water is part of our rights.

We want to restore our water cycle.

We want to protect the systems that clean and store water.

[transition to the next song]

We are waterwise

We are waterwise

Amanzi song

THE END

The script attempts to capture the material and discursive context of the neighbourhood we were working in. It includes depictions of everyday scenes in Philippi, interactions with water as well as an analysis of the water crisis in terms of its root causes and proposed solutions. The analysis attempts to engage the questions and the cultural references that surfaced in our encounter. Each scene includes a discussion prompt for workshopping the scene so that it may be reinvented elsewhere with a different group. In this way the script can be seen as an applied theatre exercise into 'water crisis'. It is thus a form of *representation* of our co-engaged inquiry.

6.3 Situating the inquiry in existing awkward relationships

In this section I present the setting up of the inquiry in terms of the relationships between myself and the learners and questions and curiosities about urban water in and across school, everyday life and public communication. These are the points of entry towards a situated inquiry into urban water.

6.3.1 Navigating relationships

When meeting for the first time, these learners and I were already in a particular relationship: one defined by class, race, and age, amongst other dimensions. One learner spoke to this at our first meeting. She said confidently, “Do you know we go to bed listening to gunshots? Where do you live? It must be nice there.” [W0, reflection]. She went straight to the heart of how the quality of life is spatially differentiated in this city and country. I go back to this moment often, because it was an important realisation of what it was possible for me to know and understand. While I had experienced one close encounter with violent crime, read the crime statistics, heard stories about the violence experienced daily in that neighbourhood, I did not know it in the way that one knows it by living it. I, unlike the learners, could, and would, leave that neighbourhood at the end of our workshop. Thus, we were not forming a relationship but renegotiating our relationship.

In another way, older white women in the context of a school, are wrongly assumed to be or treated as better knowing with an authoritative and teacher role. Because of the workings of intersectionality in educational encounters, we white women come with a particular culture of environmentalism that is not resonant with the world of the child and worse, turns processes of learning into processes of alienation (Shava, 2016). This is something that we must actively absent in our educational encounters with students of colour. This concern is in some ways at the heart of this research which links it to critical pedagogy in earlier chapters described in this thesis (see Chapters 2 and 4). However, I had to acknowledge that despite my own learning about the race-class power dynamics of education, I needed to learn the practice required to actively absent the relations these create. In other words, I still ‘looked the part’ the relations established through race, class, educational discourse and their intersection precede who I am as an individual.

Our existing relationship was also brought to my attention in a process where, at the first workshop, we all wrote down the hopes and fears for our time together. In particular, the fears articulated such as ‘not knowing’ as well as the hopes articulated of ‘reaching goals’ and ‘succeeding as a group’ led me to think about the nuance of what I was proposing to them, that we do an open-ended inquiry. My own reflection from this workshop reads:

I felt a bit silly trying to explain ... the idea of an open-ended inquiry. Quite rightly, the fears generated in some learners were that they may not know what is going on, or they do not understand clearly where this is going, or that they may lose interest. While I have come with the ...intention of having a learner directed inquiry deriving from their concerns, it is potentially unhelpful for this phase of [their] life, especially in the context of a new and potentially fragile relationship across race, across age, across the space. Do they always know where they are going as they learn in the classroom? Do they direct that learning? Is it important? I guess in the short term it is. [W1: reflection]

This initial struggle reminded me practically that learning praxis does not enter into a vacuum, but rather comes into contact with existing institutional relationships (Carpenter and Mojab, 2017). It is because of this that the notion of ‘learner-led’ could be more accurately explained as relationally-led. The acknowledgment of existing institutions and relationships, the affective spaces they set up is the first step towards working within those in order to disrupt what they determine. An absence of this acknowledgement in learning praxis will further reproduce the existing inequalities and hidden subjectivities as they play out in educational institutions.

6.3.2 Mapping the journey of urban water

Understanding and working with what is already known is key to situating a collective inquiry. I share an exercise that contributed to that here.

It was our second workshop and a hurried session. The learners came out of school late due to a memorial service and the room we were using needed to be locked in 30 minutes. I got out a sheet of newsprint and asked the question: “Where does our water come from?” As the conversation continued, I drew the following image, shown in Figure 14 below.

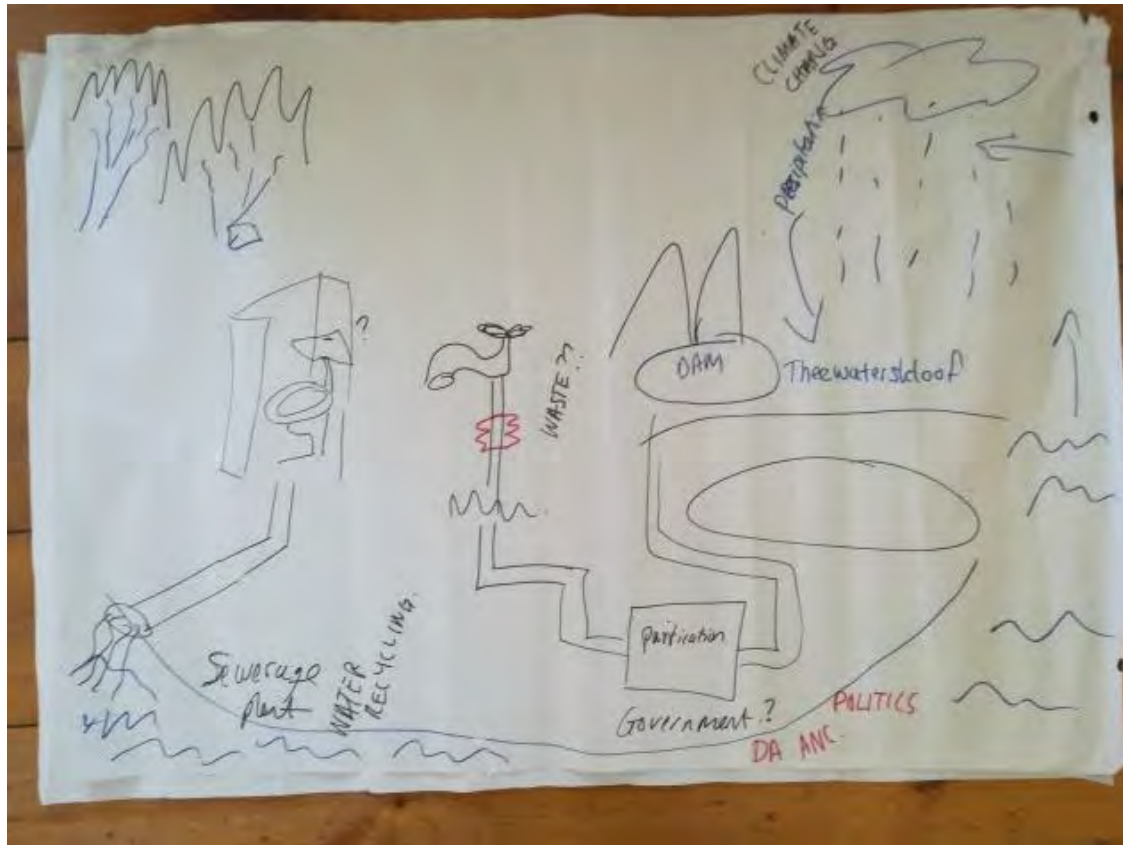


Figure 14: Source to sewerage mapping

From the starting point of the tap, the response to and how does it get to the tap was “rain”. I drew some rain in a corner away from the tap (shown in Figure 14 above) and we revised the hydrological cycle, adding in some clouds, and the ocean. We slowly populated the empty space between the rain and the tap, ‘from source to sewerage to sea’. Someone noted ground-water, I pointed out the political relationship between bulk water supply managed by national government and infrastructure provision overseen by local government; a learner noted the water meters that are sometimes put onto taps to ‘prevent waste’. Even though it felt slightly uncomfortable to bring up, I had to add in the toilet and how sewerage, once, processed, lands up in the ocean.

This exercise, despite the hurried conditions, was important because it alerted me to the knowledge or pieces of information most readily brought forward in relation to water and its origin. Equally, I learned about the gaps in knowledge of this journey, the unspoken about and the missing links, for example, one of the key questions that emerged a number of times was:

Where does the government get the right to sell the water, since it is natural?

[W4; Q5]

I had a clear role here, to fill in the gaps regarding where water comes from, while also understanding how these gaps emerge in the first place. Linking this to where learner curiosity lay, we could knit together their sense-making with everyday/every night experiences.

6.3.3 Entry points from school knowledge

Listening into the resonance with school knowledge was another important situating-type work for this inquiry.

One key question that emerged in W7 was: “Why do we have a water crisis if there is a hydrological cycle?” [W7: F1] This learner, in particular, expressed that they learnt that water goes around and around in a circle, so how can it run out? This question was a key (non)sense detector in the way in which urban water was being storied within and outside of school. It opened our inquiry up to discussions of the circularity of water in scientific terms and surfaced the contradiction with the linearity of water in urban space, relating back to our map of water from source to sewerage.

My review of curriculum documents showed few images that represent source-to-sewerage depictions of the water system (see Chapter 2, section 2.4.3). Instead, the topic of water is dealt with across various subjects and is thought about in separate pieces, from disciplinary points of view. In reflecting on the workshops with the learners, I was told that they rarely get a chance to go as deeply into water as they did in our workshops. On another occasion, they spoke about what they learned at school. They recalled that they had learned about urban water in Grade 4 (age 9–10), however, they felt they were not ready to really engage with it at that age. Now, at age 15–17, they had questions and concerns about it.

Through these discussions I learned that there were interesting questions arising from what was learned in school as well as what seemed to be an existing practice and desire to think about water in a particular way that was not so determined by the curriculum.

6.3.4 Entry points from everyday life and media

In our third workshop, we engaged with various artefacts from the media and social movement pamphlets relating to water in Cape Town. I invited the learners to prepare a brief

skit in response to the piece they read. This was an important process in getting an understanding of how water was being spoken about in this socio-cultural context, and how learners related to water in their daily lives.

For example, I learned about the tradition of throwing water over someone on their birthday (see Figure 15). This experience was used to illustrate the need to save water in one skit, where one learner was reprimanded for throwing water, as they were in a drought.



Figure 15: A skit illustrating the tradition of throwing water over one's friend on their birthday



Figure 16: A skit depicting a conversation between a municipal worker and a resident.

Another skit grappled with the concept of Day Zero. Day Zero was a concept in the City's communication strategy to note the day when water will stop running to people's homes. Instead, it will run to points of distribution where everyone will be able to collect 25 litres per day by hand. One of the skits brought up the question of whether DayZero was real or a plot:

They [the municipality] are just lying to frighten us ... there will be a DayZero whereby we have water, but we don't have water in our taps, meaning they will just switch off our taps. So, there will be no DayZero but there will be a DayZero in our taps. [W3: V3]

The notion that "there will be a DayZero in our taps" alluded to a common tension across the city at this time, where failed trust between communities and the municipalities has led to distrust of "the drought" and suspicion that DayZero was a move by the city to take away water. The experience of this encounter made it clear to me the notion that ecological and political concerns have been conflated to the extent that when ecological information is shared in public communication, it is mistrusted as a disguise for anti-poor and oppressive political agendas (suggested by the relationship between household member and municipal officer shown in Figure 16).

This showed the lived and political discourses relating to water within the socio-cultural context of these learners, revealing entry points for further discussion about urban water and its problematization.

6.3.5 Reconciling water and other matters of concern

The theme of water as a focus for our workshops was first proposed by the host environmental education organisation and consented to by the learners. However, within this agreed upon topic, I would have to understand the matters that concerned the learners. In our first workshop together I facilitated a process in which the learners elucidated the concerns they had about their urban environments. Few of these concerns included water directly, with many of them rather falling under the broad themes (categorised together with the participants), of crime, unemployment, and teenage pregnancy, school dropout [W1; MoC]. Throughout our inquiries into water, however, we made links back to many of these initial concerns. One example is that we discussed how prohibiting the washing of cars affected the income of some in the community. The question posed by one of the learners was: “Would you prefer crime or the washing of cars?” [W5, V3]

Understanding the matters that concerned these learners in their urban environments, albeit unrelated to water, provided a basis to which we could refer as we unpacked the various socio-material and historical matters of urban water. We could slowly draw links between the concern about water and the concerns first expressed by the learners in that workshop. This outcome shows how understanding matters of concern is an ongoing process wherein we come together around a problem being sensitive to how it is expressed, framed and related to differently by everyone involved in the inquiry.

This section has presented the inquiry in terms of how it was situated amongst various institutional and personal relationships through which the issue of urban water surfaced as a concern.

6.4 Dialoguing disrupting: Re-framing and re-narrating

In this section I share two processes in our educational encounters. I present these and discuss them as dialogue as analysis about water across the material and discursive domains.

I selected these two moments because of the way they appeared to contrast in terms of the pedagogical intentions and aesthetic mode of the engagement. The first section shares the

results of the action of inviting learners to seek answers to their generated questions from the Amanzi library I had compiled. The second section describes an exercise in which we told a chain story, where each participant took a turn to contribute a piece to an unfolding story. This exercise had the pedagogical intention of regenerating our creative juices after another information-heavy session. Reflecting upon these moments I realised they constituted forms of collective analysis, as they enabled us to learn more about urban water: reframing information through story, revealing contradictory logics about the relationship between water and money, and disrupting assumptions I had held about the local context. Exploring these moments together allowed for a generative-explorative analysis of the transformative possibilities enabled in this inquiry.

6.4.1 Vignette 1: Storying questions and answers about valuing water

“Why do we pay for water when it is our right?” was one of the questions that emerged in the initial phase of our inquiry. Below I present the answers verbatim by the group who grappled with this question followed by a discussion of the dialogue that followed.

If people know that they pay for water, they will try and conserve water because no one wants to waste money.

We pay the cost of production... it [water] involves everyone so we have to contribute in paying the cost of the production.

We even pay water for boosting our economy. If you pay for water that money can be used for another thing in our country of which our economy can be boosted.

So, the reason why the government sells water to us is so that everyone is able to get water. If every government says that you can use water the way you want, let's say you are at work then you cannot fetch water because you are at work it may happen that other people ... those who don't work can fetch water until [the water is] done or gone in the taps. [W5, T1]

After they presented, we discussed what they had shared: I asked for clarity about the practices undertaken by those who “use water recklessly” and those who “conserve water”. Using water recklessly, in the above presentation includes “washing cars with a pipe”, “flushing the toilet too many times” and “letting the tap run while brushing your teeth”. On the other hand, those who conserve water put a bucket underneath a dripping tap, wash a car

with a bucket, use a cup when brushing their teeth. While these acts are all important, they remain at the personal level.

The local scale continued to be the focus, with the notion that the government uses water payments to mediate between people: “So, the reason why the government sells water to us is so that everyone is able to get water” (line 4 above). Despite this statement being in contradiction with the initial impulse behind the question – having to pay for a human right – as well as the finding that water payment policies discriminate against the poor as discussed above in Section 6.1.1.4, this moment required careful listening. This slowing down, resisting the move away from something that seemed to have already been clarified allowed what seemed contradictory to reveal something further about the social, material, and historical conditions that explain the (re)emergence of this claim. I soon learned that the claim arose from a context in which a group of people share a limited resource: “those who don’t work can fetch water until they are done or gone in the taps” [W5, T1]. The legitimate concern in this case is for those who share taps and spend their days at work and get home to find their homes without water.

In this discussion different experiences emerged relating to housing contexts that characterise the South African peripheral urban landscapes. Two learners shared examples that disrupted the original claim; the person who had experienced her household taps being turned off, showed that the requirement to pay did not enable everyone to have water, but also resulted in lack of access. Another learner asked how this idea helps in informal settlements because in that context, one cannot measure the individual use of water.

As the discussion moved on, the question of “we pay for water in order to conserve it” emerged. I tried to address the absence of discussion about water limiters where, despite the crisis, the status quo of wealthy having the greatest access to water was largely maintained, as boreholes were drilled and rain tanks were installed, swimming pools were filled and dishwashing machines were run. I pleaded, “but we all are sharing the water in the end in the city, it comes from the same dam... so, is that helping us to conserve the water, the way we are paying for water?” [W5, T1] There was a resounding ‘no’ in response to this. It was not only the presenters, but all of us were there with our certainties, ready to argue.

This process of generating a narrative together that raised the conflicts of urban ecological space took the broader inquiry into urban water further by thinking across different experiences within the city. The original claim that “we pay for water in order to conserve it”

comes from a particular experience within the city. In a localised context of scarcity, where household numbers are large and sharing is hard, not paying for water has justice implications. There is the experience of being genuinely wronged, such as participants' description of being at work all day and arriving home to find no water. Understanding water flows through variable social experience across the city troubles even the taken for granted sense of water justice: that water should be freely available to all because there are situations where a limited amount of water being freely available will mean that some people go without. The question of who and how free water is limited is important and can be put in parallel with the fact that we are living on a planet with finite water source. It troubles any abstracted answer to the question of how we make water accessible to all.

Municipalities around the world have yet to develop a clear answer to the question posed by these learners, with many municipalities still grappling with how to realise equity in rapidly financialising and privatising local government contexts. In South Africa, the lack of equity is apposite, as the water pricing system further discriminates and excludes those who struggle to pay for basic services. These learners generated material to take the inquiry further in terms of the socio-political-material context and reveal how claims could be both true and false depending on the context. This set of contradictions enabled us to understand the effects of layers of reality – perceptual, relational, economic, and social – that intersect within urban water flows.

6.4.2 Vignette 2: Re-storying wetlands

For the fifth workshop I had prepared a bingo game, inspired by an exercise in which I participated at the Know Your Continent African History course hosted in 2015 (Benson, Gamedze and Koranteng, 2018), with some pieces of information – the bingo questions and answers – I felt could be useful for understanding the urban water system. One card read:

Bingo answer: Wetland is a land area that is saturated with water, either permanently or seasonally. It acts as a filter for water by cleaning out any excess nutrients and heavy metals. Water flows out of it cleaner than it flows into it.

Everyone received one of the possible answers and they all had to move around the room sharing answers and trying to match them with the questions. As soon as one learner shouted “bingo”, we sat and read through all the facts, each learner taking a turn to read through their card. Towards the end of this exercise I felt the energy levels drop, the mood collapsed under

the weight of the new information, new words, English words. I suggested we tell a story to rejuvenate the energies. I was pleased to see that they responded by saying they had a way of telling collective stories and they named this exercise a “chain story”. (The story as it is represented in this paper originates from a transcript that exists in two languages. The written story that follows was re-narrated by the researcher and the translator, where we sat together, carefully considering the meaning of what was said in Xhosa and English). I began:

“Apiwe [this name is a pseudonym as are all names hereafter] was walking through the wetland and found a shoe lying on the ground, she looked up and...”. The following story emerged with contributions from each learner in a mix of English and isiXhosa as we went around the circle.

The shoe was lost by a community member who had attended a meeting on the wetland. The meeting involved a conflict between people who wanted to occupy the wetland space for housing and another group who wanted to protect the wetland for ecological purposes. Anger levels increased and a protest began. Pretty soon the police arrived and those gathered, quickly dispersed, one of the members leaving a shoe behind.

Apiwe has an ethical struggle of whether to return the shoe or sell it for some money, but she put this quandary aside momentarily with the idea that she should get her friend, Phindi, a fellow organisation member to go and talk to the people who have built their houses on the wetland. She also, however, consults her friend as to what to do about the shoe. In the end the two of them, feeling greedy, decide to sell the shoe and split the money. As the shoe was a Carvela shoe, R1800 was the price of the pair so she would get half that amount.

Meanwhile, the struggle at the wetland is continuing as more meetings are held, more members of the environmental organisation tell about the disadvantages of building on a wetland: “the wetland would die”, “your houses will be flooded”. Still, the building continues. Then there is a storm, and the houses are flooded, the people who built there felt deep regrets and had to move.

It is discovered that the shoe belongs to the aunt of one of the members in the organisation, Onwabile. He finds out that his Aunt’s shoe has been sold for money and confronts Apiwe and Phindi. They ask for forgiveness. Onwabile takes some time to consider this. He and his aunt decide the only way that they will grant forgiveness

is if Apiwe and Phindi hand over the money so the shoe can be replaced. They hand over the money and the story ends.

This story is made up of two threads, one following the object of a Carvela shoe, the other a conflict around a group of people occupying a wetland. These threads are stretched through the relationships of people in an urban space. The story is textured with generative themes animating the lives of young South Africans with a concern for their environments.

In both threads there is a sense of taking/occupying and paying for something. The matter of the shoe is reconciled, forgiveness is granted, while in the wetland thread, the residents are left with “deep regrets”. The community needs land, and through their actions, disregard the recommendation not to build; the girls feel greedy for money and sell the shoe. The resolution in the case of the shoe is largely driven by the fact that there is a personal relationship between the owner of the shoe and those who found and sold the shoe. The relationship is different, seems unfamiliar, between those building houses on the wetland space and those who would like to instruct the occupiers that it is wrong to build houses on a wetland. The protagonists went to tell those building houses that it was a bad idea... and there is an underlying feeling of “I told you so” when the houses are flooded: the occupiers feel deep regret and move elsewhere. Perhaps we are moved to action through nurtured personal relationships and not through the provision of information. The extent to which this is possible in the context of contested and competitive seeking of land for housing is questionable.

In the story a harsh lesson is learned by both the girls and those who build houses, but the extent of the impact is different. The money from the shoe seems to be framed as greedy and excessive, while no comment is made about the need for houses. Perhaps this is to say that it is not necessarily greedy to be building a house.

There is also a theme relating to value here. It is unlikely that one could sell a single shoe and get half the price, because with shoes, as with wetlands, the whole is more than the sum of its parts. The irony in the case of the shoe in some way resonates with what it means to not understand the wetland as a broader and connected ecosystem. The oddity of a single shoe for sale troubles us in a significant way.

This story also contains a critical comment about raising environmental awareness. In this story, there is a feeling of a duty to inform the builders that there are disadvantages to

building on the wetland. In the context of contemporary South Africa, where the ability to live and work in the city is valued, city dwelling is rarely a situation of personal choice and is often a personal sacrifice. Thus, it shows the ways in which environmental education initiatives, without tools to grapple with the social and economic conditions, remain ineffective at achieving a desired kind of behaviour. There is a disjuncture between environmental education and social conditions.

There is something about this story that encompasses the whole of urban life, young peoples' aspirations for fashionable items, a non-superficial element of making and shaping an identity in the world. While seemingly peripheral and distant, the story about the wetland was an echo of the experiences in that community at the time, as the whole of South Africa was experiencing increased land occupations. This story added a fuller account of wetland realities in urban peripheral space, including the interrelationship with people and their drastically different livelihoods and political positions in relation to urban ecological features. This presents a new platform on which we might discuss and grapple with how we can reshape our worlds.

In this section, two dialogues are presented and discussed as entry points into further learning about the multiple dimensions involved in urban water flows, wetlands and water access. These dialogues include disrupting, reframing and re-narrating of assumptions, common sense understandings and curricula framing of environmental content.

6.5 Rehearsing: Theory and practice in practice

"Within its fictitious limits, the experience [of rehearsal] is a concrete one." (Boal, 2000)

This section describes and presents an improvisational theatre process. This process was part of the shift from generating material for the play to working it into a scene. At this point we did not leave sense-making behind but allowed new sense-making conditions to emerge through a rehearsal of a scenario where water stops running out of a tap. I draw on Bhaskar's (Bhaskar, 2008, 2016) critical realist dialectic to describe the movements in the sense-making that were enabled through improvisational theatre.

Having generated a significant amount of content through questions, conversations and information gathering into the urban water crisis, we reached a stage where we were refining the scenes of the play together with a theatre practitioner whom I had invited to work with us.

After some warm-up exercises, she suggested that we bring all our understandings into a scene at the community standpipe (tap). This was to become scene 2 in the play.

I have tried to represent the multiple dimensions of what occurred in this improvisational skit by thinking with Bhaskar's critical realist dialectic (presented in Chapter 4). Through this I was able to articulate and trace the multiple elements surfacing in this theatre exercise in terms of content and educational practice.

6.5.1 Non-identity and the tap: Politicising the tap

This move can be explained by a shift from *it is* to *what is it actually?* It is a move from understanding something as an essentialised thing to realising it has emerged in depth ontology (a world that is stratified and differentiated) in relation to structures and mechanisms (Norrie, 2010, p. 13). Bhaskar (2008, p. xiii) named this the first moment where moment signifies a product, "something finished" (and chapter 4 Bhaskar, 2008, p. xiii); it is something 'behind us' which calls up reflection. As Burt et al. (2018) interpret it, this is a moment when a problem that was not obvious before becomes obvious: in this case, the tap has run dry. [This is not the first time a tap has run dry, but through the skit we were able to raise the problem in relation to social and material life].

The tap stopped producing water and suddenly we understand the non-identity of the tap – the ontology of the tap in the world. The actors realise that the day cannot continue as it should because they do not have water. We need to *relook* at the relation that is held in the tap in order to decide how to respond.

6.5.2 Negativity and the second edge: 'How this came to be?'

Here, in line with Bhaskar's dialectic, I am talking about the absence that has affect – as in real and efficacious absence, absence that makes a difference (Norrie, 2010, p. 13). IN the critical realist dialectic this is named the second edge: "edge referring to a point of transition or becoming" (Bhaskar, 2008, p. xiii). I understand the *second edge* to be quite similar to the sense of being *on edge* – *in anticipation of something*. It is a moment of feeling into the absence of something in the material or some theory that does not match a practice. This is a feeling that is common to socio-ecological justice concerns, a sense that something is wrong. What is absent and what does this absence maintain or who/what is benefitting from it? These are the two modes of questioning the theory-practice contradictions at play in the situation.

In the skit a few explanations of why the tap has run dry are deliberated: the explanation “we are wasting water” is contradicted by the fact that daily needs have not even been met: *You couldn't have finished it. Not all of you even got water?* That “it is the governments fault” is challenged by the fact that climate change has caused the dams to run dry. That the government discriminates between suburbs and the townships is contradicted by the legitimacy awarded by being able to pay for water. Linking the ability to pay for water back to climate change realises a multi-scaled cycle of contradiction relating to water access. This series of rebutted explanations at some point comes full circle and produces a multi-scaled explanation of how it has come to be that there is no water in the tap. This leads us to the third level.

6.5.3 The third level – Reaching a new and improved explanation of why the contradictions have occurred

This *third level* is the move in the dialogue when ability to pay for water is linked to business, historically owned, and when this business is linked to the causes of climate change – the cause of water scarcity. It is no longer as simple as individual water use. At this point we have moved to the level of 3L: an “emergent whole, capable of reacting back on the materials from which it is formed” (Bhaskar, 2008, p. xiv). The ‘how this came to be’ also surfaced in a number of ideals or theories relating to water use and water management: we are wasting it, it’s our fault that it is running out, the duality between the seemingly out of our hands phenomena of climate change and the responsibility of our social systems including economies and government to causes of climate change. Linking the ability to pay to one of the causes of water scarcity, climate change, produces a newer explanation, one that resolves the initial contradictory explanations. It clarifies where the fault and the causes are distributed in a broader social system; fine tuning our understanding so that we may situate our actions. This situated action brings me to the fourth dimension of intentional human practice.

6.5.4 The fourth dimension: How we can put that transformation into practice?

I had trouble finding this ‘dimension’ in the skit. This dimension in the dialectical rhythm refers to “human intentional causality, transformative agency or praxis” (Bhaskar, 2008, p. xiv). How do we understand the dimensions of change occurring above in relation to our practice? I soon decided that this dimension could be elaborated upon in two ways.

Firstly, the dialogue engaged with an element of practice in moving to the question of “what do we do now?” (Burt, James and Price, 2018) in relation to the practices that were referred

to in the dialogue. We discussed how ‘sharing’ a litre of water for the morning domestic chores, and ‘using half a cup of water to brush our teeth’, would not necessarily help the problem that was identified in this skit. And I think this was a moment of reflecting on these proposed practice responses – sharing and saving a cup of water – and revealing their limitations.

The question of how to move beyond these limitations then and there felt challenging, in addition the ability to respond to complex challenges as high school students and two educators, needs to be clarified and one avenue for this is the practice of learning. From a sense of helplessness that often comes with education relating to complex socio-ecological justice issues, I shifted by thinking about 4D as the educational practice that *is* within our reach, and more specifically the practice enacted here that gave birth to unfolding skits. This is a practice that enacts a move beyond messaging as an educational intervention.

This educational practice can be described as absenting abstraction of environmental messaging, absenting the absence of socio-material-historical complexity in life, and absenting the absence of thinking critically about our agency in relation to the problem we are learning about. Importantly, it was also enacting agency in the ways in which the skit was brought forth in the affective space created by the facilitator and learners, where learners could state what they feel strongly about in the situation. In this situation they were bumping up against each other and with the provocations from the facilitator they were moving onto different levels.

Continuing along the lines of reflecting on the practice of education, of course, particular paradigms of education also served to produce the initial contradictions emerging in this skit, as they teach practices that are not necessarily appropriate to the context of spatially and economically marginalised urban life. Thus, reflecting on the practice of education was not changing track but rather understanding how educational practice was entwined with the problem. The facilitator and I moved back to 2E and asked how do we get beyond the ‘us and them’ and begin to talk about a system. This double loop consideration of educational practice as a dimension of problematising urban water, convinced me that the enactment of this skit might lay the foundation for developing a sensibility for working across multiple levels in environmental education encounters.

6.5.5 A reflection about the realness of this rehearsal

Through the responsive mode of an improvisational theatre and the skilled facilitator we resisted the temptation of abstracting socio-ecological challenges. This allowed for a multidimensional (facts, values, actions, disagreements, dialogue) and situated engagement with a problem. In the work on theatre, there is an expanded notion of what is real through a kind of disruption of the neat real-fiction binary. Boal wrote: “The truth of the matter is that the spectator-actor practices a real act even though he does it in a fictional manner. ..Within its fictitious limits, the experience is a concrete one” (2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120)(2000, pp. 119–120). The way I understand this is that what emerges in theatre exercises (such as improvisation, storytelling) is real by virtue of the fact that it has been enacted; it is not representative of reality necessarily but it emerges in the same world and draws on the mechanisms at work in the world, acts out what actions are possible in the world. So an utterance in a theatre skit is part of what is real, and the enactment of theatre brings it into immediate visibility for further dialogue. This resonates with a critical realism position that the real is more than things which can be measured or sensed. It includes false ideas for example, and it includes the imagination, as well as what has not yet come into being. It is in this way that theatre enables the surfacing of a situated encounter around which we might dialogue, testing the possibilities and impossibilities in the world, revealing its eco-pedagogical value.

6.6 Chapter conclusion: Making (non) sense of urban water flows

In this chapter I have shared the urban water crisis inquiry that took place over 12 workshops with eight learners from an environmental education organisation. Across the different sections, the chapter captures the nested and iterative processes of co-engaged inquiry. The material was gathered from video footage, photographs, co-produced materials and my own written reflections. Through several different representational forms, it shares content about water and learning, contextualised in a process of learning about water.

I began by sharing the street-theatre style script, representing what the learners and I wanted to share from our learnings. This included some process notes for reinvention with another group. I then situated the inquiry and described the work that was necessary to develop meaningful collective inquiry learning processes with a group and educator, across age, race, class engaged with a concern for the existing educational cultures that one is trying to work

with and against. The third section presented and discussed two processes of troubling our inquiry which allowed us to raise contradictions, disrupt, reframe and re-narrate discourses relating to urban environmental concerns. The third section considered rehearsing our inquiry: an improvisational theatre process engaged towards refining the material we had generated into a scene for the play. This process showed sense-making conditions that are enabled in the concrete experience, within fictitious limits, of theatre rehearsal. Working with the dialectical moves, particularly the fourth dimension of human praxis, also revealed the ways in which educational practices participate in producing the contradictions of making sense of the urban water system.

This process was not simply a linear movement towards greater knowledge. By moving backwards, sideways and forwards (iteratively between phases), it progressed. Overall, the inquiry deepened, peeling away layers of obscurity from the water crisis; however, this deepening was not determined through sequential instrumental steps but rather it emerged iteratively around conversations, activities, and rehearsals. An implication of the nestedness is that processes toward ‘situating the inquiry’ are both the first step and continuously at work even as we reach the stage of acting out a scene.

A number of dimensions of education oriented towards socio-ecological justice emerged in this inquiry: how practices land in context – practices of water use, practices of environmental education, practices of messaging, practices affecting water access. Activity, engaging felt sense or affect, making connections, thinking with information not receiving it, and debating how we might act in response, were elements required for understanding complex, conflictive and political socioecological processes in the world.

Chapter 7: Coda conversations with young people:

Thinking, acting, feeling environmental sensibilities across the City of Cape Town

7.1 Introduction

This chapter is a ‘coda’ to my main educational encounter case studies. A coda is the name of a section in a musical piece. Its purpose is to bring the piece to an end. It often takes on a different character to the main themes in the piece. And it is like an extended ‘cadenza’, a dramatic consideration or a playful mash up of all that has come before. The empirical data here is different to that of the previous two chapters but takes up conversations relating to environmental education experiences in Cape

Town and teases out some answers to the 4th research question: How do I work towards educational encounters that are in solidarity with young South Africans?

This chapter presents and discusses themes within six conversations I had with young people across the city of Cape Town. The purpose of the chapter is twofold. The first was to refract my emergent findings from the case studies presented in the two previous chapters. The second was to incorporate the voices of young people outside of Philippi to zoom out and sense into how spatiality and gradients of race and class impacted the ways in which young people were thinking, acting, learning about their environment and world. This is both in terms of resonance and dissonance across a polarised city.

All these learners I had met through their involvement in youth environmental organisations whether it was Eco-Schools, the climate strike organisers African Climate Alliance, or the Ezemvelo club that emerged out of my engagement with the learners at Ntsebenziswano Secondary School. All six learners attended one or more of the youth climate strikes in Cape Town and in this way there was an important common and shared event about which we could grapple with the issue of climate change, how we act against it and what it means to come together from across the city of Cape Town.

7.2 Lyrics from our conversations

<u>Breaking stigma</u> <i>A poem for Madeline</i> it's not something that's real. it's just a stigma within our societies. Because I read my novel, And listen to my tunes, they say I think I am from Seapoint High in our community there is stigma act like a white person just because you black. you not allowed to do sorts of things like you can't go to parks because you black. you can't do these things that whites do because you black. And I want to break that stigma So I wish people can be taught like they can change the way they do things ... to reach our goals the way that we wish to reach them so ya.	<u>Seeking togetherness across different worlds</u> <i>A poem for Lebohang</i> There are worlds within worlds, different and connected Dystopian novels tell me this and transport me, My dreams of nature too ... a flowing dress, light wind and trees... Joy! I move between worlds Which words to describe worlds? 'underdeveloped communities' – I'm from one of those Hearing them when they speak about kids from other schools... Different school worlds in our similar life world, we struggle to relate The same school world and different life worlds, Students in Pinelands said: we know when our water is turned off and most of the time it is not turned off They have everything while everyone else was complaining they have nothing. Same world and different times I never thought I would have the opportunity to protest In primary school we learned our parents were part of marches and fighting for their freedom We can do the same if we want things to change. I just wish we could do more of the choosing. It's just an eye opener to see these learners are just as concerned as I am. Across time and space we realise, We are in it together and we are saying we have power together
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Here and there in a time of climate change

A poem for Thomas Njoloza

The Eastern Cape echoes in its contrast to the
Western Cape, eKapa.

The Rural and the Urban...

There we can do what we like with our land

Here they are always telling us what to do,
there we have lots of nature and we manage
livestock

Here it is small streets and cramped houses

First of all I have to first introduce myself. My
name is Thomas Njoloza

I am proud to be from the Eastern Cape
My excitement for the environment is rooted
there and stretches to here
I will go back there

I don't know whether our next generation are
going to see the world we are living in.

Those in the suburbs do not know the challenges
we are facing in the townships
we need to give people a clear understanding of
what is going on.

Ndomnandi ngokufunda is that nobody can take
it away from you.

Do plan do:

A song lyric for Khanyi

[chorus] The future starts now
do plan do
rather than thinking in a small circle,
think on top of the box

We might be from the dusty streets of
Philippi
but we have pride
We go out there
resisting the stigma that our minds are lesser.

[chorus]

You can't tell me to save 10 litres of water
whereby you give me 5
got me thinking about the inequality
that's going on in our country.

We have agency in this environmental
quandary

[chorus]

Like people think that
if somebody is not doing it,
then I won't do it.
it starts with you.
you must do it to show that somebody that it
is possible,
everybody can do it

[chorus]
in the taxi mos
if the driver doesn't drive,
the passenger will drive, you know
so start driving
people will follow your lead.

[chorus]
like for some people when we talk about
leading
they just think it is about pulling somebody
by the nose
like leading doesn't mean
you have to have be a political party or
something,
you must lead wherever you are.

Cookie crumbling cookie munching <i>Poem for Andrea</i> There was a whole section in our exam about like, environmental issues I'm gonna get this right because a lot of it I knew from house knowledge I wrote my hand off There is a link missing Why is it only on paper? why aren't we talking about it in class and what we can do? Our planet is crumbling like a cookie and some of us are just eating it.	Joining the dots on a disjointed planet <i>Poem for Lihle</i> We took the song for Uyinene and added words for climate. We took the song for Uyinene and added words for climate. Instead of learning nouns and verbs, We are learning about the earth. Who cares that the earth is burning? Across these divisions, who cares? We are joining the dots, these disasters are connected!
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Drafting poems allowed me to dwell for a long time on the quality or feeling or sense that comes with a particular phrase, an image, a word in our conversations. Lorde (1984) wrote that poetry is a genre with a strategy in its materiality – it needs to be economical with resources and therefore succinct. The mode of a poem also animates text. Moten articulated the notion of “sound literature”, probing the way in which text, speech and sound work together in different ways across representations. According to Moten (2017, p. 3), “poetry remains to be seen and heard so to speak, and in excess of the sentence because it breaks up meaning’s conditions of production...” Drawing attention to and disrupting text and sentences feels like a way to see them for what they are more clearly – a reduction. I was, and still, am in the habit of analysing in text but there was something left out of the reduction of the interview to themed and contained words. Thus, I felt out some poems and lyrics in response to our interviews.

7.3 Opening: Concerning time

As **time** moved on in this thesis, I had been making sense of my educational encounters, analysing, listening, reading, writing, presenting, reading, talking to colleagues, and reading again. I was learning a lot. One thing that remained tugging at my conscious was “How was I going to talk to my participants about what I had learned? How would I invite them into the final conversation when in a way, the writing is in dialogue with particular language of academia. In addition “participants’ worlds are not static” and following this, we cannot assume that an “unchanging copy” of participants’ perceptions and experiences in our

inquiries can be accessed and confirmed (Ellingson, 2017, p. 165 drawing on Koelsch, 2013). Because of this, the inclusion of member checking interviews, rather than confirming something as correct or incorrect, would be continuation of the co-construction of truth or knowledge that began in our inquiry processes.

In the same way, my own sense making includes shifts from the contact with my participants. I *have* entered into the language of the academy by drawing on the useful scholarship. But a side effect of this is that one realises that in a way one has created a cell of solitary confinement with an exclusive audience of the university and particularly the social educational sciences. If my interest was pedagogical processes with young people, the first phrase was doing them; this next phase is dialoguing about learning experiences. This shift is a slightly different viewpoint and thus adds to a filling out of the study.

In addition, the learners were not forthcoming with definite opinions and one interviewee also explained to me that “we were raised not to say no to an adult”. Also, I am not sure they had reason to care that much about what I was writing, and potentially I was not writing for them, but listening to them and writing for myself and the field of education. I had to own the fact that the writing was in English words, and included theories and current debates that I had drawn on to make sense of what I was seeing. And while this process had academic and personal value, this value was not necessarily directly for the learners in its written or English-spoken representational form. I had to find other ways.

7.3.1 Introducing the speakers and their positions in the city

I reached out to a number of young people I had worked with and then others across the city. Table 10 presents each learners and their home school positions across the city. With permission from the learners and their parents, I arranged six interview conversations from learners across the city. One glaring concern was that only one of the learners from my inquiry processes came forward for an interview; however, two of their peers came who had met me and engaged with me through the Ezemvelo, Our Khasi Goal eco club. In life, things change, people move on, and in some cases there is significant disruption and chaos in the lives of young people.... and they might not have been interested in talking to me... At this concern, I consulted with the project organisers who assured me that the learners were likely too busy with school. While I as comforted by this to an extend I also wondered about the

lack of will to talk further and considered the uncomfortable reality that my initial suspicion, was correct. Researchers have to allow space for that.

Table 10: Home and school geography of interviewees

Name (or pseudonym)	Involvement in environmental organisation	Home	School
Thomas ¹⁵	Ezemvelo Our Khasi Goal	Township	Township
Madeline	Ezemvelo Our Khasi Goal	Township	Township
Khanyi	Ezemvelo Our Khasi Goal/ Beyond Expectations Environmental Project	Township	Township
Andrea	Eco-Schools club	Suburbs	Suburbs
Lebohang	Eco-Schools club	Township	Suburbs
Lihle	African Climate Alliance	Township	Township

These six conversations are qualitatively rich in interaction and in the diversity of experience. They include a diverse range of youth experience in terms of school, community and space in the city but with a common thread of experience and interest in environmental programmes. Four interviewees attended school within the township in which they live. One of these was in Khayelitsha and the other three were in Philippi. The fifth learner travelled from a township to a model C school in a historically white suburb. The sixth learner lived in the historically white suburb and attended the model C school there. These learners were not only diverse in race and class but in their mobilities across city space, the multiple subjectivities connected to this is studied by Fataar (2009) and explored in Chapter 2. This work shows how the frequent movement through the city space attaches real meaning to the perception that (in black neighbourhoods) schools further away, that is in the suburbs, are better. The

¹⁵ If a learner indicated a preference to remain anonymous, I used a pseudonym

production of this entrenches the hierarchy and inequalities in educational experience across the city.

Figure 17 below presents a reminder of the process of reading and inferring from these conversations. This is elaborated in section 3.7.3.

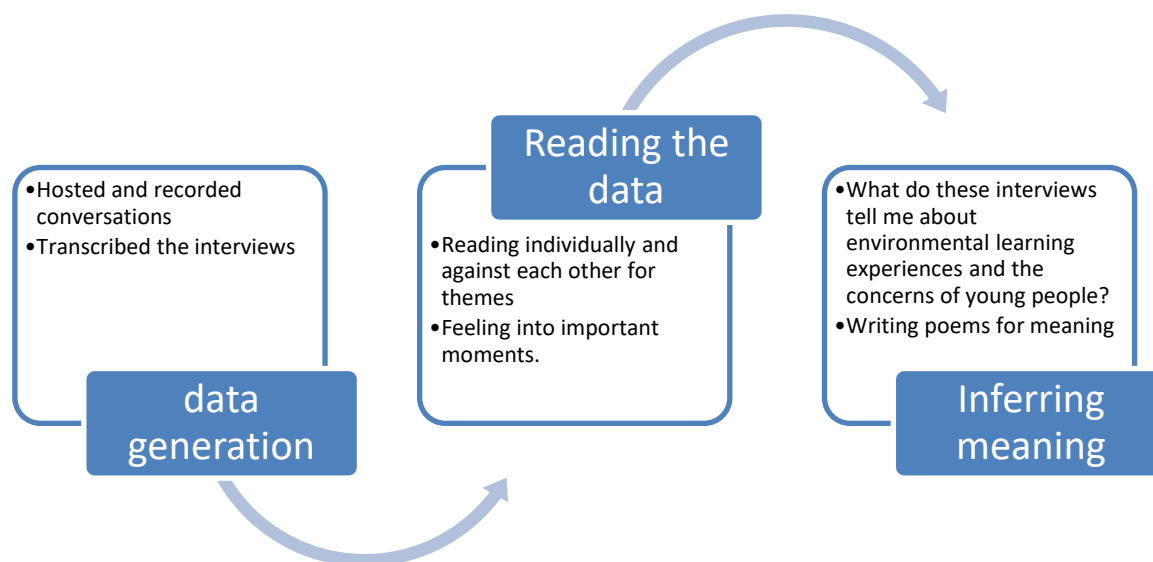


Figure 17: Process of inferring from interviews

7.4 Context of data generation: Performing and transforming the mode of interview conversations

My entry as a researcher educator was framed through both the offering of inquiry workshops on water, and an interest in conversing with young people involved in environmental change work. Two of the learners I got to know through an Eco-Schools group. Thus, preceding my arrival, were my associations with environmental discourse, educational discourse, interview discourse, researcher, adult, position of white, English speaking woman. For five of the learners, we had had prior interaction in conversations or organising events (Ezemvelo Our Khasi Goal and the Eco-Schools club). The sixth I contacted via the African Climate Alliance adult support group.

In order to paint a picture of the conditions in which the data presented in this chapter was generated, I share some extracts from interviews that shed light on our interactions.

Sociological researchers have long since understood and purported that interviews are a form

of relational communication, where the researcher and interviewee are ‘travel companions’ or ‘co-constructors’ (Ellingson, 2017, p. 102). Our planned and unplanned reactions to things inform the story that unfolds. The moments described below represent moments in our conversation in which I aspired to being open to the unexpected, and engaged with ideas that may initially have been side-lined, but were important. This approach helped me to establish the basis for disrupting the performance and embracing openings to generative impulses and explanations – transforming the adult-youth relationships.

7.4.1 Feeling interviews

“That didn’t feel like an interview” said Lihle at the end of the interview – this statement made me feel a bit worried. Did this 16-year-old think I was a ‘bad’ researcher? Following that initial anxiety, I felt quite pleased as I know that research can be performed in a formalised way that can hamper genuine expression and dialogue, the wonderful muddle that comes with putting thoughts into words while conversing.

I was reminded about how bell hooks (1994, p. 7) argues that there is an important place for excitement in education but somehow, she contended, we established that learning could only happen in formal and serious encounters – this is in institutions of education and similarly in positivist cultures of research. I thought about how the Grade 4s expressed so little in talk and then so much more richly in play (Chapter 5). This questioning of whether that was an interview felt like a good indicator of an animated conversation.

7.4.2 Life stories and the erasure of race and class differences

I asked Lebohlang the question: “What barriers are there to bringing young people together across the city of Cape Town?” And she began with a caveat on terminology that I felt was significant.

I am not exactly sure what the correct terms to use are, but children from ... um maybe I don't know, other schools like, in more under-developed communities if that is the right word ...

I assured her that in our conversation terminology was not important and she could take as much time to explain herself as she needed. This was a sensitive moment for her as I was later to find, she was talking about her own home community. Her struggle in this moment mirrored the challenge that certain places can be erased through our use of language as we

struggle to talk about a very real part of our society, those people living in the precarity of poverty.

Lebohang proceeded to say very quickly that she was from such a community.

Lebohang: So I obviously as well come from an under developed community now, I will just say that for now.

Anna: OK, I didn't know.

Lebohang: I live in Langa.

This told me something about our interaction, that Lebohang needed an opening to explain where she was from. This was despite me asking her to start with her river of life in which she had storied how she came to her interest in joining the eco club. This story did not include indications of the place she had grown up in, despite the significance of it being 'underdeveloped'. She may have been unsure of how the story related to such places.

7.4.3 Probing matters of concern

The first set of questions intentionally started with a focus on the lives and interests of the learners, while only later in the interview getting to chat about their environmental-related work. There was a question that asked "What is the biggest challenge facing the world today?". I asked Madeline what she thought was the biggest challenge in the world today was. She asked me to repeat this question and I rephrased it in terms of obstacles. She then said there were no obstacles that she experienced. I rephrased yet again and asked: What would you like to change about the world today? I acknowledge that this might have been provocative on my part. But this opened something up. She mentioned that she would like to change behaviour which linked to the stigma of whiteness amongst her Black peers and family members. This was not an obvious environmental concern, but it cut right through to the (im)possibility of young people being involved in environmental projects. Khanyi referred first to the concern of safety as a woman, explaining that before women were not as in danger as they are today. She also listed the problem of dumping. I was concerned that this question would too obviously be answered in terms of environmental challenges, leaving out challenges closer to lived experiences. These two responses reveal that this particular question remained open to themes beyond typical environmental themes.

Raising concerns indirectly linked to the environment gave me an entry then into asking how these concerns were engaged with in their experience of the school curriculum, thus tracing pedagogical moments that spoke to what they were concerned about.

7.4.4 Interview objects

The presence of the recording device also added something to the interaction. Both Thomas and Khanyi, despite my explaining that the recordings would not be shared beyond me, introduced themselves. Khanyi paused at the beginning of the interview and asked, must I introduce myself? Thomas listened respectfully to my first question and then said, “Thank you for the question but first of all I must introduce myself, my name is Thomas Njoloza”.

These interjections were interesting to me. They were an expression of wanting to be heard and acknowledged for who they were. They seemed to express a sense of pride. It troubled the concern about anonymity that is prevalent in research with young people and reflected a sense of ownership to and with the process. It made me want to turn the interviews into a podcast. This also alerted me to the performances of our conversation, that these young people might in a sense be performing in a way that they imagine others will hear the recording after our conversation.

7.4.5 My presence in the township

Khanyi provided an alternative to my prevalent feeling that I was intruding in township space:

I as an individual thought that maybe um the people are out there don't care what's happening in the townships you know so like for somebody to come out and say, this is, this is the case you know, so like it makes me feel so yes, privileged yes. we are so privileged to have somebody like you to come and talk to us about the things like we never thought you'd come and talk to us.

She might have been performing what I wanted to hear, and I acknowledge in this expression the potential problems of ‘white saviourism’, but my sense was that over the two years in which we had met, the relationship we built, my returning to their school in the township, and not just telling them what to do but workshopping together, made a difference to the expectations of what our relationship might have been.

P: But ... your presence means something because we couldn't just tell us to do something then disappear. So like you being here helps because we know that OK. She is adamant you know, she means what she says.

When I asked her what role adults might play in their school Ezemvelo club she said she does not expect me to donate financially but I have the information that can help them to find sponsors. This idea is pertinent in relation to the previous one: these young people can express appreciation for the relationship we built and they can still request that my assistance comes in the form of the resources to which I have access.

7.4.6 Section summary

Taking the above moments into account, I felt I could hold together the building of a relationship with the unavoidable tension of our different material, social, cultural, economic, and linguistic circumstances. This is the place of radical difference but also of interdependence, the place of solidarity building (Gaztambide-Fernández, 2012).

This section has drawn on moments in our interviews to shed light on how the relations between researcher-adult and youth learners were both performed and transformed while generating this data. We were neither determined by our positions nor free of them. Moments of disruption and uncertainty allowed important insights to emerge. It was through playing within these conditions that the following insights were gleaned.

7.5 Narratives of place in our conversations

Thomas invited me to see the plants he was growing at his home. As we drove from the school through streets lined with the densely packed tin shacks, I was aware of the spectacle I was as I parked on the side of the road, which was about 30cm away from the row of tin shacks. We got out of the car and walked across the road, many eyes watching us go. I was



Figure 18: Participant with a verticle garden

hesitant. Aware that this might feel like an invasion, aware that I was a presence, Thomas invited me in to meet his mother and sister. I greeted them in my best isiXhosa. Their shack had two rooms. Thomas showed me his plants growing in the tiny space between their shack and the next. He has spearmint and some spring onions. The former was growing in a two-litre bottle hanging from the awning – a vertical garden as some call it. Thomas said

something like, you see white people are afraid but there is no reason to be. I left shortly after that, but I realised that my anxiety about making people uncomfortable was interpreted by Thomas as fear. I needed to listen to the likes of Thomas and calm down a bit.

In our conversation, Lihle reflected on the water crisis in 2018:

So um. We survived with only less than 20 litres of water. Here in Khayelitsha and then sometimes you'd find that you wake up to no water at all. Even though you never...

A: They turned the taps off.

L: Exactly, when you have never actually used the water. So ya. It was very terrible. That time...we pulled through.

L: And you see that people like living in shacks don't normally attend these climate strikes because they think that, OK, white people are scared of floods and the heat and...

A: We [referring to people living in shacks] have it all the time.

L: We have it all the time. Because when it is raining you find it that people have to move out of their shacks because like we found it that water is coming during the sleep or maybe when they were off at work and doing something in their life so like ya...

Khanyi spoke passionately about breaking the stigma associated with the 'intelligence' of those who live in the townships: "*that your mind is at the level of the township*". This connection between place and perception of intelligence or knowledge is deeply troubling in a country still divided so starkly. It echoes in school attendance, it echoes in the fact that Khanyi has to speak out against it.

Another important inference for me was Thomas' contrast to the rural areas: Despite admitting that he was in the township to reach further opportunities, he is strongly aware of the freedom and power he has at his home in the Eastern Cape. He felt that in the township they are just told what to do. The chief in the rural areas has a different form of leadership to the municipality in Philippi. Thomas felt that in the rural areas governed by chiefs, people are given more power to do things for themselves. This brings another place relationship

affecting the identity of young South Africans – the mobility affected identity of movement between the urban and rural, where ‘lifestyle’ and ‘opportunity’ exist in tension.

In Philippi the biggest challenge we face is because we are living in a township and the City of Cape Town does not support people – what I'm talking about is support, I'm talking about water and sanitation that's the biggest challenge we face in Philippi and people are doing deforestation and municipality does not pay attention to that. And the other thing is water and sanitation. Because we are living in an infiltrated area, where the houses are close to each other, they are, what are those diseases – what you call those diseases, airborne disease.

Khanyi spoke of the significant presence of gender-based-violence in their lives as one moves between home and school.

We are afraid like because you don't know who's next. Sisters are killed, sisters are murdered, sisters are raped ... so like as I am here ... like I'm not sure if when I go out the school premises, I'll be raped, I'll be killed or murdered you know.

This comment felt important not only as a prominent intersectional theme in South Africa life but also that it was made the year that shortly after the youth climate strikes, women in South Africa demonstrated against gender based violence in the wake of Uyinene Mrwetyana's rape and murder.¹⁶

Fast forward to the climate march when I was walking back to the transport with the Philippi learners. I had my bicycle with me and they were taking turns to ride it. Thomas asked me to bring the bicycle to Philippi so he could teach other learners how to ride it. I made a joke about cycling to Philippi. I have a vivid memory of him saying: “Under no circumstances must you do that, your bike will be stolen”. This was provocative because a bike and cycling is a prominent narrative in the green discourse. Yet, it is so far away from possibility for the lives of some learners in the city of Cape Town. This contrasted drastically with the learner living and schooling in the same neighbourhood who was encouraged to cycle to school by her father. The possibility across space of performing environmental activism differs drastically.

¹⁶ <https://www.ijr.org.za/2019/09/05/the-death-of-uyinene-mrwetyana-and-sexual-and-gender-based-violence-in-south-africa/>

These narratives of different spaces and places in the South African landscape foreground an important dimension of how learners experience their urban environments. The learners are sensed into the powers, perils, and ways of being across urban-rural and within urban differentials. These underlie any and all of their urban environmental concerns and play into what it is they are able to respond and react to.

7.6 Environmental learning themes and reflections emerging

7.6.1 Conceptions of the environment

Throughout our conversations there were a variety of ways of framing the environment – environmentalisms. These environmental framings are not presented here to establish which learners know more. Rather this is an attempt to capture the framings they currently have in thought-language. Remembering that environmentalism is a part of environmental education, thinking pedagogically, presenting these are part of reflecting on environmental learning experiences.

In an explanation of her concern that only white people seem to care about the environment, Andrea's transcript reflects distinction between living conditions and 'caring for the environment'.

I think because South Africa is so unjust that those who live with less, are going to care more about like their basic needs than the environment necessarily, the environment kind of seems subordinate to the basic needs which makes sense obviously.

Her experience was that many people she was around feel negatively about the environment. Amidst a felt sense of the injustice that many people are living in poverty, she opposed caring for the environment (in terms of showing up for the climate strike) to the daily living struggles of those who are living in poverty.

Khanyi remarks on the challenge of dumping being the major environmental concern.

Not so many people like pay attention to the environment so like this we sometimes do things not knowing where the consequences of that thing you know like for instance we dump, most sort of dump it so we don't know that that thing will come back to us in the form of global warming climate change and stuff so we do things not knowing that they will backfire so we're ignorant. That's the problem.

Lebohang noted that her mother did not know much about climate change and environmental issues because she works in the ‘public works’ department. In our conversation I shared with her that I thought public works, a coordinating public infrastructure responsible for how resources are distributed, was very much linked to, and was most directly related to environmental and climate concerns. This notion also reflects the disconnection of the climate problem to everyday life and the silo-ing of departments and language.

Referring to other people, the infamous ‘they’, Thomas complained that other people did not see that what the Ezemvelo club was doing was development, noting the link between their work with the vegetable garden and the daily needs of the Philippi community.

Khanyi echoes Andrea’s sense that it was a minority position to care for the environment. Thomas begins the work of connections that seem to be missing in Khanyi, Andrea and Lebohang’s framings. The link between sustainability and survival were not always present in the (English-represented) narratives of these three learners.

7.6.2 Learning moments

Throughout the interviews the learners shared with me learning moments that stood out for them. This sharing was sometimes in relation to the particular question: Do you remember a time when you learned about these things in class? And sometimes came up spontaneously at another part of the interview.

Lebohang talked about the model C school she was at and described a moment where they were learning about the government. In Life Orientation, where they usually get to ‘discuss things’, she recalled a discussion that emerged between learners. The learners in Pinelands explained that they were always notified of the time their water and electricity would be turned off. The learners in Mitchell’s Plein explained that they were never warned; it is always random. After describing this polarised discussion, Lebohang noted that her home experience was the same as those learners living in Mitchell’s Plein. She also expressed a disappointment about this: as they get their bills delivered to them, why can’t they get notification of loadshedding. (#manylifeworldswithinoneschoolworld)

Andrea recalled a lesson experience she had where a teacher gave the class each a choc chip cookie and a piece of paper with circles of ‘impact’ and asked them to mine the chocolate

chips. The crumbs that resulted acted as a representation of the impact of mining and even in their attempts to clean up the crumbs, illuminated how irreversible impact was. Andrea felt strongly about this lesson and expressed concern that others did not seem to get the severity; rather they were just excited about getting cookies in class. Her concern extended to her educational experience and the feeling that they were not doing enough to help learners make changes, instead they were “just writing their hands off in exams”.

Lihle shared some wily pedagogical strategies, bringing climate change up in a variety of classes. They also try to make jokes about it, noting that often it will be more engaging if it is a joke.

So we also like try to bring up climate change to sort of like educator our peers since they really don't care about it so we try to force them into subjects. That's what we do.

She spoke adoringly of her English teacher who:

But I love my English teacher. I love my English teacher because we supposed to be like learning about nouns verbs and all that ya ... ya... because it's part of English instead we are learning about the earth.

Khanyi, being one of the students who had joined me in the play building workshops shared her learning from those.

No. I still remember the things you talked about um, one thing that stands out for me like for me it was the statement that says save water was imposed to us like I never knew the background of that statement like I never knew like where does it come from so you the workshops we did together helped me understand that no, we can't just say to people save water. Like who should save, who uses much, who uses less you know, so the workshops helped me to expand a lot my knowledge you know, to expand my thinking that got me thinking oh like for instance in a township like in a shack you know in a squatter camp there are you'd say maybe two toilets ...um you know up for that particular area and two taps you know... so let me say a family of eight people like share a let me say a bucket of water they come to Kirstenbosch or Constantia and then a family of three maybe like a wife, kid and a husband and they have pools, they have lawns like you know so you can't just go to a person in a township who struggles

and just say, save water like what am I going to save, what do I have, how am I going to save the little I have you know ...so like that expanded my knowledge you know that helped me, that got me thinking up this is the stage whereby we have to we have to be more realistic like you can't just say it can't just say I must save what I don't have, what am I going to save if I don't have it so that got me thinking about the inequalities that we are told to save you are ordered to do this and that and that but there are people you know in big houses in the suburbs, they are not told to save because it was believed that they have money, they pay so us who are poor who don't pay much for the water, we must be ordered to do things like that are not realistic, like you can't tell me to save 10 litres whereby we give you five litres you know. So that got me thinking about the inequalities that's happening in our countries you know...

These learning experiences were not definitive, but they revealed small insights into dimensions that allow for openings for grappling with these learner's concerns. Learning about the government, learning that just learning is not enough and feeling the hopelessness of just learning about ecological destruction in school. They also raise some further pedagogical questions. How do educators harness moments where different experiences are brought into the classroom, making it accountable to those learners across spatial difference? How do we ensure that our creative environmental lessons make time for exploring and reflecting about the environmental concern we are communicating about – providing learners with the tools do something rather than feeling hopeless or like it is not their concern (not caring). How to capacitate learners to sit reflexively with the difficult knowledge of the world. Underlying this, how do we break out of the separation of the classroom and the world? Where what is being learned affects beyond the final year exam.

7.6.3 Young environmental change makers know learning

A friend of mine and I were speaking about the struggles of the youth climate strike. She paused to say there was a real question here about who knows. There are the elder 'experts' who have most of their lives behind them, and then there are the youth who have a bigger interest in the next 70 years at least. How does the higher risk of death and destruction weight the importance we put onto change, how that change happens, what we sacrifice for that change? The notion of intergenerational learning looks different across the world and it feels as though the notion of young people knowing more than their elders holds assumptions about who these elders are. For students of Africa it is likely that elder knowledge is

necessary to disconnect from coloniality of being. This was a significant moment of “who knows” and is a pertinent question for many epistemological justice questions where those who hold the knowledge are somehow protected from the impacts of how that knowledge plays out in the world.

Lihle made a point that as they try to bring Climate Change into all their lessons the best strategy is through jokes because they are more easily remembered. This contrasts with rote learning. It showed a sense of how we affect people with information. She also explained how she and her teammates build climate change into their sport chants. Khanyi identified herself as someone who needs to see something done in practice and then she will remember it. She extends this to modelling good behaviour which was linked to my presence at her school: you don’t just tell people to do something you show them. Andrea noted that there is environmental content in almost all subjects across the curriculum. However, it seemed they learn it to put it down in an exam. There was not enough time and effort spent on thinking about what can be done.

In my conversation with Thomas, we discussed the claim made elsewhere that strike organisers were ‘puppets of white people’ came up. When I asked Thomas what he thought about that he recalled a pedagogical response. He said:

The thing they have to do is to give the people the clear understanding of what you will do in environmental learning and justice climate change so if you tell a person or you make a clarification and then you give him or her the facts, what we are dealing with then I think we will get a clear understanding of what is going on.

This extract is interesting because it begins with an explanation of what young people accused of being puppets should do – to provide clarification and a clear understanding - and then the quote ends with “Then I think we will get a clear understanding of what is going on”. He positioned himself with those who are accusing the puppets. He was stating his own plea for clarification and understanding, particularly in relation to justice and climate change. And perhaps the relational side of it all – a wish to have been invited to the table of strike organising and not feeling like someone on the periphery. This link between asking for a clear understanding and asking to be included alludes to a notion of cognitive justice – that the experiences and situations of all youth around the city should be fairly participating and present at the strike.

Khanyi introduced a pedagogical point of thinking *on top* of the box. (This was in addition an innovative pedagogically relevant play with the English idioms.)

This is a stage whereby we have to be more realistic, this is a stage whereby we have to think about the future before the future comes you know this is the stage whereby we have to be to think wider rather than thinking in a small circle, you have to think outside the box, even on top of the box. [I love this play on English metaphors]

A: I love on top.

P: Yes. You must think on top of the box, because maybe outside the box, it's too close. then on top.

A: So you can see...

P: Yes and also we talk about ..

A: Can I just ask, what will you see when you stand on top of the box?

P: You see the box is tall. Then when you outside the box maybe you are next to the box then maybe your height is you know, the same height but when you on top of the box, that's when you see more, that's when you have a wider view you know.

A: And what will that wider view include if we talk about water and the city? I'm interested.

P: Um that wider view will include the inequality, concerning water. That wider view will include um, the things we do like you know for people like they just ok, water came to my tap that's it, I have water to drink I have water to wash... like they just OK I have it so why should I save you know while I have it. Why should I? Why should I save while there are people who don't save? So people just compare, they compare you know.

Khanyi pushed beyond her awareness of the issue of saving water across significant inequality and while doing so she pushed back at an implicit bias I had. She was emphatic about the fact that, despite living in a township when sometimes there was not enough water,

she was still in a position to act. She even argued that there is always someone who “wants to be where I am”. In my fear of responsabilising a learner who had unreliable access to water, I had overshot, I had gone the other way and unintentionally suggested there was nothing they could do about the water/environmental crisis struggle. I was so anti the imposition of saving that I was unknowingly stripping the ability to participate – playing into a notion of deficit. In a sense, learning more about the “bigger picture of water” gave her an understanding of how to problematise “save water” and be sensitive to who was being asked to save. At the same time, it did not de-legitimise the ‘save water’ concern. In fact it helps to clarify the sense in saving water. It is like understanding that big companies are responsible for making plastic, but it still makes sense to pick up litter! We can still in a small way make a difference and it is wrong for someone to disregard or take away the possibility of practising that agency. This was a powerful bit of hope and a push back to my pessimistic ‘critical stance’ which in fact enacts some violence of deficit and that agency is not being enacted. I was aligning with Andrea’s framing of the environment that being environmentally active is not possible if you are poor – a notion that need to be radically reimaged.

7.6.4 Racialisation of youth environmental concern

Race has been a central concern for me from the beginnings of this project. However, race did not emerge as an explicit concern in our collective discussions and, despite feeling concerned about this, I did not probe it more than a few comments. For example, I joked about *Mlungu* [a white person]. But perhaps we all felt safer talking about ‘townships’ and ‘suburbs’. I understood that it would have been difficult given the unequal power relations between myself and the learners; however the interviews enabled this theme to emerge strongly.

The first time was when I heard a young student racialised as ‘white’ reflect about her experience of one of the climate marches. She stated that the march felt “too white”. My initial response to this was, “Wow!” Here is a young white person who is expressing in language her concern about the race divides in the environmental movement. This utterance was the first mention of a race-based concern with the youth environmental movement, that I had heard at the time. Her comment invoked in me a strong feeling of sadness that in practice South Africa remains divided around important concerns. In our interview, she explained that:

I am not saying that only white people care or anything but I think because South Africa is so unjust that those who live with less, are going to care more about like their basic needs than the environment necessarily -the environment kind of seems subordinate to the basic needs which makes sense obviously so ya...

In our conversation she continued to make sense of this through hesitantly using the frame of environmental justice:

I'm not sure. It is like the environmental justice where you improve people's living conditions before getting them to care about the environment. I am not sure if that is what environmental justice is.

I heard in her reflections a confusion. A grappling with the fact that people of a particular race seem not to care as much as she does and then an acknowledgement of how they must not be able to.

She she had a language of racial dynamics intersecting with environmental concerns. At the root of this was the contradiction that our environmental concerns could ever be separated from our living situations. This had left her in a certain stuckness: struggling to reconcile a deep passion of hers amidst the sense that its apparent race and class exclusivity was wrong.

Lihle confirmed a sense of racially determined discrimination through being involved in organising the Climate Strike. She noted that even as she applied for the position on the organising committee, she was afraid that she would not be elected, largely due to her being Black, while the majority of the members were white. She was elected; however the racial dynamics of her involvement did not end there. She explained that there were significant struggles in mobilising her own community because “they don’t care” and they think “climate change is privileged people’s business”. Importantly, they thought that the only reason white people are involved in climate change action was because they are afraid to live in the conditions that poor Black South Africans were already living in. She expressed how desperately they need people of colour talking about these issues. So that the broader community can relate to these issues.

Madeline noted that interest in environmental issues was automatically linked to ‘acting white’: it is attached to bringing one’s own lunch to school rather than eating the food that is

provided by the school. Individualist behaviour was thus quickly linked to the socio-economic hierarchies of schools, which was especially spatialised in this city. And this was ironically used to subjugate people.

The three other participants addressed these issues but in terms of spaces across the city. Lebohang, did not use racial descriptors but echoed Madeline's notion of stigma. As a young person who travels outside of "an underdeveloped community" or township, she relayed that learners at the school in her neighbourhood held the perception that those who travelled to schools in the suburbs felt superior.

Lebohang: I live in Langa. and I have met other kids who maybe, let's say, don't go to schools in town or Pinelands and so when I hear them speak it is almost like, ... and maybe they asked me which school I go to ..., and I tell them, ... and it is almost like there is a sense of kids in that school [my school] can't relate or they make themselves seem better than [those attending schools in the township].

She also expressed surprise that there were schools from across the city attending the climate strike, which suggested to me that that she may have expected it to be a white people's march.

Khanyi makes an illuminating comment that brings a different story to the experience of living and schooling in a township:

That makes me feel proud you know to be born in a township and then be able to go out there you know so to erase the stigma that says like if you attend a school in a township then your mind will only be, you know, to a level of a township.

Khanyi was identifying this perception that one is inferior if raised and schooled in a township but also a concern with transgressing that. She talked about "going out there" to erase the stigma. This suggested to me that it is the feeling *in here [the township]* that people out there think they are inferior. She might have been referring to me, or she might have been referring to white people more generally. However, it echoed the existence of the phenomenon Lebohang described of "being better than" those who stay to school in the township.

Thomas brought a concern about the ignorance of those who live in the suburbs. Straight out he shared his disappointment that those who organised the march were largely from the suburbs. Despite this concern being incorrect, it was a refreshing challenge to who has authority on the matter.

*I did enjoy the strike but because I am person who like to share my ideas and knowledge so I didn't get to come up with ideas or to also **add on the things that we are addressing at the strike**. So because some of the people or most of the people that attended the strike are people who are coming from suburbs*

My own experience of that strike was that there was a great acknowledgement of the history of colonisation and the similarities across peoples and spaces, especially due to the presence of the rapper, Mixed Mense. However, hearing Thomas' observation pointed to something deeper. We can have the performance of hosting an intersectional strike but one can be left with the feeling of being outside of the conversation which I think is the reality in the midst of the challenges of bringing young people together across the City of Cape Town.

While the construct of race placed these learners at different ends of a spectrum they were, nevertheless, on the same spectrum. This is a line of concern about how race played out in daily behaviour, being included in conversations and youth organising, the ability of privilege to enable conversations, the insistence that despite race and related class situations, one can do something and be involved.

7.6.5 Closing

Themes relating to experience and involvement in environmental organisations and learning help to zoom out on the relationship in time and place. Significantly, the intersections of race and socio-economic experience underpin a variety of environmentalisms which also informs experiences of learning in social school contexts.

7.7 Chapter conclusion: Tensions and resonances in environmental learning experiences

This chapter has surfaced, analysed and discussed some critical points of tension for young people's experience of environmental learning. These include: Conceptions of the environment, nature of critical environmental learning moments, informal learning, concerns

about race in youth environmental programs. These points are critical starting points for finding ways to be in solidarity with young people as we engage in environmental education encounters.

Remembering that these conversations emerged between a white adult women and all but one young people of colour, across various socio-spatial context in the city of Cape Town, I was aware that underlying our communication, the interviewees might have been reminding and emphasising to me the difference that exists in this city. And in this sense there was a magnification of the themes of difference. My experience in the field and observing trends in the world at this time let me know that this magnification was not problematic. It was only that there was, of course, so much more than this emphasis which I may have missed out on in our short time together. Perhaps this emphasis, or exaggeration was in part making sense of a phenomena that is experienced in the world. This emergence, exaggerated or not, required a response from me in terms of grappling with the significant material, historical, economic conditions of polarisation, and also to think through its relationship to environmental education experiences.

This chapter, through an analysis of these conversation interviews, attempted to grasp moments and aspects of transformative potential in the practice of environmental learning as young people exist and act in the world. It sketched some openings to the generative themes that underlie the lives and learning of young people identifying as concerned about the environment. In this way, it laid a foundation for curricular sensibilities relating to thinking about spatially determined social justice education within environmental learning. Raising some of the contradictions that emerged for these young people and their curiosity in the ecological/climate crisis, it aimed to transgress notions of inclusion and hopes to situate and centre these experiences as important mirrors for the environmental education project.

What emerged clearly across the interviews was the appreciation of space for learning about the things they cared about. This space came in the form of classroom discussions, ways of relating curriculum material to their lived experience. Andrea found the Eco-Schools club a place where learners come together with other people who are concerned about the ecological crisis; significant learning moments occur in classes where there is space for discussion, or talking about content that is part of daily experience and things that cannot be spoken about with parents. Khanyi expressed appreciation for those subjects where they talked about what

they already know and experience. Spaces and times for drawing links between young people's lived reality concerns and environmental concerns were significant to the learning that occurred in relation to urban environmental concerns.

There was resonance in the experience of two interviewees in different parts of the city. Andrea and Lihle both felt like they were surrounded by people who did not care, or even feel negatively about environmental concerns. That "climate change is privileged people's business" was a repeated notion in the form of a statement from Lihle's interview. We could word play with this for a long time. It resonated with the *at the tap* improvisation (Chapter 6) we did in Philippi where we linked the water limited tap to climate change and the businesses of people in the suburb. It resonated still with Baviskar (PLAAS, 2020) whose description of political ecology sees climate change as the ecological issue worthy of attention by the north – for whom environmental issues were previously not a concern.

The notion of "who cares" gives us insight into how environmental learning is shaped and experienced. It is a generative theme – embracing the idea that we are all in this together but exploring it from the different seats we are sitting in. While there are frames of logic suggesting that 'the poor' / ('underdeveloped communities' / those dwelling in 'unjust' living conditions) do not care, this observation perception differs across the city. However, the 'poor' or township dwellers also have their own very particular feelings and reasonings for why the 'rich people' care so much about climate change – that they want to maintain their standards of living, their separation from 'the poor'. And some utterances in Chapter 6 suggested that the lifestyle of the rich was understood as part of the problem. Between both these impressions falls the "we are all in this together part" and we focus on the seats rather than how our seats sit in relation to the whole bus that is hurtling towards a precipice.

These logics and associations might be dismissed as unmeaningful, but they exist as significant obstacles to these young people embarking on being involved in life affirming work and building their change making capacities. And they matter to me too; they are not distractions to learning; they are real experiences in the world and require acknowledgement (in the least) as well as addressing (in the long term). Contradiction is maintained in the abstraction of environmental issues (through language and epistemological culture) from the everyday struggles of survival in the city And thus they become understood as a particular

group's issues rather than a collective concern – that does not detract from the daily struggles of those who are living in precarious conditions.

Thus, the concern of '*who* cares' must be explored together with *why* they care and how these individuals relate to the conditions producing the differences between people who seem to care and seem not to care. In other words, the reasoning behind our urgent concerns is as important as the concerns themselves – how we arrive at what concerns us can trace and track the positions we hold and in turn tell us something about our worlds. I have had to constantly revisit the root of my concern, continuously thinking about it through the lens of solidarity rather than that of saviourism. This is the reflective work required for change oriented learning and education in a polarised society.

To link this concern back to how learning is enabled or obstructed for these young people, I am left with a sense that this stigma, divide, racial polarisation is a barrier to the free and full learning about the constituents of the climate/ecological crisis by *all* young people in South Africa – not only those who live in the townships. It might manifest as a conflict within dispossessed communities but it is due to the significant inequality, the continued narration of environmental problems as apolitical and disconnected from daily practices of care and reproduction, as more urgent than lived pressing issues. These serve to make environmental concerns something out of reach to many South Africans, unless they work tirelessly to reclaim this struggle and insist on its connection to contextual concerns (which of course there are examples, but which have been left out of the dominant youth climate strike discourse). Equally, young people who grow up in privileged suburbs are also obstructed from understanding the fullness of the problem and the capacities available to make change.

These young people in their important work of leading the future struggle of climate change, need tools to grapple with these barriers, obstacles and abstractions that come into play in their education and environmental programs. In my experience during this PhD, race has been a challenging ever-present concern and structural issue. As is its nature, implicit in my immediate consciousness but showing up in manifestations of social-economic-spatial-discursive events – understanding these issues is complementary to understanding the structure of racism. I realise this is partly a result of my own inability to amplify concerns of race in ways that are generative and accountable, whether it is even possible given my historically and socially prescribed identity as white. What is absent here, and of concern to

environmental education, is analytical tools and spaces to engage the way ‘anti-blackness’ obstructs young people’s (across race and class but in different ways) learning about and ability to act in their world, all young people albeit in different ways.

The risks of addressing difference in learning encounters are significant – we stand to re-establish essentialised understandings of difference and reproduce notions of inferiority if we do not extend these concerns to their root causes. However, failing to address difference in a world where difference matters materially, culturally socially is problematic – we need to develop the capacity for working with this in a way that does not essentialise. It is to understand the qualities – historic, material, social, economic, pedagogical – of race in particular anti-black racism and grapple with these differences for why they make a difference. In figure 19 alongside here this learner borrowed an isiXhosa idiom for representing difference: those with ties and those without’. In the case of environmentally active youth, difference is made and maintained in the dissonance between purpose, motivations, acceptance and language for learning about their biophysical and social worlds.

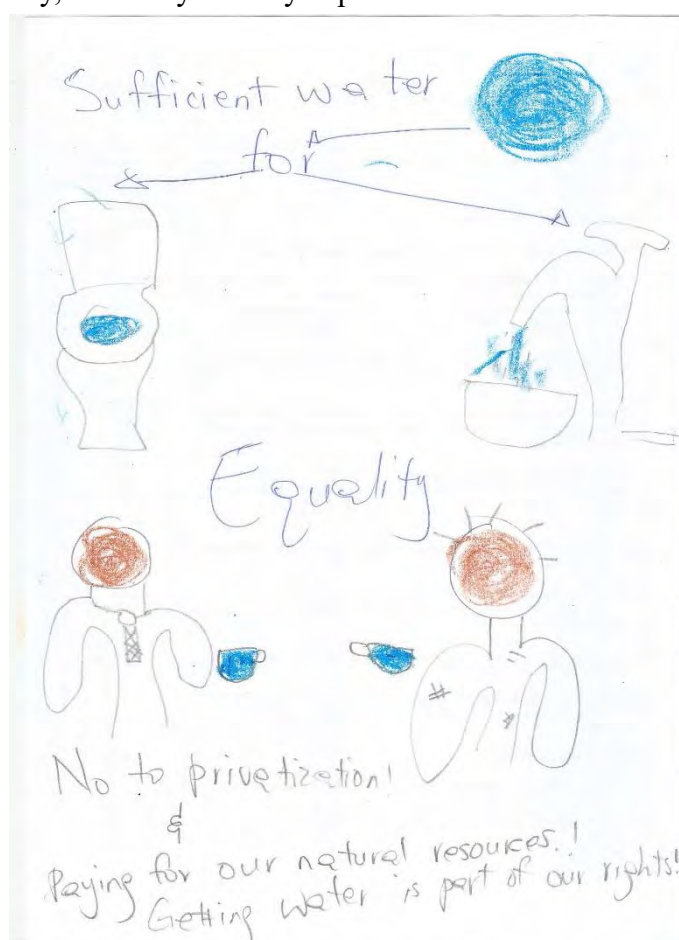


Figure 19: A highschool learner expresses her dreams relating to water; Sufficient water for drinking and sanitation, that there is equality for those with ties and those without, a resistance with privatization and an awareness of water as a human right.

Chapter 8: Listening to learning: reflexive elements for enabling transformative potential in water education

8.1 Introduction

In this chapter I distil some elements of reflexivity in water education from the reflective practice of this thesis. First, I situate the chapter in the spirit of its aims and its relationship to the rest of the thesis. Second, I revise the way in which it is possible to produce knowledge about educational practice, namely as a reflective process to be taken up rather than a blueprint to be exported. Third, I pause to consider the position of children and youth, with whom this work was co-created and to whom it is dedicated. Next, I speak to six reflective nodes of critical urban environmental pedagogical encounters, which, while being separated for the purposes of explanation and differentiation, are not separable but relational. I aim to hold this relationality in the learning metaphor of a river. I conclude with a paragraph summing up the contribution of this thesis.

As a postscript I share a narrative reflection on an experience contributing to developing water education materials, drawing from what I had learned listening to the learning of young Cape Town citizens. These are described in terms of articulating new levels of reflection for reflexive pedagogical practice and reframing water education materials with critique generated through observed absence.

8.2 What is this chapter setting out to do?

I have reached the stage of being able to articulate some critical concerns for the project of learning about water with social and ecological justice in mind! This chapter is an attempt to pause and distil what I have learned about socio-ecological water pedagogy and gestures towards transformative potential in a world that is stuck, partly in forms of pedagogy that prevail. To remind, the process has been as follows: In this research I set out to explore a creative process and collaborative learning encounters as a response to the significant obstacles to flourishing occurring in South Africa today, particularly as they manifest in pedagogical cultures (Chapters 1 and 2). I studied ways of thinking about and researching education with transformative goals as an underlabouring for questions 2 and 3 relating to critical and responsive education (Chapters 3 and 4). The research approach, Arts-based educational research, holds research question 1 as an implicit principle for building

educational encounters that affirm experiences of the learners as a starting point for building knowledge and analytical tools for critical learning. I have engaged in acts of learning about water, and in dialogue with children and youth; I have ruminated, interpreted and inferred from those encounters a critical engagement with the use of multiple arts-based modes in educational encounters and extrapolated the ways in which arts-based inquiry enables a responsiveness to urban environmental concerns (Chapters 5, 6 and 7). What is distilled from these are reflexive considerations for education aspires to be in solidarity with young South Africans (research question 4), where reflexivity is understood as “the capacity of an agent or an institution to monitor and account for its activity” (Price, 2016, p. 34 referencing Bhaskar 2008, p. 273) of how intentionality and action play out in educational practice in unpredictable but explainable ways.

This chapter shares tools towards rigorous and reflective educational practice that resists the reproduction of oppression and capitalist environmentalisms in processes of learning. These elements are experience, curricula and co-making transgressive libraries, an arts-based process, the educator -researcher role, the self, working with children, and working across race and class. Water education is urgent currently if we are to work better in relation to this increasingly degraded and unequally shared resource. However, the urgency should be accompanied by a consideration of some prominent quandaries stirred up in attempts to generate transformative water pedagogies at this time in South Africa and the world.

The discussion draws on theory and fieldwork from this research process and attempts to open up and generate critical reflection, to complexify, to trouble and to re-root environmental learning as a reflexive generative practice. These elements are relational; it is almost problematic to separate them out. But, according to critical realism, we can embrace relationality without letting go of differentiation – the usefulness of identifying and articulating and explaining a component of our complex world (Bhaskar, 2008, p. 252). This chapter is a totality, following on dialectically from the descriptions and absences articulated in the chapters that come before. It is a totality that is ‘radically open’ (Bhaskar, 2008, p. 8) in order that it might invite and grant permission to overflow into the beautiful mess of practice, transformed transformative practice.

Usually a researcher would use this chapter to respond to the individual questions. In this chapter I emerge through the research questions (Section 1.3.4). and make visible my own praxis shifts that have come with the learning through this thesis. The research questions

“...shift and evolve with, rather than precede, fieldwork and interviews” (Ellingson, 2017, p. 35). The learning relates learning to be aware of tendencies to reach for instrumental and magical recipes for education. These tendencies have been present with me throughout the encounters of this thesis and have needed to be disrupted. Awareness of instrumental tendencies, in practice, is a learning necessary for all educators (Biesta, 2007b). This chapter focuses on the enabling conditions of continuous educational reflexivity that must accompany the embrace of arts-modes in socio-ecological education, these conditions enable the intersection of arts-based and socio-ecological environmental education. I describe an emergent practice that must underly educational intentions for using arts-based modes critically (question 3), for understanding arts-based inquiry as responsive to urban environmental education practice (question 2) and working with generative themes and lived experience in non-essentialised ways (question 1). I do not end this thesis with “simple definitive answers or ‘con(col)lusions’ (Nolan, 2014, p. 526). In this way I honour the potential of arts-based research to resist simple answers to complex problems, “to promote new questions” and in fact, to raise “more questions than it does answers” (Barone and Eisner 2006 quoted by Nolan, 2014, p. 526). In this way I try to practice research that refuses to take the authority away from the readers, from those who are engaged in educational practice. I refuse to assume to know how the practice should be done. But instead I present theory and practice informed elements and points for further dialogue that think about conditions for critical learning.

This chapter is held together by the river metaphor, a metaphor that is used in order to hold relationality and complexity in discussions of pedagogy. It cannot be taken as a blueprint and lumped somewhere else without changing its form. In other words, despite the temptation at the end of a thesis to conclude with certainties, I am trying to avoid replacing “one set of certainties with another” (Andreotti *et al.*, 2018, p. 13). This thesis is rather a call for reinvention and continuation of education as the struggle for change. In describing what has been learned about pedagogy, drawing on the metaphor of a river, this chapter invites a flow of the river – a reflective tool to be taken up in other contexts of learning about water. The river metaphor is found at the beginning of each section in italics. It is to re-present in a way that remains balanced between specificity and generalisability, so that it can burst out into the world of practice, as I am itching to do.

8.3 On ‘doing critical and transformative environmental education’ or ‘creating

conditions’ (zooming back into the politics of educational practice)

I do not come to the end of this project with an answer for how to *do* critical urban environmental education which includes possibilities of transformative and transgressive learning. Such a question slips back into a problematic ontology that one person can determine, be in control of, another person’s learning (work reviewed in Chapter 4): a premise to much of the problematic educational cultures we are inundated by today (analysed in Chapter 2). Embracing Bhaskar’s absence-infused critical realism philosophy, this question can be reframed as: How do we remove obstacles or create an enabling environment to the basic human freedom of ‘unfolding the enfolded’ or learning (Scott and Bhaskar, 2015, p. 13) about the world we are living in, in a way that is meaningful to those participating in the educational encounter? Or, what conditions are needed for transformative and transgressive learning (an objective of critical environmental education) to emerge from the place where we are currently? This question can be addressed through practice, through deep listening dialogue in the spirit of solidarity that is anti-racist, anti-colonial, anti-patriarchal and directed towards affirming life. Consequently, if we accept that it is impossible to *do* transformative or critical education through a recipe, we end up with the concern for continuous reflective practice on the part of the educator. What I come to at the end of this thesis is nodes for reflexivity – the capacity to account for our actions in educational work – in critical urban environmental education for a pedagogy that supports it, as the active naming of the intellectual and political work that educators do in their practice.

Another reason why we cannot *do* critical urban environmental education is that we will never enter into practice in a vacuum with a fresh new perspective on environmental education. The creative work we do needs to grapple with the educational cultures and logics, the existing curriculum canons (Oliveira, 2016, p. x), and from there birth new pedagogical praxis. Thus, a reflective educator needs to think about the existing setting in which education occurs: Learning to pay attention to how what we bring in the form of ideas, practice, and methods, plays out with other humans and more-than-humans in educational process. Paying attention to the physical, social, cultural, political and institutional context is a critical underpinning to reflective work that brings together theory and practice for critical environmental learning. Accordingly, learning to attend to the discourses and cultures that have been established in structures that are older than us, is also critical because we may become perpetual creators of the ‘alternative’ that does not actually grapple with the root cause of obstacles to education for the common good.

These concerns characterise what it means to work well with the impulse that accompanies the desire to realise a different version of education. Andreotti et al. (2018, p. 13) reminds us that “the desire for guaranteed alternatives is rooted in a desire for intellectual certainty upon [which] modern/colonial ideas of ontological security are premised. It is precisely this set of lined desires that rationalize the reproduction of harmful relations, asserting a series of partitions and security measures rooted in fantasies of separations, autonomy and control”.

Underpinning effective work with the impulse for education that enables change is the return to the reflective practice that gives rise to reflexivity. Norrie (2010, p. 103), a critical realist, speaks about reflexivity as an “agent’s ability through perspectival switch to reflect upon her situation to step in and out of it to relate her experience to her broader understanding of the world”. Bhaskar (2016, p. 166) has a similar notion of reflexivity which is to arrive at a point of learning practice that enables one to understand the implications of our actions in the world (this was also discussed previously in Chapter 4). Therefore, engaging critical urban environmental education, is beyond the teacher who simply delivers content or hands out a worksheet or speaks to a class for an hour. It is even, despite what some may argue, beyond holding a dialogue, positioning learners in a circle while the educator stands back to listen. It includes the thought that happens in response to what occurs in any arrangement of chairs, in the drive home from school about something a learner said; it includes reflecting on what is going on in the world at this time and how that relates to the content that is being taught; it is continuous; it is not corrective; it is being in the moment even after it has occurred and thinking with what emerges.

This reflexive stance, as a way to facilitate enabling conditions, describes the way I have been reflecting on water education programmes since embarking on the two case studies, the empirical work of this thesis. There is a paradox here: it was in the doing that these dimensions became clearer to me. Thus, there is a very close and important relationship between the action and the reflection in the pursuit of conditions for a kind of education that is co-created, non-alienating and life affirming. This return to educator reflexivity is a viewpoint from which we might understand something about the other elements of the water education encounter: the critical process, critical analysis, environmental education, arts-based inquiry, and dialogue between adults and children. In what follows I draw from my field work to elaborate on some dimensions of the open-ended inquiry process.

8.4 Working with children and youth in research and learning

Before I go further into sharing details about the complex social processes known as education and learning, let me re-centre the people from which this thesis/study/understanding emerges: children and youth, with whom I learned and engaged as described in Chapters 5 through to 7.

I personally feel an energy and enthusiasm, a lightness and brightness working, playing, and talking with children and youth. I love the possibility of play that comes with young people, the interesting ways they resist our interventions and the generative ways they respond and reinvent them. Of course, part of how and why children do this is because they are actively able to perceive their worlds acutely and for many children in the world, in South Africa and in the city of Cape Town, their situations are precarious and getting more so.

Children and young people are not some abstract idealised future, as the discourse would sometimes have us believe. Children and youth are in and of the world. Federicci (2020, p. 41) notes that children in the world today are exposed to myriad acts of violence from material deprivation, direct violence as well as the violence of state institutions “often under the guise of protecting children from their parents in the home”. She argues:

If we refuse the violence done to us, with more reasons must we refuse the violence done to our children. We need to valorize our children, looking at them as companions rather than inferior beings. Children have not yet interiorized the defeats and conventions that shape our relations with others as we become adults and can spot immediately what is false, artificial. Only through years of conditioning do we learn to hide and simulate. Thus there is much we can learn from them.

As key actors in the schools system they are on the front line of the production of the public knowledge about water. In 1979, the world made a declaration to facilitate their participation in decisions that affect them; in part, the educational spaces created for children need to be a sight where this is facilitated. As children and young people are awake to the world(s) they are growing into, there is much that can be discovered and rediscovered about our world(s) in conversation with them. I attempted such a conversation, in this reflective practice, this critical study of water education.

I could not transgress all the mechanisms that serve to exclude them from these discussions. For example, I am still the one writing this and my time with them was limited. But beyond

this practical concern, I am aware that I hold my own beliefs and values about how things should be, and to which I would be partial to the younger generation affirming for me (Maldonado-Torres, 2016) (also further explored in Chapter 2). There may be things that I did not hear, things that I did not interpret, undercurrents that slipped by me completely. However, as I tuned into moments and artefacts from our time together, I attempted to allow a certain unraveling of what I thought could be certain. In this way, I tried to be as open as possible, a soft front but with a hard back.

8.5 Elements of educational encounters – attuning to multiple dimensions to make space for learning

8.5.1 Working with generative themes: Lived experience as existing intersectional knowledge

In the metaphor of the river experience might be the layers of mud at the bottom of the riverbed, laid there by flows of water past. These layers make up the bed upon which ‘new’ water flows. As it flows along the bed, mud particles are taken up and colour the water flows but also new layers of mud settle. These are in turn moved along the river’s path. The space above the riverbed, which the water occupies is significant, it is the emptiness and spaciousness into which new water collects and flows.

What I term ‘lived experience’ is something held by everyone in an educational encounter. It includes the history, the meaning making and habits of practice that evolve in each of us by virtue of existing in the world. Lived experience and the knowledge contained therein also has the character of integration or an intersectionality that dissipates from abstract and expert produced knowledge, that understands how things are connected in the reality of everyday life. The concern for education is how it is engaged with, brought up into conversation or shut down as irrelevant. As educators we need to understand it critically and work with it creatively.

This critical and creative engagement is significant for the transformative potential in educational processes in the global South. Engaging lived experience in educational inquiry holds counter-hegemonic potential where ‘expert knowledge’ in the dominant paradigms is given the only legitimacy (Fenwick, 2006), and ‘learners’ are considered ‘empty vessels’ (Naidoo, 2015). Experience is also significant to the politics of ‘where in the world’, or the geopolitics of educational encounters, are held and oriented. Opening up educational encounters to experience is a way of resisting the exclusionary mode of western

epistemologies (De Sousa Santos, 2007). As discussed in chapter 2.4 engaging lived experience and the knowledge cultivated in the everyday is vital to shaking up the framings “by which curriculum work unjustly reproduced social-structural inequalities” (Zipin, 2017, p. 73). If the environmental concern of water is never considered in relation to the learners’ lived experience, there will be an erasure of agency towards responding to that concern. If we share case studies of water challenges in South Africa and solutions from Europe, we are engaging a western oriented geopolitics that is further obstructing the necessity for South African communities to become the inventors of a better community. So, it is vital that we develop capacities for raising and incorporating lived experiences into educational encounters for anti-colonial, situated, action oriented and empowering encounters.

At the same time, the concept of lived experience has been engaged (or some argue ‘produced’) in ways that serve to hold in place dominant narratives of individuals and structures in the world (Michelson, 2015). And this resonates in the failure of the South African Outcomes-Based-Education system to realise a genuinely inclusive educational culture (As discussed in section 2.4). Lived experience is individual but is not only about the individual. It holds the relationship between the individual and their world. Lived experience is not different to thought but is in dialectical relationship with thought and context – this relationship is our consciousness (Carpenter and Mojab, 2017). In this way, lived experience cannot be commodified, trimmed, moulded, set to serve narratives of individuals overcoming their obstacles, thus making invisible the ways in which structures of capitalism remain hidden (2015). Environmental Education presents a particular challenge to engaging lived experience pedagogically. While it is long considered that situated and context and concern oriented interventions are vital (O’Donoghue, 2018), these must always be extended beyond daily experience for the purposes of explanation of multi-scaled and dynamic reality of the world. I wrote about this in the context of water (James, 2019); understanding water requires that we zoom out to understand flows and scales that do not relate but are influential and sometimes, in contradiction to our lived experience. Lived experience is sacred and needs to be embraced in educational encounters that aspire to a ‘practice of freedom’(hooks, 1994). Educators should develop a critical concern for the multiple ways lived experience and the intersectional knowledge it brings with it, surfaces in educational encounters.

Two examples of surfacing experience in our educational encounters speak to the multiple ways experience can be taken up in inquiry for transformative potential. These are the

wetland story which raised the clash between the ecological valuing of wetlands and urban housing struggles (Chapter 6) and the play skits (Chapter 5).

In the play skits, household gender dynamics emerged in performing with a bucket of water, revealing to us educators that these children understand gender dynamics, to the extent that they can engage ridicule to represent them. Here, as critical educators request, the children brought together the material, social and political together in their enactments suggesting an in-depth understanding of these interconnections.

The wetland story served to ‘situate’ the inquiry into water for both the educator and the learners. It aimed to situate the inquiry in the context of the learners lives, to resist the abstraction of wetlands outside of their social and political worlds, a move that is significant given the dominance of western epistemology and framings in curricula knowledge. In this way, the wetland story enacted a dialogue with, rather than a transmission of the singular story about a wetland being ecologically valuable, thereby enacting the possibility to engage. As such it raised critical contradictions about our socio-ecological worlds, that cannot easily be solved and shifted the inquiry to the concern of urban housing.

Our experiences generate material that is already intersectional, in that it moves beyond single-issue framing and shows how an environmental concern aligns with socio-political concerns. The wetland story recast the wetland within the politics of city space. The play skits revealed relations between men and women and adults and children in activities involving water. These speak to representations of concerns that are central to knowing a matter of concern more responsively and that can be ignored in purely technical and scientific paradigms. This introduces an exciting complexity to the notion of intersectional literacy, not as a corrective to environmental education (Kellner and Kneller, 2010, p. 152), the intersections are enfolded within the learners experience and consciousness.

Everyday knowledge drawn from experience should not be considered complete or ‘final’, but good education will take it further. Experiential knowledge can form a launch pad of relevance for an open-ended inquiry through raising questions and curiosities about things we do not understand; it includes questions about things that do not make sense to us and then these are all, of course, emergent from and in relation to the messy context we inhabit. These are vital anchors for the inquiry process. For example, the questions while reading the urban water journey: “if water goes around in a circle, why do we have a water crisis?” or “where is the water purification station?” Curiosity and questions probed by contradictions or

mismatches between practice/experience and theory indicate the expression of inner emptiness – the first moment in Bhaskar’s dialectical learning process, the moment that must exist for dynamic learning to occur (Bhaskar, 2016, p. 165). Thus, experience need not only be engaged as something in the positive but also the site from which new knowledge and learning will spring. *It is also the space above the riverbed which the water flowing down the mountain will occupy.* Engaging with this as a baseline for the inquiry process is a significant move towards building dialectical relationships between ‘everyday knowledge’ and disciplinary knowledge (Zipin, 2017), and in general, by facilitating sense-making that makes sense for (young) people.

Thus, experience in educational encounters must be engaged critically and creatively. Everyday experiences show up in ways that are unexpected and hold potential for situating inquiry, but also drive inquiry further through questions and curiosities that emerge between experience in the world and theories used to explain it. Finally, it is a basis through which we can bring interdisciplinarity and intersectionality into our educational encounters. Experience holds a form of knowledge that is always already concrete and resists separating out elements of the world into abstract categories. In my experience, the unfolding of experience in educational encounters is in conversation with other dimensions discussed in this chapter. It often will not be a starting point but may emerge unexpectedly in reflection. It may need to be invited out by a prompt whether arts-based or as part of a curriculum piece or as part of a dialogue.

8.5.2 Co-making transgressive libraries

As the river flows, it will interact with the environment through which it flows, taking on the colour of tannins in the soil, being cleansed by a wetland, moving faster along a concrete channel, absorbing fertiliser from a farmland, and churning up sand at a waterfall. These additions join with the river and are transformed as the river is transformed, for better or worse. They do not replace the river, but they have the possibility of radically changing it.

As I planned and conducted the inquiry sessions, I found myself gathering materials for an Amanzi library in a number of ways: drawing from my reading of the current water crisis, in response to questions posed by learners, attempting to respond to their curiosities. For example, ‘How much of our body is made up of water?’ was a reminder that we must talk about the way we *are* water, not merely users of it. Materials were gathered from active social movements, where people are developing material that is sometimes counter to the

mainstream media and dominant framings of the water crisis. Materials were gathered from historical archives as a way of inviting space-time explorations, for example the work of the Anti-Privatisation Forum. These were shared through the mediums of text, images, audio, video and bingo games.

In the playbuilding inquiry (Chapter 6) we worked with pamphlets produced from social movement, largely informing and critiquing the water management devices. These resonated with the question in the group about why we pay for water. This question was controversially answered in a presentation by three learners: paying for water ensures there is some for everyone. This argument that in contexts of scarcity – or where scarcity is imposed by water limiters. There was a lived experience that paying for water made sense – so those who are at work all day still have water when they get home. This was a resistance to accept the social justice charged contention that water should be free for all and we were able to work ourselves there without neglecting this lived reality! As with all complex social and ecological challenges, ideologies cannot be superimposed onto social realities. No matter the origin of items in the library, they must be continuously reflexively engaged in the lived context.

In the image and drawing session with the Grade 4s (Chapter 5), a learner expressed extended curiosity about the location of the water purification station – there was a sense that she wanted to understand and perhaps be involved with this vital process that affects her life. There is an importance here not to become trapped in the known lived experience but to enable processes of curiosity about what is not yet known to flourish. It is also important to ground and contextualise what was made abstract in the image we were reading together.

Curriculum artefacts, or an inquiry library, are thus of equal and necessary importance to elements of experience discussed above. Experience and the frames of interpretation it brings are already shaped by multiple sources of information in the world. One of the pitfalls of ‘experiential learning’ discourses is dwelling on individual experience to the extent that our questions do not get answered and we do not get the chance to link our experience to scales, social processes and structures that serve to shape it (Cruz, 2013; Michelson, 2015, p. 162). This shift can be facilitated by bringing other knowledge into the process.

Bringing other knowledge in should not be seen as something that comes before or after the raising of experience; it is rather that other knowledge and the knowledge in focus are in dialogue with each other. Artefacts in the library (representations of knowledge) can invite

stories from experience, as in the case of the wetland story. Artefacts can be sourced by the educator in response to the question learners put forward, such as finding out which dams feed the city, as well as from the current discussions in the media.

There is another level of pedagogy involved when we think about working with curriculum artefacts. This level relates to how knowledge is represented in materials and will never fully capture our world (Osberg, Biesta and Cilliers, 2017). This idea is something like critical literacy, an analytical capacity to trace the relationships among language, power, social practice, identities and inequalities; to imagine otherwise; to engage ethically with; differentiate; and to understand the potential implications of their thoughts and actions (Andreotti, 2011, p. 194). Accordingly, materials are also seen as representations which Bhaskar (Scott and Bhaskar, 2015, p. 30) explains as the “relationship between knowledge and the world...our representations of the world as part of our process of understanding it, explaining it and potentially changing it”. Thus, reading and engaging materials is a radical invitation to inhabit one’s role as active participation in the production of knowledge about the world – beyond what is positively visible. And so, the inquiry and what is produced with those participating in the inquiry may become part of the library too, such as the play we made, the stories we told.

Critically, we need to be aware of the power relations at play between how knowledge is worked with. Information and the way it is represented in knowledge artefacts should be brought in with a sense of space to explore how it relates to one’s experience and questions. The transformative potential here is in responding to learner questions, reaching for more-than-western-science knowledge producers. A final transformative potential is the possibility of co-making curriculums and building libraries which can be transgressively and critically read.

8.5.3 Arts-based process

As the organisms within a river help us to understand its state, arts-based modes can enrich and help us to better understand the state of an educational process. Organisms are a critical part of the river, the way things are aesthetically arranged, impacts upon learning. They provide material for an educator to reflect and understand where the learners are at. They provide multiple lenses for seeing the multiple dimensions at play. Like organisms within a riverbed, they will mean nothing if we do not understand their role in the riverine ecology. So without careful (almost ecological) thinking about arts-based modes, drawing on existing

theories about what multiple arts-modes indicate about the people who produced them or the world in which they have been produced, their use might not be meaningful. Like organisms in a river, arts-based modes will mean nothing without the currents of pedagogy holding them in life.

I knew about making street theatre plays; I had an experience of the learning and exploration they offer! I had worked with creative materials in popular education workshops and I loved making music. My experience learning in playbuilding was captured in the discourse of arts-based and the exciting praxis evolving in the applied theatre field (Norris, 2009, 2011; Baxter and Low, 2017). Over the course of my fieldwork, I became critical of the term ‘arts-based’ and was grateful to read Gaztambide- Fernández’s (2013) essay suggesting that we speak in terms of *cultural production* instead. He notes that arts do not do anything to people but “[a]rtistic forms and practices are thus understood as processes of cultural production rather than as substances and as evolving within both symbolic and material conditions that constrain but do not predefine how individuals engage each other through such practices” (Gaztambide-Fernández, 2013, p. 226).

The pitfalls of arts-based approaches seem no different to the collapse into instrumentalism, but the articulation of cultural production offered a deeper level of understanding about what we were doing when working with the arts. Critically, we are *doing* – we are not being done to. They are always already existing in the context of educational relations, the broader socio-political context as well as the discursive-aesthetic politics accompanying what is being learned about (in this case, water).

Hence, engaging with arts-based modes rather presents the potential of expanding our palette of doing, seeing, knowing, dialoguing and becoming. I consider the following *doing* potentials offered by an embrace of an arts-based process.

In the inquiry, the role of arts-based modes was important for **retaining the complexity**, re-narrating and reframing the environmental content. We could begin to colour environmental science-based knowledge with the social world inhabited by the learners and myself. So we could link the water crisis with the birthday tradition of throwing water over the birthday person. We could link the water crisis to the fact that water cut-offs are nothing new in some parts of the city. We could resituate and reinterpret the crisis.

This resituating was critical in the polarised South African context. Before we could

understand the crisis, we needed to understand **how the crisis was differently received across varied experiences in the city**. Lewis (2012) argues that it is not the use of arts modes that enable us to move from a question to a consensus of knowing, but the use of arts-based modes allows us to see differently and so see our seeing differently; engage dissensus and *in this dissensus rather than consensus*, see the world more fully. In these ways, work with symbolic forms is a form of resistance as McKenna and Darder argue, seeking to ‘reinterpret reality’ (McKenna and Darder, 2011, p. 673)

With theatre scenario work – rehearsing crisis in Chapter 6 – we were able to resist the abstraction of an environmental problems and solutions from daily life. We also thought carefully about solutions; taken for granted ‘good values’ such as sharing water in a situation of scarcity. ‘How do I do my laundry with 1 litre of water?’ This raised the reality of conflict and scarce resources. Similarly, with the wetland story, *story* enabled us to understand how environmental messaging is rejected as irrelevant in the face of urgent housing politics. This juxtaposition of lived experience with the messaging, raised a theme that was prominent in the conversations of Chapter 7. In a sense, the act of playing out this problem, became a new social praxis for water education – as it was analysing the problem, demonstrating new dimensions of sense-making and collective dialogue – what it means to face up together with peers to the really hard questions. Gaztambide- Fernández (2013, p. 227) argues that “it is through symbolic work that youth negotiate the material and symbolic constraints that shape their self-understanding, their relationship with others and their identification with social categories...” Working with improvisational theatre and storytelling enabled a negotiation between the symbolic substance of the water crisis narrative and an alignment more directly with their material conditions.

With arts-based modes the learners and I together could challenge language hegemonies. As we grow up and sometimes accept formal English to be the universal language, we forget that ‘children have 100 languages’ they are adept and fluent in. If I had spoken with the learners, this conversation would have happened across age, language not to mention race and class. I would never have learned nearly as much as I did witnessing their play skits – a mode through which they could communicate in a nuanced and detailed manner about the world they occupy.

Linked to this, applied theatre process and story enable the possibility for contributions on the terms that suit the learners. Of course this is not guaranteed (Gaztambide-Fernández, 2013,

p. 227) and what emerges is always a co-created product. This participative parity is either through re-framing, disrupting, or re-orienting the conversation. It could also be through not participating at all, which is a valid form of response. Calling up responses from others in a way that those responses are not controlled, is a form of democratic practice articulated by Arendt (Biesta, 2006). The potential for rich conversations with children and youth about complex environmental problems within arts-based mode is there, although not guaranteed.

Arts-based modes provide the opportunity to participate in the act of representation, to understand how representation sometimes collapses the difference between reality and the artefact, collapsing the possibility of elements of the artefact to misrepresent reality – the source of smog. An example of this was the Grade 4 learners helping me to re-look at the curriculum images we used. Seeing that the learners had produced drawings with complete connections between water sites, made me realise that the curriculum images had abstracted the physical connections between phases in the urban water journey (Chapter 5). In this way, the learners and the educator together were critically reading the representation in the educational artefact.

I did not have sufficient time or perhaps sensibility to engage the arts-based modes for imagining a different kind of future. The work of remaking and reimagining how things could be is another project for another time. Expressing this concern to a peer, the answer arrived: we need to be taught to dream in a world where the status quo dominates. I realised that I may be trying to master this for myself. However, the work of figuring out where we are before we begin dreaming, prepares the soil for rigorous dreaming rather than ideological ungrounded reasoning.

I played with modes in the representation of this research. Njabulo's story was a way to hold together some of what I was reading from my interactions with the Grade 4s but also in the character of Njabulo I tried to decentre myself, introduce doubt about what I was reading and to recentre the learner and their life in Philippi and all the multiple learning encounters they might have in a day. I shared the play we produced as the introduction to Chapter 6 – this as a way to bring learner words and questions into the piece as well as set the context in which we were working. Chapter 7 used poetry and lyrics to listen and amplify the passionate concerns of the seven young people I interviewed. It is in these ways, in relation to other elements of the inquiry that arts-based modes can be critically engaged. The medium for creation and an

expansion of critique into demonstrating and embodying a different method of inquiry and learning.

Arts-based modes hold significant potential for co-making inquiry and inviting *doing* into the process. Through these modes I was able to join with learners to review their curricula. Learners reframed the content I brought to them in a way that situated the inquiry; these modes supported the creation of material for me to reflect upon our process together.

8.5.4 Educator researcher dance

Another element of educational practice interested in transformative potential, is the movement between the educator and the researcher in the context of open-ended inquiries. Unpacking this relationship moves us into thinking about educator as activist, educator as intellectual, and the resources needed for that.

Throughout the practice of this thesis, I was aware of moments where I ended up, sometimes in concert with my participants, reproducing unhelpful discourses about water. This occurrence was despite holding rich and progressive ideas about how education should be. It was only in having the time, trust, community and further reading – letting the pedagogista in – to think deeply about what I was doing that I could make sense of these occurrences; seeing different elements, in and out of my control, come into play that I could really understand the ways in which the feeling of the need for control sneaks in. I could begin to name and narrate the processes of navigating learning about water in urban South Africa. From here I could think about why they had occurred and how I might transgress them. This begins to bring to the surface the critical relationship between educator and researcher in the context of open ended, emergent learning.

The educator, in her best form, plans and prepares, thinks through the logistical arrangements. She arrives at an educational encounter, ready for an overhaul of her plan, for things to go awry, ready for no response where she had hoped there would be a response, hoping for a prompt to lead in a certain direction and prepared for it to go in a different direction altogether. Immediately she must engage things like improvisation, adjustments and responsivity.

The study of educational practice requires something that appropriately honours and does not erase the reality of that work, its unpredictability and messiness. The interfacing of practice and reflection means that there will not be a singular analytical frame, but rather a

multiplicity of lenses for understanding what is at play (Pacini-Ketchabaw *et al.*, 2014). What distinguishes this as a study is that it will articulate something about the practice in the context of learning about water. This kind of knowledge (knowledge of reflective and reflexive practice) is produced within the tension between reifying, simplifying a complex practice, and failing to contribute to the knowledge project around that – the purpose of doctoral research.

The work of Reggio Emilia's pedagogical documentation became the invitation to study the multiplicity and complex process. This process is essentially producing and working with pedagogical narrations. I think that many good educationalists will write about their work drawing on theorists but also drawing on their contexts of practice and moments in process and instances when they make sense of something. There are three things about pedagogical documentation as a way of studying educational practice that have been especially important in this work, and I discuss these below.

The first one is the embrace of multiplicity, multi-dimensionality, and through this meaningfully acknowledging the multiple dimensions of the educational space. Not many people will disagree with this statement; however, Reggio Emilia engaged with this form of documentation which actively embraces that (developing practice as the educational approach developed). We need to gather as much from the pedagogical process as possible – photographs, videos, artefacts that children create, artefacts the educator creates, written accounts of what occurs in the classroom. These need to be brought together with other teachers and pedagogista to examine. These can be read with, and against, each other. This is an aesthetic approach that meets the multidimensionality of our educational encounters.

Secondly, we need to consider the shift from judgement as valuation to judgement as observation. Even in the critical education space there is significant focus on an outcome – often framed as conscientisation which is also often problematically claimed as a static outcome according to one particular ideology (Carpenter and Mojab, 2017, p. 46). Like this, there is pressure to look for whether they being anti-capitalist enough. Are they analysing the power enough, do they have the right ideology or with what ideology have learners been brainwashed? On the other side, the mainstream side of education, the same spirit is evoked in 'have they learned x, y and z?' The invitation here from Reggio Emilia, which is so generative, is to pause. It is a radical pause to say, not did learning occur but what learning did occur? (Wien, Guyevskey and Berdousis, 2011). And in a way learning theories and

learning pathways and learning journeys emerge from this where an educator and a pedagogista can listen deeply enough to where the learners and students are, what they have made of the lesson you brought, and where their impulses are directing the process. Critically, this will include an observation of their own frames and lenses brought to the process. This is reflexivity that is made possible in observation and obstructed in judgement and valuation.

The third element which complements those above is the embrace of an ‘indicator’ of surprise and uncertainty. And if surprise and uncertainty are not part of an educational experience, then there is something unresponsive about that encounter. Those movements are to be nurtured and valued rather than feared.

The relationship between the educator and the researcher (even if they are the same person) needs to be something that closely knits together the encounter with the theories we are using – theories about the way the world is, theories about what knowledge is and theories about how we learn, how we act and how these are informed by theories about what is right or wrong. We need to reach for the theoretical tools that can assist us in making sense of what we are doing rather than feeling governed by (high) theories and feeling like we can put ourselves aside. We need to consider the micro decisions we will have to make in every small moment and link back to theories we hold consciously or subconsciously.

I think this begins with educators practising their narration about educational encounters, talking with others. These are accompanied productively by notions of *delicate activism* which resist the temptations of control, embrace the relationships between “order and chaos in the creative endeavour” and value “process over discrete outcomes”(Kaplan and Davidoff, 2014, p.7).

8.5.5 *The self*

There is always a ‘self’ involved in educator and researcher roles. Bhaskar (2016) argues that the only change we can be responsible for is the change in ourselves through self-realisation. Scholarship on the emotional and the psycho-social planes facilitates the investigation of this self-reflection in the context of an educational encounter, including work that considers the intersection of the contemplative and the critical (Mah y Busch, 2014). However, the idea is not to retreat into individualised self-involvement, nor is it to abandon the challenge of co-defining problems and solutions to our ecological crisis. Rather, it is understanding the

critical link between the two. “The purpose of attending to emotional habits as part of radical education is to draw attention to the ways in which we enact and embody dominant values and assumptions in our daily habits and routines” (Boler, 2014, p. 29). Being conscious of my own responses allows for a practice of the observational work of educators and researchers.

In the 2018 rendition of the bucket play skits there was significant mimicry across the skits which the educators interpreted as ‘copying’ (Chapter 5). When the skits were finished, the educator proceeded to scold the learners for this. I left this session distraught. I was devastated that the learners had been scolded for their enactment in the world, an enactment invited by myself primarily as the active educator researcher. I was uneasy in the feeling that the educators who I had been working with were not understanding my invitation. In the educators’ action there was a great need to control the outcome of the skits which was counter to the very intention of open-ended arts-based process. All I could think about was that I had messed up. The session had not gone well, it was my fault for not setting it up well and there had been this fall out between educator and learners as a result.

This reaction I have identified as a cognitive strategy deeply entrenched in my psychic levels (Fenwick, 2007) – a cognitive strategy that makes me feel a fanciful sense of control in the world. This is a form of fantasy that is maintained and explained in terms of self-blame. The implication of blaming oneself for something not going a particular way is to deny the complex unpredictable and ungovernable reality – it is almost safer to blame the self than to acknowledge how little we can direct the way things unfold. To feel what I had felt was not wrong and of course, I learned some lessons about communication through that experience but, clouded by self-blame, I was then less able to read more deeply in that moment, to take up what the learners were offering. After all, there is repetition in the world also, this could have been generatively discussed with the educator I was working with. The reflexive (pedagogista) move drawing on this experience is to let go of the overbearing responsibility and the need to control and instead to observe curiously what happened – watching the videos enabled this and revealed nuanced (amidst the ‘copying’) and interesting enactments presenting multiple layers and complexities of the world of these learners and the role that water plays within it.

Unsettling and disruption of the self were continuous demands on this journey and gave rise to a counter-intuitive notion that meaningful collaboration requires rigorous self-work.

Writing on psychoanalytic contributions to feminist popular education, Meckesheimer and

Williams (2012, p. 129) argued “what is required is to surface unconscious compliances, dependencies and refusals that inhibit learning and autonomy or psychical agency among and between us, and to reach toward the difficult knowledge that awaits us as educators and activists”. My white and class privilege meant that despite having read illuminating and critical works on decolonising education and the history of my country, I could not hold onto certainty or knowing. If I was to embrace this role respectfully it had to be in vulnerability and openness.

Educationally, this reflective self-work related to the movement between pedagogista and educator, the latter being more observant (softness) and the former being more proactive and in authority (a kind of strength). Educators will and must actively participate in the processes they facilitate, they will need to be an authority but not an authoritarian (Freire, 1972, p. 178). This pedagogical and co-engaged, learning centred authority comes with trust and the skills to muster the clarity and sense of power to speak out, stand with and stand back. This comes from a learning that power relations can prevail because of us educators (and our positions and privileges) but they are not necessarily gone in our absence. Rather we move consciously towards a vulnerable authority and clarity on how to disrupt these in educational spaces, in a way that makes sense and can facilitate learning and anti-violence. It involves knowing when to step forward and knowing when to stand with and knowing when to step back responsively and respectfully.

8.5.6 The endless work of solidarity across divides: Working across race and class

Differences in race and class, and their intersections with gender, sexuality, age, ability, and the ways these differences are implicated in the sharing of power and resources across the world, are very much present in educational processes. They are like the streams of pollution in the river blocking out oxygen and sunlight. It is possible to address them, but they cannot be reversed. River pollution needs to be traced back to its root and understood for its implications downstream. Reflecting on the pedagogical process requires careful consideration of river pollution. Otherwise, we cannot swim-learn safely!

It is possible for someone like me, a white woman, to avoid facing up to concerns about racism that do not determine but characterise social interactions in South Africa and the world today. Working reflexively with race is wrongly still a choice taken up by white people in South Africa as we live with an implicit bias that allows us to remain ignorant of our privilege and power (DiAngelo, 2011; Steyn, 2012). African Feminist Amina Mama asked in

1996, why there were no good books on “white racial identity” (De La Rey and Magubane, 1997). While there may be some good books on this today, I think she was naming a phenomena which is that white racial identity is not reflected upon enough. Vice (2010) argues that white reflexivity “should be cultivated with humility and in (a certain kind of) silence” (2010, p. 324). This is perhaps a silence that works against performative declarations which name troubled power relations but do nothing to actively transgress them. This is a silence that resists the impossible attempts to ‘move to innocence’ (Tuck and Yang, 2012). Racism as an obstacle of flourishing and my offering towards removing it, will involve personal and collective work far beyond this doctoral study.

There is a kind of productive paradox in attending to whiteness and its complicity with anti-black racism. It lies between Mama’s still relevant call for work on white racial identity and Vice’s suggestion that it be done ‘in silence’. From this paradox we must find ways to do it so that the work is felt but not dominating. Here I work with it tentatively, taking care not to suggest falsehoods about individual awareness undoing a structural, historical and material violence, knowing that it is not in a doctoral study, a few short workshops or even in a new curriculum that racism and classism can be undone (Kendi, 2019). Rather it will require a collective effort by white South Africans to refigure the country we have inherited and find ways to take a figurative step to the side. Understanding the entanglement of racial capitalism and the environmental crisis (Nixon, 2011), implies that environmental education should also be an anti-racist practice. I consider race below in relation to the themes surfaced by my participants and the work that is required within a pedagogical encounter in order to resist it.

Articulated by the children and youth participating in this study was the way in which environmental discourses can become ‘raced’ – sometimes directly in terms of relations between young people across race but also sometimes as reframing which I argue in Chapters 5 and 6 is a generative critique to narrow representations of environmental issues. The Grade 4s mirrored back to us the ways in which water is couched in dynamics in the home, poking fun at adult concerns over the cost of accessing the basic need of water, acting out the command and control relationship that emerges from the save water discourse – they were not limited by this but they showed it. The race-class nature of environmental discourses was challenged through storying wetlands more fully than curriculum materials as well as analysing the root cause of water scarcity and climate change as historical wealth inequality. The seven interviews revealed that the vast difference between schools, a difference not set by the race of learners attending but established in their position in the city and access to

wealth, formed a part of how they understood and experienced the climate march. This as well as the disjunct between home community and environmental discourses dominated conversations. That is, learners were not simply speaking of the insurmountable barriers produced by racism but also enacting anti-racism by opening up new stories about environmental topics.

However, barriers persist to furthering environmental learning and collective environmental action amongst young people. It was particularly evident in the conversations discussed in Chapter 7 that raced environmental discourse can be mobilised towards stigmatisation resulting in learners being shamed for interest in environmental themes. Listening to the interviews, it seemed as though young people were rejecting framings of the environment they perceive to be ‘white’ which is significant and important – to reject a concern that does not resonate meaningfully with all realities and especially the precarious realities of South Africans. However, the stories of this resulting in alienation of peers who are interested in environmental issues, by naming them as ‘white’, signals a serious violence.

Raced environmentalisms have historical and contemporary, discursive and material roots and of course are not limited to environmental education. In South Africa’s recent and remote past, people were systematically separated from Eurocentric conceptualisations of ‘nature’, fenced off for animals to be shot by wealthy hunters and later viewed by wealthy tourists (Brown, 2019). And this separation, a basis for the accumulation of wealth by colonial, apartheid and now neoliberal governments by perpetuated by global capitalism, would have made its way into pedagogical cultures relating to the environment (as discussed in Chapter 2). It plays out through particular framing of environmental issues, in some cases affirming white and Western Science ideologies of nature-human relationships, how to enjoy them and how they become damaged. Consequently, we end up with a kind of racism, seemingly detached from any white people, playing out between young black learners obstructive to learning more fully and freely about their world. In this way it is an active obstacle to alternatives knowing in the world. It is complex. Resistance to framings that do not make sense in lived reality can invoke essentialised currents and in doing so, choke itself up.

This thesis shared evidence that white capitalism prevails even in the absence of white people (Madeline and Lihle’s experience of interest in environmental concerns, Chapter 7) and thus resonates with McLean’s (2013) findings that notions of ‘green’ may also be conflated with notions of ‘white’ and thus be violent towards bodies and the earth. Drawing on the reflexive

elements of this study, I can note the following. White capitalist values become normalised in many environmental education programmes with the following absences: the absence of centring experience in context of material precarity, and centring the middle class white experience as the norm (when it is not); the struggle to name historical dispossession as the root cause of that precarity as well as environmental problems; the dismissal of innovation, knowledge, practice within precarious contexts as a source of grounded, local, realist solutions to environmental problems (Di Chiro, 2006; Salleh, 2018); the lack of critique of neo-colonial ‘environmental initiatives’ and educational initiatives underpinned by individualised and instrumentalist theories of change (Odora Hoppers, 2017); the continued erasure of history outside of the Eurocentric epistemology that holds knowledge and learnings about solutions to environmental degradation that transgresses the divide between human and ecological well-being (O’Donoghue *et al.*, 2019); the experience of disconnect between home community and participation in environmental matters. These concerns echo many of the critiques of the recently published article by Nattrass (2020) on “Why black students are less likely to consider studying biological sciences”, a piece of research that demonstrated the prevalence of racist, colonial uncritical and unecological thought enabled in spaces discussing and producing knowledge about conservation pedagogy. These need to be actively absented for deep and just, reclaimed environmental learning that can be responsive to dismantling inequality.

An anti-racist positioning in environmental education involves dedication to identifying the ways in which race-based power is established in socio-ecological framings and considering how to transgress these. Many environmental education researchers are embarking on this work (O’Donoghue, Shava and Zazu, 2013; Lotz-Sisitka, 2016b; Shava, 2016; Burt and Lusithi, 2017; Kulundu-Bolus, 2017; Masuku, 2018; Nxumalo and ross, 2019; O’Donoghue, 2019; Kulundu-Bolus, McGarry and Lotz-Sisitka, 2020). The work involves rigorous work with the self, with the symbolic forms in educational materials, with epistemologies and logics that underpin these and building tools of analysis that show the system of racial capitalism for what it is: immoral, illogical. I can excavate the archives for social change created and led by people of colour all around the world in resistance to this system, new and old epistemologies and politics which match politicisation with depolarisation rather than increased divisions (De Sousa Santos, 2014). Critical understanding of the structure of whiteness and white supremacy must be part of the project of critical environmental education that acknowledges the capitalist-colonial social relations that remain with us and

our systems today. Returning to the argument at the beginning of this chapter, contributing to an anti-racist and decolonial environmental education and water pedagogies, is to be true to the political urgency of water education at this time.

8.5.7 The paradox of inequality and sustainability education – a dialogue with policy

There is a paradox between acknowledging the real material obstacles to flourishing experienced by many people in the world (lack of access to good food, safe spaces, good education, health care, water) and the abundance and resources that are located in these so-called margins. Part of being an emancipatory educator is holding that paradox and resisting the conflation of deficit and abundance in either direction. This situation demands of us two simultaneous responses; outrage at the lacks and the needs that exist in such contrast to the greed of so few and a refusal to allow that outrage to erase the abundance that is true of all and any social life, the potential to flourish.

The acknowledgement of injustice in the world has transformative potential. But that potential will be compromised in our act of acknowledgement that we are consumed by versions of what it means to know and care that aligns with narrow views of reality. The feeling of this is articulated by Bayo Akomolafe and Marta Benavides (2018): “The times are urgent: let us slow down”. In slowing down, we might embrace what Dei (2010b), Salleh (2018), Di Chiro (2006) and Shiva (1988) tell us, that significant and necessary knowing about sustainability exists in reproductive spaces, in the struggle for survival usually by women, holding the world together despite others pulling it apart (an idea I explored together with colleagues in Burt *et al.*, 2020). Thus, dominant narratives sometimes enact an erasure of sustainability and/as care work in contexts that are ‘marginalised’, or occupying the shadow side of capitalism or on the other side of the abyss – this is an absence.

The use of the term ‘shadow side’ has a relevant extension here – is it an important attempt to language what it is that I struggle to language, especially when our language is so binary (do I use the word ‘oppressed’ or ‘marginalised’?). In fact, our language maintains the paradox identified above. Perhaps, working with shadow and light and diffraction can be productive in easing this contradiction. Barad says “darkness is not mere absence but rather abundance” (2014, p. 171) based on the two slit experiment where light travels beyond its geometrical barriers and darkness too; lightness and darkness are not binary but related and asymmetrical. Rather than *either or* they are *both and*, and constellationally related.

According to the latest policy on Education for Sustainable Development (UNESCO, 2019, p. 6), “the approach for populations in extreme poverty may require more attention to the fundamentals. The starting point should be, first and foremost to ensure and restore human dignity and the right to live decently. Providing people with basic and other relevant life skills or skills to ensure their livelihood to confront and overcome extreme poverty, is a priority”.

I am drawn to the above statement found in the ESD policy. I realise it is possible to completely agree and disagree with something at the same time --- It's like being both particle and wave. The difference is not in the thing but in the conditions – it's both and. It rings true and resonates with me but I wonder at what point in the logic behind the language are “actions towards addressing extreme poverty” or the ‘fundamentals’ not considered part of the educational project? Technical fixes have not succeeded, there is always social process and where there is social process, there is always learning.

The notion that “ESD approaches that may work for populations living in more fortunate situations may not necessarily be effective for populations in need.” (UNESCO, 2019, p. 5) feels concerning because, while difference in circumstance is a vital recognition, it may collapse into a kind of ‘bantu education’, essentialised segregation, when what really needs to occur is a both/and criss-crossing. I recognise that I am fearful of making this mistake in this thesis. The alternative argument is a request that the whole structure shifts to remove obstacles where they are most pressing. We must not be satisfied with difference as an end point, even if it forms a very important analytical starting point (Barad, 2014). I guess this is the reason I have worked hard to consider what has emerged from this research across very different parts of an apartheid city. And to argue that my curriculum making with young people living in the shadow side must break open ways of thinking about environmental education for everyone!

In the absences of dignity there is an abundance of understanding. Before deprivation there was abundance.... Before light there was darkness.

I keep going back to Lebohang's difficulty in finding the word to indicate to me the nature of her home neighbourhood (the need to indicate difference between wealthy, historically white and materially deficit/historically black townships) but struggling to find the word that felt right.. (Discussed in Chapter 7). She was grappling with a significant tension and discomfort between: 1) the words available to her to describe her home, a place utterly different to a

suburb where her school was located, and where the person she was talking to likely lived (me), and 2) the need to describe it, the need to describe the difference that made a difference. This struggle is the need to build languages about the place and space dynamics into the conversation about young people relating across the city and environmental learning. It is utterly maddening to struggle to story and describe the differences one observes in the world. Perhaps this is what our private property rainbow democracy has left us – with a language that does not allow us to acknowledge and build.

“A structural view is required also to address ESD in the context of extreme poverty or other challenging survival situations...” (UNESCO, 2019, p. 5)

This issue should be traced to its paradoxical roots: that extreme poverty is a side effect of unsustainable systems, the ferocity of capitalism. We need to reflect on the dominant framing of sustainability that results in that terrible contradiction that steals learning and sense-making away from those who fall into the shadows. If we trace this issue as such we should find that a structural view is required even in contexts that are not characterised by extreme poverty or other challenging survival situations. We need sustainability learning everywhere to be infused with a critical and systems critique if we want to better equip citizens to enact change.

8.5.8 Summary

Pedagogy, like a river, is a way of describing open process inquiry that can respond to complex urban ecological concerns because it enables space for uncertainty, contradiction, dialogue, storying, reflecting, and being attentive to the broader context in which education takes place and how that social context is contained within the meeting of the educational encounter. The reflexive practice required for supporting open process inquiry into complex social ecological relationships can be cultivated across these elements.

8.6 Education in solidarity with the world: Two experiences of reframing

In this section I share a narrative of an experience co-developing water education materials. It draws on what has been learned in this study to articulate levels where reflexivity is needed about mechanisms behind pedagogical decisions, particularly as they concern the relationship between descriptions of socio-ecological challenges and assumptions about agency and change. These absences are explored for how they emerge from educational configurations

and moralistic codes. I describe filling out the materials in a way that addresses the absences. While this exercise could have been framed as critical, the notion of absences, moves us away from the wrong right, allowing us to dialectically reframe and expand existing water curricula rather than discard it.

8.6.1 Learning story 1: Articulating new levels of pedagogical reflexivity to understand hidden theories in water education

One of the most fulfilling things I did as I was drawing this study to a close, was run a water education programme in collaboration with environmental educators in the city of Cape Town. It was during COVID-19 lockdown and had to be curated online. It felt refreshing to make connections again with educators and young people actively involved in environmental organisations.

I initiated this programme as I was feeling concerned during the lockdown about the absence of environmental education programmes and spaces for young people to grapple with the ecological upheavals unfolding in concert with, but behind the frontline of, the COVID-19 crisis. One of these upheavals was the release of a report by the City of Cape Town municipality, *Know Your Coast*, which revealed high E. coli levels at several popular beaches in the city of Cape Town (City of Cape Town, 2019c).

8.6.1.1 Mapping out the context of high E. coli levels and urban water

Over the past three years I had been following a conflict between a group of scientists and the City of Cape Town about the E. coli levels in the ocean water surrounding the city. Scientists shared alarming results of E. coli levels (Petrik *et al.*, 2017). In 2019 scientists reported in the media that E. coli levels had begun to affect the health of a community living alongside the river system (Green *et al.*, 2019). In the same year journalists from the organisation Ground Up reported that the municipality had not released their own water quality tests for the last five years (Kretzmann, 2019, 11 February). The Cape Town municipality responded to these criticisms with harsh statements which included attacks on the reputation of the scientists and a refusal to hear evidence from the community affected by the water pollution, arguing that science and public should be kept separate (City of Cape Town, 2019a). Then in May 2019, Ground Up reported that a desalination plant costing the City R60 million may produce unusable drinking water due to the levels of pollution in the ocean. This resulted in an attempt to sue the City (Liao, 2019, 15 May). The City finally released a report on the E. coli levels measured on several beaches and revealed that these were connected to sanitation

systems flushing inadequately filtered matter out into the ocean (City of Cape Town, 2019c). This report seemed to confirm scientists' concerns what these scientists had been trying to bring attention to.

A parallel argument being made by Green (2020) was that the Blue Flag beaches certification is not an adequate measure of environmental health. The Blue Flag status of beaches relies on a monthly measurement of the water quality. It is not peer reviewed and is not rigorously considered in terms of , for example, the time of day the measurement is taken, the direction of the wind. The measurement and its results serve to continue the flow of tourists to Cape Town as a destination (Green, 2020). This is science that conveniently blindspots the elements of ocean pollution that affect the more permanent residents of Cape Town. As such Green argues that the Blue Flag certification is an example of science for capital rather than science for health.

The *Know Your Coast* report was released in the middle of level 5 COVID-19 lockdown when the attention of the public was focused on how to make it through, and survive, a global pandemic. Figuring out survival included dealing with the pre-COVID-19 inadequate access to water by some communities in the Western Cape (South African Water Caucus, 2020), making it difficult to follow the most basic of instructions to avoid contracting COVID-19 – regular hand washing. The concerns of water access, ocean pollution, dysfunction of sanitation systems were all related but kept separate in the narratives and bubbles of the crisis. It also introduced a narrative that contradicted the municipality's claim to authority 'knowing and doing better' than the individual citizen, a narrative highly dominant during the drought. It was further generative in the tangled relationships it brought up – so sewerage pollution was not only from unserved communities or informal settlements. It was the City's infrastructure that was affecting ocean pollution, flowing untreated into rivers – sewerage from well serviced neighbourhoods who might be enjoying the performance of living in environmentally friendly ways.

8.6.1.2 Educational opportunities under COVID-19

I have been engaging with high school learners over the past two years. With lockdown, I wondered whether and how young people in the city were accessing and understanding this information about urban water in their worlds. During the lockdown, extra curricular environmental programmes would have shut down and learners would have had much less contact with each other. However, lockdown had also led to some organisations providing

data to young people through workshops and programmes that might not have become available if there was no pandemic. Perversely, funding was being allocated to learning opportunities because of the pandemic which could have equally been offered under less dire circumstances.

In this context, the *Source to Sea* course unfolded and as educators we found ourselves grappling with how to realise pedagogically the intentions of building literacies of connection across source to sea. This included shifting from our original lesson plan. I illustrate an example of one instance. One task on the course asked learners to read and then critically discuss a media article about sewerage. We chose not to use the article about sewerage, covered in the City's *Know Your Coast* report. Our reason for this was that the problem felt too overwhelming for inspiring action amongst the learners. Instead, we chose an article about how plastic was still washing up on the beaches even when people were not visiting the beaches under hard lockdown. This article was equally generative with potential for unpacking multiple socio-ecological relationships. So, in terms of exploring complex environmental issues, the difference between the two articles was not significant.

I reflected on this decision and reasons for choosing one article over the other. Our assumption was that plastic on beaches was easier for high school learners to respond to. I wondered about the move from my original impulse of working with the issue of *E. coli* in urban water ways.

In response to the water crisis during COVID-19, the podcast I co-produced with Sarah Van Borek (described in Chapter 1 and displayed in Appendix B) included an interview with Dr Jo Barnes. In our conversation we heard how urban rivers were increasingly taking on the burden that sewerage systems could not manage (Van Borek and James, 2018) and as dams emptied again, we would have no hope of using the reserve of water that exists in our rivers (interestingly the concern of our river health was significantly backstage to the drought narrative). In a sense, the way our rivers bear the burden of servicing a rapidly growing city is a hidden vulnerability that we have built into our urban designs. Were we, in our article selection, continuing the silence around the urban warped and exploitative relationship with rivers? Were we arguing that action can only be mobilised on what can be known more easily? Were we couching this silence in a concern for young people who would feel more significantly the degraded water resource?

In deciding not to use the E. coli article we were responding to a real educational concern of overwhelming young people with an issue they have little power to change. At the same time, by taking the position of ‘we explore content that is easily responded to’, are we not also teaching something erroneous about how change happens? Bhaskar argues that, at the first moment (1M), agency exists in the form of ‘reasons’ and understanding (Scott and Bhaskar, 2015, p. 38). The first move in the dialectic is asking the question ‘what is happening?’ and it gives agency to understand, but to leave it here can be overwhelming which is why we move to the next transformative leap ‘how has this come to be?’ so that we understand where responsibility lies and that it is multifaceted. Then we move to how do we transform? By acknowledging this we get an expanded view of agency – one that is not reproduced in one way of doing things. We were invoking a theory of response and response-ability of young people. Barad echoes Bhaskar’s expansive thought on agency in relation to responsibility: “It is an iterative (re) opening up to, an enabling of responsiveness, not through the realisation of some existing possibility, but through the interactive reworking of im/possibility, an ongoing rupturing, a cross cutting of topological reconfiguring of the space of responsibility” (2014, p. 183). Are we limiting the ways in which response-ability can play between possibility and impossibility to bring forth the *not yet*.

This decision is small in the greater scheme of things. But the mechanism behind it, enacted enough times, serves to produce a structural constraint in water education. We are blind spotting the reality that with the weight of the past, power needs to be built for that change – part of this is gaining the skills to know the systems that we are a part of, make connections, stand on top of the box, and join the dots, the first moment of the ‘depth struggle’ (Bhaskar, 2016, p. 82). Is it not important for high school learners, soon to be actors and potentially leaders in our society, to have an understanding of these issues too?

It made me think that closing off a topic because we believed it to be beyond the power of young people was premature and lacking a sensibility of the transgressive change impulse. This questioning of my own practice enabled me to ask the question of ‘what is happening?’ and to look at how content is selected in curriculum. This underlies the importance of building **reflexivity about decision making into curriculum work** that enables young people to accountably and safely reject the status quo of the world and imagine something different, albeit beyond their immediate reach.

In a way, this reflexivity revealed a bias towards individual action as the cause of change rather than collective and continuous action. The question here is, tapping into the pulse of change needed, is ‘How do we break open Environmental Education initiatives to talking about how change happens beyond individual action?’

8.6.2 Articulating new levels of reflexivity as necessary for transformative potential

Reflexivity is coming to understand the implications of our decisions (as actions) in the world, in this case the world of the learner. It is to realise that, as educators, we participate in the concepts, activities and relationships that form the social systems in our world. This echoes back to the reflection from Chapter 6 – that participants had learned about urban water at a time when they felt they did not know how to ask questions about it. Tuning into the ideas of change that hide beneath our curriculum decisions felt like an important educator capacity in response to the real concern and potential that young people hold. The question here is how capacitated are the educators in this area? *Where* and *how* do environmental educators experience the possibility of organising mobilising, practice, and reflection? And then, most importantly how do they or we link it back to curriculum and do they have the power to do so? As I have learned over the last six years, once one begins to understand power beyond the individual action within a social system, that is only the beginning. The power of collective action also needs to be reflected upon and understood for the ways in which it can become contradictory and inhibitive and conservative in its own right, especially if we lose sight of how the individual and the collective relate (Kaplan and Davidoff, 2014; Von Kotze, Walters and Luckett, 2016).

Price (2019) and Bhaskar (2016) helped me to think about how we make links between pedagogical strategies and the real world and mechanisms behind the phenomena we are trying to teach – flows of water. We need to understand and reflect on the *real* link between the content we learn about and how that reflects something about society and its ability to shift and change. This relationship between curriculum and hidden theories of change is part of understanding how education is implicitly active in the construction of social structures depending upon human activity, human concepts, social relations and time and space configurations. Through conceptually supported reflection we can begin to see that “the struggle for curriculum relevance [becomes] a struggle for social and cognitive justice” (Oliveira, 2016). Our educational encounters are part of the social world and they present the

possibility to remake or reproduce the structures that have come to define it – reflexivity helps us to navigate this tension.

8.6.3 Learning story 2: Reframing and absencing absences in water education materials

I was asked to assist with a teacher guide on water and sanitation. It was for a schools sustainability project and directed at schools across income brackets in two provinces of South Africa. The coordinator had expressed the wish or concern that these guide books speak to the contexts of the schools – more so than the model inherited from Europe had done. I was intrigued by this intervention and eager to be invited into a project that existed as a network of teachers across schools across the city.

8.6.3.1 Observing absences in water education material

As I looked at the first draft of the guidebook, I noticed two things. The absence of an in-depth and layered analysis of why water was considered a global issue. The second absence concerned the experience of many South African schools who do not have adequate water. This absence was produced by the haste at which the guidebook moved to the instruction ‘we must conserve water’. The move to ‘saving water’ was further emphasised by the suggestion in the guidebook to perform a school water audit which prioritised the reduction of water use in the school. How might this guide, which asked the question, ‘How can you conserve water?’ be received across the polarised experiences in South African schools? In under-resourced schools, how would learners make sense of and work with this question? In well-resourced schools, would their experiences continuously affirmed as normal, absent the possibility of learning about the full reality of water and sanitation in other schools in South Africa? Was there not a danger in inadvertently teaching hopelessness as learners ‘saved water’ but the crisis of water does not change? This reminded me of what was expressed by Andrea in Chapter 7, regarding the multiple and polarised lived experiences across the country.

8.6.3.2 Responding to absences

I felt these absences strongly as I began to revise the guide but I was also careful to protect this knowledge production practice from my own enthusiasm (as Lather (2003, p. 190) would request for a more reflexive human science). I needed to not produce an opposition and shower scathing critique on the original version.

How could I address these absences in a productive way? I reached out to my reading of political ecology of education which presents a framework to draw knowledge from social movements into curriculums (Meek and Lloro-Bidart, 2017). I was further heartened by accounts from Amina Mama of African feminists traveling the African continent and tracing curriculum making – “and we began from movements, not disciplines” (Magadla, Mama and Honwana, 2020). I knew that pedagogical knowledge and approaches to understanding and responding to the global water crisis were being developed in close proximity to people struggling for dignity and therefore we could realise the space and care needed in water pedagogies for revisiting the *why* behind the crisis and reconfiguring or co-defining the *what* that might be done.

I reached for what could be learned from sanitation movements in South Africa. I recalled the Housing Assembly’s method of assisting households to understand how much water they actually need before the government gives them a predefined amount of water for the ‘average household’ in the form of a water management device (meeting on 22 September 2018). I read up on the school social audits run by Equal Education (2016) and the Social Justice Coalition, distilling the relevance of their evidence based civic activism and demands on the government, the links they made between schools and policy makers resulting in the basic norms and standards and accompanying timeline for implementation from the Department of Basic Education.

To address the first absence, an adequate explanation of the water crisis, I included content on the finite nature of water in our world and how it is being degraded and exploited. I considered the impacts of climate change and different scales. Instead of only focusing on the narrative of water being scarce, water was being made undrinkable and being redistributed or hoarded for those who can pay. I also included material that would show the inequality in water use across the world with content on sanitation basic rights as well as the norms and standards that hold the government accountable for ensuring schools are safe and healthy places for learning.

Towards addressing the second absence – of saving water as *the* primary action response to this crisis, I included information boxes that told stories of the school social audit which mobilised change on the basis of gathered data to demand timelines and action from the government for those schools that had been devastatingly neglected, above and beyond the apartheid systemic neglect. These boxes mapped the connection between schools and the

structures responsible for ensuring they are places in which good education can flourish. This illustrates the unfair distribution of water and presents a challenge to the universal command to 'save water' and, speaking to the reflection above, tried to illustrate an example of how broader change occurs.

To slow the rush to 'save water' action, I avoided ignoring the fact that we have no choice but to use water – we are water, and we use it. We are not simply learning minds that can wander around saving water and not drinking it or using it to wash our bodies. Before the question 'How much can we save?' I placed the questions, 'How much water is enough?' and 'Does your school have enough?' If yes, then how can it be used more wisely? If no, who can be alerted to this? [listing a number of organisations who can be contacted].

These questions could generatively lead to examining alternatives such as water harvesting, permaculture, (safe) composting toilets that could address both cases of schools needing to reduce excess use and schools needing more water and improved infrastructure. In the latter case, it would not be letting the local powers 'off the hook' and would lead to understanding the political-ecology in which the school is positioned (attuning the response-ability).

8.6.3.3 Checking my observation and enthusiasm with environmental education practitioners

I sent this revision off with some trepidation. I was ready for the response that I had gone off the topic, or that I was being too political. Was there enough science? The document I produced was workshopped with teachers and there was an agreement that the guide was useful. In particular, one teacher expressed that they had not known about the norms and standards. I was thrilled – if there is simply an alert to what a school should expect to be provided with, this was a significant change from the possibility of a school grappling with the meaning of water conservation in the context of inadequate water infrastructure. It had filled a gap for others also.

We reworked the guidebook finally with a few things in mind. In particular, we took into account an ethic of care given the reality that we could not promise that local municipalities, once alerted, would realise better infrastructure for the school. But understanding the basic laws and obligations of governance structures was part of a kind of ecological citizenship education, for teachers as well as learners.

8.6.4 Conclusion

This was an instance of a move to reframing – a reframing that environmental educators themselves feel is needed but have not had the access to articulating strongly the importance of these ideas. A merging of the discourse of school sustainability with material, social and political struggles for educational justice would be a productive rendition of environmental education in South Africa and other parts of the world.

This was a move towards answering or putting into practice a response to the question of how we teach about the ecological crisis in the context of social inequality [the answer: by denormalising and disrupting the middle-class experience, by tracing the political forces behind resource use and abuse, by presenting fuller analyses of the particular ecological challenge, by refusing the erasure of experience of majority in South Africa].

This reflection is an illustration of the ability to identify, confidently articulate and respond to these absences emerged out of extensive inquiry and conversations that were undertaken as part of this study. It is an example of absence as new zones of proximal development in environmental education (Lotz-Sisitka, 2016b). It was supported by the thinking I had done on critical pedagogy and a reflexive concern for what this looked like in the context of urban South Africa. I was submitting to practise these significant reflexive tools that I had felt before but not effectively articulated. There are tools that I feel have made me a more reflective, relevant, and effective environmental educator, and seemed to resonate for other educators too.

Transgressive and situated and socio-ecological justice oriented water education require articulations at these levels of reflexivity. Chosen content can teach hidden and false theories of individual responsibility if we do not teach at the same time, that the world is emergent and complex.

Thinking in terms of absences can move us away from a wrong and right, science and social dualism, and ideological critique and towards an understanding of the world in a more nuanced way as well bring an awareness of the possibilities for change. From this more expansive standpoint, we are able to become aware of how our conceptual interventions are in fact efficacious in the world. And from here we can begin to explore them for how they can be reproductive or transformative.

As discussed in section 8.5.7 on paradox of inequality and sustainability education, realising that ‘save water’ is not appropriate to everyone should not result in segregated educational approaches but rather a broader reflection on why and how the often-separated conversations of water access and water conservation come together at the roots – how exploited water systems and people with obstacles to flourishing are effects of our crisis system. With this broader reflection we can respond better to the ways in which ‘save water’ sometimes emerge as the ‘right answer’ because this will emerge. We can open a conversation around the contradiction of water scarcity in a world where water is increasingly being grabbed and degraded.

Articulating curriculum work as social justice work is a central element of reflexivity in critical environmental pedagogy practice.

8.7 The contribution of this thesis

Situated within a holistic educational encounter, the use of arts-based modes is a form of pedagogical critique, working between the way the world is and the way it is storied towards something better. I worked with arts-based modes because learning is a dynamic and multi-dimensional process that should make space for enactment and expression that moves beyond language. At the level of the individual, working with arts modes moves us to a different part of the brain, a less linear and linguistic part of the brain, a more playful one. At the level of social relationships using arts-based modes challenges one way flows of information, reveals meaning-making and as such, exposes our socio-ecological relationships with water – made real in our activity, relations, and concepts. These processes of opening up help researcher-educators to understand where the absences are. This is a critical study of water education, a critical pedagogy *with* young people – where creative expression becomes critique by filling out an emptiness – which is simultaneously an articulation of absence and an absenting of the absence in the context of an educational encounter. It is a work of reframing that can transgress the insistent reproduction of the status quo through education. Working with this expression in education is the transformative potential of arts-based inquiry – it is a collaborative critique and creation of educational process.

Environmental educators need to attend to reflective analytical tools of their own. We cannot assist with processes of reading the world if we are not on world reading journeys ourselves – this is to always think beyond the analytical frames we inherit to understand things. This

journey began for me prior to this PhD and was crafted in the process of it and will be continually crafted into the future. A world reading journey involves a curiosity, not dogma, about the structures and mechanisms in the world, ever ready for those to be contradicted in lived experiences. These paradoxes can be the sites of new learning, not only about our world but about our position within it – the mechanisms at play in our agency, spontaneity and intentionality. Another way of saying this, is that environmental educators need to embrace a politics and engage with a reflective political dialogue about how the world is shaped.

A final contribution concerns the work of listening in reflexive research.

There was an important lesson in listening on this journey to understanding transformative potential in arts-based environmental learning, learning that is more attuned towards socio-ecological (in)justice. Moves to engage with injustice in a moralistic and simplistic way can make us blind to the continued creative innovations that are always present even in contexts of severe obstacles to flourishing, the actions and insights that will spark transformative potential.

I came into this study with my sword and shield raised against all that I felt was wrong but finding the voice to productively story it, was incredibly difficult. I was either too loud or too soft and generally I would often simply end up arguing against my own value as a scholar, my own existence. My voice became awkward and then voiceless. My voicelessness became deafness... I could not hear myself in my attempt to story the complexity of environmental learning in the context of such violent inequality into a pre-existing language. I began to tell myself that there was nothing I could do – I felt like the child who could not read surrounded by others who could.

Perhaps fortunately, this self-battle was in contradiction with my belief in a pedagogy that affirms life as well as scholars and educators who insist that the emptiness I was feeling was not permanent emptiness. I could not remain voiceless and argue that education required voicing by learners.

Through tireless work, talking with fellow scholars, supervisors, friends, and a therapist, I began to grapple with my own struggle to voice and listen. I was able to sense into a kind of ‘ear crafting’ that could listen in conversation with, rather than through or according to other analytical frames. And this enabled me to be a better witness to things that were outside of my idea of a fixed language of injustice, that I was never using correctly or in the right way –

because this way did not exist. Learning to witness outside of my inherited analytical tools, I began to loosen the grip of inevitable doom that comes with misusing theories of oppression and mistakenly erasing possibilities for change. Loosening this grip had two very important outcomes: 1. I could understand more viscerally and more acutely the obstacles to flourishing; and 2. I could begin to recognise the abundance of resources available to transgress it. What I can see now, is that the struggle to story what was experienced in this study, was part of the scholarly work.

This shift enabled me to feel beyond loud analyses of injustice, to feel the active meaning making of children through drawing, to hear their expansive offerings through play, to articulate the critical capabilities of young people as they told stories about their world productively disrupting narrow frames. It allowed me to feel into the struggles of the seven interviewees, and witness their own struggles to describe their world(s). Voicing and listening was not only a problem I was having, but a struggle for everyone navigating the layers of crisis that characterise our world. I came to understand in a new way, the need to be able to work creatively and attentively as our intersubjective experiences come into content with language and unlanguage analytical frames such as environment and of race. In listening to myself, I could listen to others, and in listening to others, I could listen to myself. This listening developed a voice together with others in this study, together with water. Through this co-developed voice, we managed to articulate a practice of critical urban environmental education.

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Interviews and analysis sessions with educators

Educator interview, 22 October 2018 Place: Siyazama High School.

Educator interview, 4 June 2019, Place: Pinelands High School.

Session co-analysing drawings with educator October 23, 2018 Siyazakha SAEP office.

Appendices

Appendix A

Rhodes University Ethical Clearance certificate



RHODES UNIVERSITY

Grahamstown • 6140 • South Africa

EDUCATION FACULTY • PO Box 94, Grahamstown, 6140
Tel: (046) 603 8385 / (046) 603 8393 • Fax: (046) 622 8028 • e-mail: d.willemot@ru.ac.za

PROPOSAL AND ETHICAL CLEARANCE APPROVAL

Ethical clearance number 2017.12.08.02

The minute of the EHDC meeting of 05 December 2017 reflect the following:

**2017.12.8 CLASS A RESTRICTED MATTERS
DOCTOR OF PHILOSOPHY RESEARCH PROPOSALS**

To consider the following research proposal for the degree of PhD (Education) in the Faculty of Education:

Ms Anna James (17J7710)

Topic: Exploring transformative potentials of 'eco-pedagogy' through arts-based inquiry in contemporary urban South Africa.

Supervisor: Professor H Lotz-Sisitka

Decision: Approved

This letter confirms the approval of the above proposal at a meeting of the Faculty of Education Higher Degrees' Committee on the 5 December 2017.

The proposal demonstrates an awareness of ethical responsibilities and a commitment to ethical research processes. The approval of the proposal by the committee thus constitutes ethical clearance.

Sincerely

Ms Zisanda Sanda
Secretariat of the EHDC, Rhodes University
8th December 2017

Permission letter from the Western Cape Education Department



Directorate: Research

Audrey.wyngaard@westerncape.gov.za

tel: +27 021 467 9272

Fax: 0865902282

Private Bag x9114, Cape Town, 8000

wced.wcape.gov.za

REFERENCE: 20180222-9692

ENQUIRIES: Dr A T Wyngaard

Miss Anna James
39 Arnold Street
Observatory
7925

Dear Miss Anna James

RESEARCH PROPOSAL: EXPLORING TRANSFORMATIVE POTENTIALS OF 'ECO-PEDAGOGY' THROUGH ARTS-BASED INQUIRY IN CONTEMPORARY URBAN SOUTH AFRICA

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **26 February 2018 till 27 September 2019**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:
**The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000**

We wish you success in your research.

Kind regards.

Signed: Dr Audrey T Wyngaard

Directorate: Research

DATE: 09 January 2019

Lower Parliament Street, Cape Town, 8001
tel: +27 21 467 9272 fax: 0865902282
Safe Schools: 0800 45 46 47

Private Bag X9114, Cape Town, 8000
Employment and salary enquiries: 0861 92 33 22
www.westerncape.gov.za

Case study 1 information and consent letters

Permission from organisation letter

*Anna James
PhD candidate
Rhodes University
0825054263
20 February 2018*

Requesting permission to conduct research with SAEP learners at Siyazakha Primary School

Dear Ms Taylor-Alston and Ms Appalaraju

My name is Anna James and I am writing to request permission to invite grade 4 Siyazakha learners who attend SAEP to join me in a process that forms part of my PhD research in environmental education, for which I am registered at Rhodes University.

My intention is to undergo small arts-based inquiry projects, over 5 workshops, on the topic of water as an urban environmental concern. The inquiry approach will facilitate a learning process for the learners and myself, that brings together lived experience, information and creative approaches to communicating what we have learned. Urban environmental concerns involve learning about multiple complex dimensions which can be surfaced through sharing stories and experiences and using these as a launching point for information gathering and communication. In addition, there is a concern that we learn how to mobilise creatively to redirect trends that are putting our life support systems at risk. Centrally this is about lifting the voices and knowledge of the learners. Arts-based inquiry facilitates multiple learning interactions, dialogue and collective creations directed around an environmental concern (e.g. water).

Through my interactions with SAEP thus far, it seems likely that these learning workshops might result in short story books on the topic of water. These books will be the end point of our learning workshops.

I would like to invite learners to join me via a personal introduction meeting at which they may ask questions about the process (this is currently planned for 20 February). This will form part of the informed consent which I value highly from anyone who will take part. In addition, prior

to the workshops beginning I will draft letters to the parents of those participating to inform them and obtain their consent. Rhodes University has approved this research and I am in the process of receiving permission from Western Cape Education Department which I will provide for you when it comes.

I intend to record the workshops using video footage which will be kept on a hard drive that is securely stored. All participants will remain anonymous and I will request permission from them and their parents about the use of video stills in the research reports, providing the option of blurring our faces. This video footage will allow all participants to reflect on the process, what was learned and how it was learned, towards a better understanding of environmental education in South African urban contexts.

If this is possible, please could you E-mail me at annakajam@gmail.com to confirm that you are willing to allow access to engage with the learners?

Yours sincerely,

Anna James



2 April 2019

Permission for Anna James to participate in SIYAKHATHALA PRIMARY PROGRAM as part of her PhD research

This letter is to confirm that the South African Education and Environment Project (SAEP) permits Anna James to work with the SIYAKHATHALA PRIMARY PROGRAM as part of her PhD research. This permission is for the time period of April to May 2019. SAEP has been informed of her research plan and process and understands that the workshops she runs will be reflected upon as research in environmental education.

This permission is subject to compliance with SAEP's policy for volunteers and that she remains accountable to Susie Taylor-Alston. This permission given in trust that she complies with the ethical requirements of research with minors as stipulated by Rhodes University Education Faculty Ethics committee.

NAME: Susie Taylor-Alston
SIGNATURE: [Signature]
DATE: 2nd April 2019.



14 February 2018

Permission for Anna James to participate in SIYAKHATHALA PRIMARY PROGRAM as part of her PhD research

This letter is to confirm that the South African Education and Environment Project (SAEP) permits Anna James to work with the SIYAKHATHALA PRIMARY PROGRAM as part of her PhD research. This permission is for the time period of February to May 2018. SAEP has been informed of her research plan and process and understands that the workshops she runs will be reflected upon as research in environmental education.

This permission is subject to compliance with SAEP's policy for volunteers and that she remains accountable to Susie Taylor-Alston. This permission given in trust that she complies with the ethical requirements of research with minors as stipulated by Rhodes University Education Faculty Ethics committee.

NAME: *Susie Taylor-Alston*
SIGNATURE: *[Signature]*
DATE: *16/02/18*

Parental information and consent letters

Anna James

PhD candidate

Rhodes University

26 February 2018

Requesting permission for your child to participate in my research

Dear parent/ guardian,

I am working with the Learning Gym at Siyazakha Primary School and will be having some lessons with the learners about water from March to May 2018. This forms part of my research at university on environmental education. The classes will include activities to teach the learners about water and they will then write their own stories about water. We will be making a video and taking some photos. All activities will take place at the school. Please indicate on the next page if you give permission for your child to take part.

Thank you for your consideration,

Anna James

Email address: annakajam@gmail.com

Cell: 0825054263

Consent form

I(NAME SURNAME) provide consent for my child
..... (NAME SURNAME) to participate in the classes about
water.

I understand that this is a chance for my child to explore and learn about water in the city, and
that this is part of a research project.

I understand that my child's participation in this study is under the umbrella of SAEP's
Siyakathala Programme and that care will be taken to uphold all SAEP's standards and
policies.

Signature of parent/ guardian:

Date: Place:.....

Anna James

Umgqatswa kwi PhD

KwiDyunivesithi yase Rhodes

26 eyoMdumba 2018

Isicelo semvume yomzali womntwana ukuba athathe inxaxheba kuphando

Mzali obekekileyo/ mkhathaleli,

Ndisebenzisana nenkqubo eyi Learning Gym eqhutywa yinkampani ezimeleyo engekho phantsi korhulumenete (NGO) ekuthiwa ngu SAEP kwisikolo I Siyazakha Primary School. Ndizakuba neezifundo endizabenzisa ngamanzi, bazabayinxalenye yophando lwam endilwenzayo phantsi kwedyunivesithi endikuyo kwimfundo engeNtlalo nendalo apha kulenyanga yoKwindla (March) ukuya kwinyanga ka Canzibe(May) apha ku2018. Iiklasi zethu ziquka imisetyenzana yokubafundisa abantwana ngamanzi, bazakuthi ke babhale amabali ngokwabo angamanzi. Sizakushicilela iVido kamabonakude ezakubukelwa sibafote nokubafota. Yonke lento izakwenzeka esikolweni iSiyazakha. Nceda sazise ukuba uyamvumela na umntwana wakho abeyinxalenye yalenkqubo ngokubhala kweliphepha lingasemva.

Enkosi ngentsebenziswano,

Anna James

Iposi-yombane (Email): annakam@gmail.com

Umnxeba: 08250544263

Learner reflection sheet

Session 1

Ndithanda 😊

-

Andithandi..... 😞

Ndifunda..... Aha!!

Session 2

Ndithanda 😊

-

Andithandi..... 😞

Ndifunda..... Aha!!

Session 3

Ndithanda 😊

-

Andithandi..... 😞

Ndifunda..... Aha!!

Session 4

Ndithanda 😊

-

Andithandi..... 😞

Ndifunda..... Aha!!

Session 5

Ndithanda 😊

-

Andithandi..... 😞

Ndifunda..... Aha!!

Case study 2 information and consent letters

Permissions from organisation letter

*Anna James
PhD candidate
Rhodes University
0825054263
19 February 2018*

Requesting permission to conduct research with members/learners at Beyond Expectations - Environmental Project (BEEP)

To: Kanyiswa, director of Beyond Expectations Environmental Project

Dear Kanyiswa Zangqa,

My name is Anna James and I am writing to request permission to invite members of BEEP to join me in a process that forms part of my PhD research in environmental education, for which I am registered at Rhodes University.

My intention is to undergo small arts-based inquiry projects, over 5 workshops, on the topic of water as an urban environmental concern. The inquiry approach will facilitate a learning process for the learners and myself that brings together lived experience, information and creative approaches to communicating what we have learned. Recent scholarship in environmental education has argued that multiple literacies should be engaged for learning about our environment, as it is constituted by multiple factors (cultural, economic, political, ecological, political, intersectional) which make up today's 'wicked' problems. In addition, there is a concern that we learn how to mobilise creatively to redirect trends that are putting our life support systems at risk. Arts-based inquiry facilitates multiple learning interactions, dialogue and collective creations directed around an environmental concern (e.g. water).

From what I have read and heard about BEEP, I feel this would be aligned with the project's objectives not only as the concern is urban environment but also as a possibility to reflect on how we educate.

I would like to invite members to join me via letters and a personal introduction meeting at which they may ask questions about the process. This will form part of the informed consent which I value highly from anyone who will take part. In addition, prior to the workshops beginning I will draft letters to the parents of those participating to inform them and obtain their consent.

I intend to record the workshops using video footage which will be kept on a harddrive that is securely stored. All participants will remain anonymous and I will request permission from them and their parents about the use of video stills in the research reports, providing the option of blurring our faces. This video footage will allow all participants to reflect on the process, what was learned and how it was learned, towards a better understanding of environmental education in South African urban contexts.

If this is possible, please could you E-mail me at annakajam@gmail.com to confirm that you are willing to allow access to engage with members at BEEP.

Yours sincerely,

Anna James

Ms Khanyiswa Zangqa
118 Joel Bolnick Street
Victoria Mxenge, Phillipi
South Africa
7785

1 March 2018

To whom it may concern,

Permission for Anna James to engage with BEEP learners for her PHD research

This letter is to confirm that Beyond Expectations Environmental Program (BEEP) has given their permission for Anna James to facilitate workshops with 12 of their high school learners, unpacking the issue of urban water with our high school participants. These workshops will take place between March and May 2018. BEEP acknowledges the letter outlining Ms James' research and understands that these sessions will be reflected upon as part of her PhD research. This permission is subject to compliance with BEEP's policies and consent letters from the learners.

NAME: Khanyiswa Zangqa

SIGNATURE: K. Zangqa

DATE: 06/march/2018

Parental information and consent letters

Anna James

PhD candidate

Rhodes University

26 February 2018

Requesting permission for your child to participate in my research

Dear parent/ guardian,

I am working with the mentors at Beyond Expectations Environmental Programme (BEEP) and running workshops with the learners from March to May 2018. The purpose of these workshops is to engage arts-based inquiry into the issue of water. This forms part of my research at university on environmental education. The classes will include sharing lived experiences of the water issue, engaging with information and sharing what we have learnt together to take the dialogue further. We will be making a video and taking some photos. These workshops will take place at the Philippi Brown's farm library. Please indicate on the next page if you give permission for your child to take part.

Thank you for your consideration,

Anna James

Email address: annakajam@gmail.com

Cell: 0825054263

Consent form

I(NAME SURNAME) provide consent for my child
..... (NAME SURNAME) to participate in the workshops
which explore the issue of water as a starting point for learning in the context of
contemporary urban challenges.

I understand that this is a chance for my child to explore and learn about water in the city, and
that this is part of a research project.

I understand that my child's participation in this study links to the work they are doing with
Beyond Expectations Environmental Programme and serves to dialogue about the skills that
are needed to grapple with complex environmental challenges.

Signature of parent/ guardian:

Date: Place:.....

Learner information and consent letter

Anna James

PhD Candidate

Environmental Learning Research Centre

Rhodes University

0825054263

20 February 2018

Invitation to co-participate in PhD research

Dear BEEP member,

This is an invitation to join me in my research. I am interested to understand more about how we as young South Africans can learn about and participate in our urban environments through a process of inquiry that draws on experience, science and arts. I invite you to attend 5 workshops in which we explore an environmental issue that affects you and your community.

The process is a serious and playful conversation about the things that are shaping the urban spaces in which you live and move. It begins with a concern we all share: How do we understand ourselves as shaping our urban spaces? How does our urban space impact upon us? What bothers us on a daily basis? What do we love and what do we not want to lose? (For example, have you heard about the severe water crisis Cape Town is currently facing?)

Towards understanding this concern, we draw on a number of resources that we all bring to the workshop as citizens of the planet (stories from experiences, conversations with each other, imagination and hope for how we think about urban spaces). We will also reach for further information in response to the burning questions that arise. We will capture our learning journey in a collective creation that might take the form of a short play, a song, a sculpture or a collage.

The final workshop will be a reflection on what we did in the previous sessions, in which we watch the video footage of our activities. This will help us look back on what happened, what was learnt, what worked and what did not work.

We will have five workshops:

Workshop 1	<u>Data generation</u> • Identify matter of concern that expresses the relationship between ourselves and our urban environments. • Informal conversations which engage experience and surface further questions • Drawing on and interrogating information that is available to us. • Engaging our imagination through improvisational skits.
Workshop 2	<u>Digging deeper</u> • Revise what stood out for us on the previous workshop. • Identify key themes, explore root causes and understand power dynamics. • Finalise key themes for collective creation
Workshop 3	<u>Collective creation</u> Draw on the outcomes of the previous workshops we will try to capture our learning journey through a collective creation. This could take the form of a series of theatrical scenes, a sculpture, a collage that expresses the results of the learning journey we have had together.
Workshop 4	Finish up, rehearse further and hold a final reflection on the process.
Workshop 5	Reflect on the video footage and dialogue about what we learned.

If you would like to join me, I invite you to express your interest through a 1 page drawing or short piece of writing on the theme of urban. Please bring this one page, the parental consent form to the workshop on 19 March at the Philippi library. Please sign the form below to indicate that you unI look forward to working with you!

In addition, please fill in the form below.

Informed consent for workshops

1. I accept the invitation to co-participate in the research project titled: Exploring transformative potentials of ‘eco-pedagogy’ through arts-based inquiry in contemporary urban South Africa And led by Anna James.

2. I acknowledge that my participation is voluntary and that if I wish I can withdraw my participation.
3. I understand that this research is concerned with understanding how we can learn about urban environmental concerns drawing on multiple resources including storied experience, collective dialogue, collective creations, informative resources. I further understand that this process is a collective process that will be developed by all of us and requires the input from all involved.
4. This form has been read to me, my questions have been answered and I understand its contents.
5. I authorise the researcher to use photographs or video materials that include me in the research reports.
5. YES _____ NO _____ (Please tick one)
- 6.
6. I would prefer to first see the photographs and video materials before they are used.
7. YES _____ NO _____ (Please tick one)
- 8.
7. I would like my face to be blurred out of any photographs that include me.
- YES _____ NO _____ (Please tick one)
- 9.

Name

Signature

Date

Educators as co-researcher forms



CO-RESEARCHER INFORMED CONSENT FORM FOR PARTICIPATION IN DOCTORAL RESEARCH

April 2019

Dear co-researcher,

This letter is to inform and request consent for your participation in my research. My research is aiming to articulate the transformative potential of arts-based pedagogies for understanding complex environmental issues and raising the voice of children in contemporary urban South Africa. As we have partnered in facilitating amanzi learning journeys, it will greatly enrich the work if I include your perspective as an educator in order to understand as much as I can about what we achieved, learned and struggled with. This letter is to request permission for me to use our reflections in my PHD thesis which looks at a reflective praxis of learning in the context of environmental concerns.

With your permission I will record our conversations and draw on these reflections as a way of understanding the context in which the art materials were made. I would also like to look through the drama pieces and drawings together with you so that we can share our various understanding of the materials the learners produced. I will include a list of tasks in which you can indicate your availability for.

For this to be possible, I require informed consent from you. Consent is an important process that allows for you to say voluntarily whether or not you are happy to participate in this research project. You are free to say, no thanks!

In order to participate, fill in the consent form attached. Do not hesitate to contact me should you have any questions.

Yours sincerely,

Anna James (RESEARCHER)
Rhodes University T-learning Research Programme
Cell: 0825054263
Email: annakajam@gmail.com

Reflecting on session 1	
Reflecting on session 2	
Analyzing drawings together	
Analysis videos together	
Tuesday 1 hour	
Wednesday 1 hour	
Thursday 1 hour	

CONSENT FORM

Please tick your preferences below and return this form to Anna James

I _____ (EDUCATOR NAME AND SURNAME) give consent to my participation in Anna James' research.

Yes _____ No _____

I understand the purpose of this research and how my contribution will be used within it.

Yes _____ No _____

I would prefer my name remains anonymous.

Yes _____; No _____:

I understand that my participation in this research is of great importance to the researcher however it is also voluntary and I may freely refuse to participate.

Yes _____ No _____

In addition, I understand that at any point, should I feel the need, I can withdraw my participation in this research by contacting the researcher and indicating withdrawal.

Yes _____ No _____

As the spirit of this research aspires to be participatory, I will share the insights I draw with the learners at the end of the year.

Educator

Name & surname: _____

Date

Signature _____

Reflection interviews and workshop information and consent letters



GUARDIAN INFORMED CONSENT FORM FOR PARTICIPATION IN DOCTORAL RESEARCH

September 2019

Dear Sir / Madam:

I am a PhD student from the Environmental Learning Research Centre (ELRC) at Rhodes University. I am engaging with young South Africans involved in change oriented work in their environments/schools. This is in order to understand social-ecological justice learning as it arises within the contexts and experiences of our young citizens. **I invite your child to join me for a conversation and semi-structured interview about her/his environmental work.** For this to be possible, I require informed consent from yourself and your child.

The goal of this research is to further understand an learning practices that can respond to complex socio-ecological issues and importantly how educators and educational institutions can respond to supporting theses. Importantly, as an environmental education practitioner I can offer some insights about social movement learning that your child might take up in their environmental work.

In order for your child to participate, fill in the consent form attached. Do not hesitate to contact me should you have any questions.

Yours sincerely,

Anna James (RESEARCHER)
Rhodes University T-learning Research Programme
[Cell: 0825054263](tel:0825054263)
[Email: annakajam@gmail.com](mailto:annakajam@gmail.com)



September 2019

CONSENT FORM

Please tick your preferences below and return this form to Anna James

I _____(GUARDIAN NAME AND SURNAME) the guardian of -
_____ (LEARNER NAME AND SURNAME) give consent for my child to
participate in this research on condition that my child provides consent (SEE FORM ATTACHED).

Yes _____ No _____

If my child agrees, on condition of an additional consent form, she/he may participate in an individual semi-structured interview with the researcher:

Yes _____ No _____

I would prefer her/his name is not shared:

Yes _____; No _____:

I understand that my child's participation in this research is voluntary and there will be no consequences should she/he withdraw or decide not to participate in this research.

Yes _____ No _____

At any point should I feel the need, I can withdraw my child from participation in this research by contacting the researcher and indicating withdrawal.

Yes _____ No _____

As the spirit of this research aspires to be participatory, I will share the insights I draw with the learners at the end of the year.

Guardian

Name & surname: _____

Signature _____

Date _____

Yours sincerely,

Anna James (RESEARCHER)
Rhodes University T-learning Research Programme
www.dayonewater.wordpress.com | soundcloud.com/dayonewaterpodcast
Cell: 0825054263; Email: annakajam@gmail.com



LEARNER INFORMED CONSENT FORM FOR PARTICIPATION IN DOCTORAL RESEARCH

September 2019

Dear youth change driver,

My name is Anna James and I am a PHD student at Rhodes University. My research is about trying to understand the learning that comes with change-oriented actions of young people in South Africa today. While much of my work to date has focused on the issue of urban water I am interested in any contemporary issues that concern young people in the City of Cape Town and their schools.

With your permission I would very much like to have a conversation with you about your involvement in environmental change work. This will be in order to gain insight into how and why you became concerned about the environment as well as some of the challenges you have faced. The interview will contribute to researching transformative potential of youth involved in change work. The goal of this research is to further understand learning practices that can respond to complicated issues as well as how educators and educational institutions can support them.

In order to participate, fill in the consent form attached. **Consent** is an important process that allows for you to say voluntarily whether or not you are happy to participate in this research project. **You are free to say, no thanks!**

Do not hesitate to contact me should you have any questions.

Yours sincerely,

Anna James (RESEARCHER)
Rhodes University T-learning Research Programme
[Cell: 0825054263](tel:0825054263)
[Email: annakajam@gmail.com](mailto:annakajam@gmail.com)

CONSENT FORM

Please tick your preferences below and return this form to Anna James

I _____ (LEARNER NAME AND SURNAME) child of _____ (GUARDIAN NAME AND SURNAME) consent to my participation in Anna James' research.

Yes _____ No _____

I am willing to be a part of an individual semi-structured interview with the researcher, on condition my guardian consents to this.

Yes _____ No _____

I would prefer my name remains anonymous.

Yes _____; No _____:

I understand that my participation in this research is voluntary and there will be no consequences if I decide to not participate in or withdraw from this research:

Yes _____ No _____

At any point should I feel the need, I can withdraw my participation in this research by contacting the researcher and indicating withdrawal.

Yes _____ No _____

As the spirit of this research aspires to be participatory, I will share the insights I draw with the learners at the end of the year.

Learner

Name & surname: _____

Signature _____

Yours sincerely,

Anna James (RESEARCHER)
Rhodes University T-learning Research Programme
www.dayonewater.wordpress.com | soundcloud.com/dayonewaterpodcast
Cell: 0825054263
Email: annakajam@gmail.com

Reflection interview instrument

Learner questions

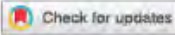
1. What brings you most joy in life?
2. River of life: How did Andrea end up joining the eco club?
3. What do you think the eco club is doing well? What is behind that?
4. What do you think it could improve upon? What are your wishes for what it could be?
What is behind that 'absence'/failure?
5. Let's talk about the curriculum, this is a big part of your life as a high school learner.
Which subject do you think engages most with our environmental challenges and in what way?
6. Do you have a sense of what other schools in Cape Town are doing re. environment?
7. Final question: I would like to ask you to tell me a bit more about your experience in the climate march and a bit about what is behind the concern that it was too white.
8. That are the major factors that obstruct the coming together of young South Africans?

Appendix B: Portfolio of accompaniment

A collaborative paper accompanying Jane Burt's PhD

JOURNAL OF CRITICAL REALISM
2018, VOL. 17, NO. 5, 492–513
<https://doi.org/10.1080/14767430.2018.1550312>

 **Routledge**
Taylor & Francis Group



A peaceful revenge: achieving structural and agential transformation in a South African context using cognitive justice and emancipatory social learning

Jane Burt ^{a,b}, Anna James^b and Leigh Price^b

^aEnvironmental Monitoring Group, Cape Town, South Africa; ^bDepartment of Education, Environmental Learning Research Centre, Rhodes University, Grahamstown, South Africa

ABSTRACT

This is an account of the emancipatory struggle that faces agents who seek to change the oppressive social structures associated with neo-liberalism. We begin by ‘digging amongst the bones’ of the calls for resistance that have been declared dead or assimilated/co-opted by neoliberal theorists. This leads us to unearth, then utilize, Paulo Freire’s Pedagogy of the Oppressed, Steve Biko’s Black Consciousness and Shiv Visvanathan’s ideas; which are examples of Roy Bhaskar’s transformative dialectic. We argue, using examples, that cognitive justice – a concept common to each of our chosen theorists – is vital in enabling emancipatory social learning. By embracing cognitive justice, the agents gained confidence, which led to their increased ability to champion community and non-academic knowledge. It also uncovered structural tensions – attendant in neoliberalism – around privilege. By articulating these tensions, the participants were able to ‘come closer together’. Such processes, initiated by ensuring cognitive justice, are possible steps in achieving universal solidarity; which is likely to be a necessary step along the path of achieving emancipation.

KEYWORDS

Epistemological dialectic; cognitive justice; water governance; civil society; social learning; emancipatory learning



A peaceful revenge
achieving structural ai

A collaborative paper accompanying Sarah Van Borek's PhD and capturing our collaborative podcast project

(Toward) Sound Research Practice: Podcast-Building as Modelling Relational Sensibilities at the Water-Climate Change Nexus in Cape Town

Sarah Van Borek,¹ Rhodes University, South Africa
Anna James, Rhodes University, South Africa

Abstract: With roots in past injustice and a future of complex social-ecological-economic-political situations, climate change calls for innovative ways to understand the evolving issues in real time and to continue to mobilise action, resources, and community around this. We, as arts-based researchers, focus on the climate change related drought in Cape Town, the city that almost ran out of water in early 2018. We embarked on a praxis process of co-producing a socially-engaged podcast series. We harnessed this medium to facilitate a form of social learning about this water crisis and as a device for uncovering the contested narratives of lived experiences of this water crisis. Our overarching goal was to support a more just and sustainable relationship with water in and beyond the crisis. We took an arts-based, relational approach to inquiry, with inquiry being both research and learning. This paper constitutes an important critical reflection on the process thus far to inform how we take this podcast into the future. We provide some context to the Cape Town water crisis and describe the building of DayOne's foundational four episodes as our research methodology. We then analyse the podcast-building process with support from literature on the podcast genre, social movement learning, and relational pedagogy. We outline why we feel relational sensibilities can contribute to social and ecological justice and how social practice podcast-building might help to cultivate these. We conclude by presenting three tensions to explore the question: how do we build podcasts in and with Cape Town as a tool for relational research-communication-education-action around urban water while best utilising the unique strengths of the podcast genre? These tensions are: listener-host intimacy versus sufficient contextual information; the affective power of raw audio versus the mediating power of editing audio; and the disruption versus reproduction of dominant narratives through sharing personal stories.

Keywords: Podcast, Water, Climate Change, South Africa, Relational, Social Movement Learning, Contested Narratives, Arts-Based Inquiry



Van Borek, James -
1964 - (Toward) Sound

Podcast episodes

EPISODE 1: DAY ZERO – AN INTRODUCTION TO THE DROUGHT IN CAPE TOWN
TO LISTEN:

Season 1 Episode 1 – [English](#)

Season 1 Episode 1 – [Afrikaans](#)

Season 1 Episode 1 – [Xhosa](#)

Episode 1 features:

Speakers from the [Cape Town Water Crisis Coalition](#) march at civic centre Feb. 2

Members from the [Western Cape Water Caucus](#)

Hannerie Visser, Founder of design [Studio H](#), discussing her work in exploring the potential role of sea water in our agricultural future

[Mapumba Cilombo](#) (singer/songwriter/producer/composer) and [Daniel Eppel](#) (musician/producer/composer) chatting about the song, “[For Love of Water](#).”

EPISODE 2: WATER PRIVATIZATION

TO LISTEN:

Season 1 Episode 2 – [English](#)

Season 1 Episode 2 – [Afrikaans](#)

Season 1 Episode 2 – [Xhosa](#)

Episode 2 features:

Community members share their experiences of collecting water while they are in line to collect water from the [Newlands Spring](#)

Thabo Lusithi from a non-profit organization called the [Environmental Monitoring Group](#) and the Western Cape Water Caucus outlines research on the lived experience of communities with water management devices

Permaculturalist [Imraan Samuels](#) from [Guerilla House](#) teaches us how to decentralize our sanitation services by creating a composting loo

[Click here for additional information from Imraan Samuels](#)

During Cape Town’s [International Public Art Festival](#) in Salt River, mural artist [CareOneLove](#) describes a mural she’s painting (while she’s painting it!) about catching rainfall

EPISODE 3: AUGMENTATION

TO LISTEN:

Season 1 Episode 3 – [English](#)

Episode 3 features:

Thando Mcunu, a Masters student in [Environmental Humanities](#) from the University of Cape Town, who offers a unique way of thinking about the future of dams in South Africa

Derek Whitfield, a geologist who, with his company [EDRS](#), is currently digging 2 major boreholes for the City of Cape Town.

Nazeer Sunday, a Farmer in the [Philippi Horticultural Area](#), who will introduce the importance of responsible aquifer management when extracting groundwater from the Cape Flats Aquifer and link water to food production and sovereignty

Natural builders Conway Lotter of [Stop Reset Go](#) and Carrie Pretorius of [heARTh eARTh ART](#) who teach us about building a cost-effective ferrocement tank for rainwater harvesting

Simbi Nkula, co-founder of the [Black Filmmakers Film Festival](#), who will describe how his organization creates a platform for filmmakers of colour while using film as a catalyst for dialogue about important issues like healthy oceans.

EPISODE 4: HEALTH IN DROUGHT

TO LISTEN:

Season 1 Episode 4 – [English](#)

Episode 4 features:

Retired Senior lecturer in [Community Health at Stellenbosch University](#), Jo Barnes, who teaches us about the connections between river health and community health, as well as tips for safely using greywater

Taryn Pereira, a Researcher with the [Environmental Monitoring Group](#), who gives us a glimpse into the current state of the country's [department of Water and Sanitation](#)

Youth leaders from the [Children's Movement](#) empowering their peers with innovative practices in personal hygiene

[The Long Shots Improv Comedy Troupe](#), who remind us why health in drought is no laughing matter through a uniquely-made-for-DayOne comedy sketch

Blog posts

James, A. and Van Borek, S. 2018. DayOne Podcast: South social research in water-stressed Cape Town. Transgressive learning website.

<https://transgressivelearning.org/2018/05/10/dayone-podcast-sound-social-research-water-stressed-cape-town/>



Article

Making (Non)Sense of Urban Water Flows: Qualities and Processes for Transformative and Transgressive Learning Moments

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Abstract: Urban sustainability and justice depend upon the flow of water across complex urban space. Yet, the characteristics of urban space produce a fragmented sense of our water resources. Cape Town, South Africa, the context of this research, is one such city whose water challenges have been exacerbated by climate change-induced drought, to the extent that the city nearly shut off the water running to residents' taps. This context presents a particular challenge for the focus of this special issue, transformative and transgressive learning, an emerging arena of thought and practice concerned with learning processes that might foster more sustainable socio-ecological relations. The empirical material for this research draws from 12 arts-based inquiry workshops run with youth in an environmental organisation over four months, exploring a local water crisis. The data were generated through an engaged arts-based research process. The paper traces how transformative and transgressive learning in the context of urban water crisis might be characterised as *making (non)sense* by bringing the empirical material into dialogue with five entry points of transformative and transgressive learning literature rooted in Freirean educational praxis. This paper crafts and engages the concept of making (non)sense, a way of thinking about qualities and processes of learning praxis that responds to the wicked sustainability challenges we face today, particularly in terms of a Global South perspective. I argue such a praxis needs qualities and processes that disrupt and trouble the norm in the context of the socio-ecological challenge of urban water.

Keywords: transformative and transgressive learning; urban water; arts-based participatory inquiry; making (non)sense

CTEET materials: Spotlight on...Water & Sanitation

Step 1: Understanding the water commons and its connection to sanitation

The water commons

All life on Earth depends on water. In fact, we are made of water, making up approximately 60% of our body weight! We simply cannot live without it.

How many days can someone survive without water?

3 Days, maybe 4....

Water is in everything! We eat it, we drink it and we use it in a million ways. Water was used to make the breakfast you ate this morning. It is in the pencils, pens and exercise books we use in the classroom, the computer you may be reading this manual on, and the electricity that we constantly rely on. Water is also crucial for rituals and ceremonies central to the lives of many cultures.

The water we use today, is the exact same water, and the exact same amount of water, that has been on Earth for billions of years. The water you drank this morning once rained down on a Tyrannosaurus, froze on a woolly mammoth, flowed down the Nile to bring new silt to an Egyptian farm – and filled the calabash of King Shaka. So, what process is responsible for this phenomenon (a remarkable thing)? **The Water Cycle** - one of our world's most amazing systems of energy transfer.

Water does not come from a tap!

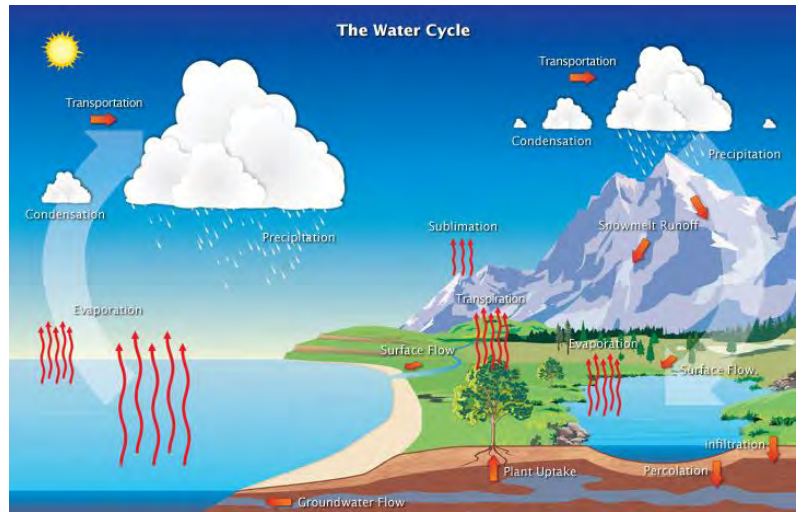
Some of us access water from a tap, perhaps more than one tap if we are privileged. We flush, drink, cook, wash, clean and play with it. We however rarely reflect on where it actually comes from and how it gets to our taps.

The journey of a drop of water is impressive and dynamic (constantly changing), as it continuously travels through the four stages of the water cycle: evaporation, condensation, precipitation and transpiration.

There is no beginning and no end to the Water Cycle

BOX 1: Thanks to the dynamic nature of water, it can exist as either a liquid, gas and or solid. Here's how it works:

Water from oceans, rivers and lakes (water in its liquid form), evaporates and rises into the atmosphere (water in its gas form) where it condenses to form clouds. Precipitation then falls to the earth in the form of rain (water in its liquid form) or snow and hail, (water in its solid form) where it flows into oceans, rivers and lakes.... and so the cycle continues.



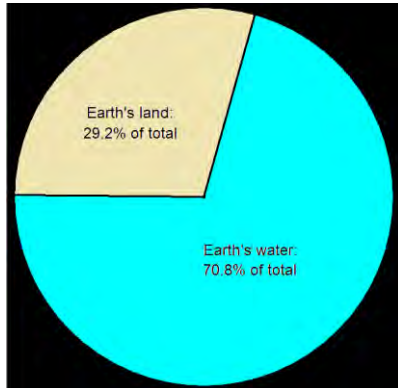
In South Africa, most of our water comes from our formidable mountain ranges: Ukhahlamba-Drakensberg, Cederberg, Magaliesberg, Hex and Blouberg. (Here is a map of our strategic water source areas: <https://water.cer.org.za/interactive-map>). It is in these high areas, called catchments, that precipitation (rain, snow, hail) is collected and runs off the mountains forming streams, and then rivers, which eventually reaches the oceans again. Along the way, water is stored in wetlands and groundwater deposits.

To get to our taps, water needs to be re-directed out of this cycle - via dams, into pipes, into water purification plants, and then into more pipes, to finally reach our taps.

The global water commons challenge

Availability / Access to Water

The Blue Planet



71% of the earth's surface is covered in water

Of this water, 97.5% is salt water - which we can't drink, unless it is desalinated (the salt removed) at great cost.

That leaves less than 3% freshwater!!

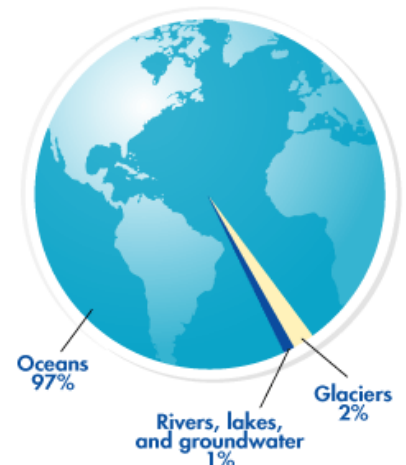
Now, of this approximately 3% freshwater...

Only 1% is accessible in the form of surface water i.e. lakes, rivers and dams. This water is the basis of human life of earth. It is sacred. The water we are in relationship with is sometimes called the **water commons** – a resource that is vital and should be shared between us humans. The remaining 2% is locked up in the form of underground water and ice, and costly to access.

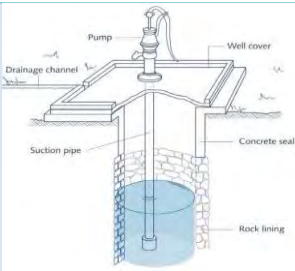
So, of all the water on earth, less than 1% is available for consumption and most of that is polluted and needs to be treated - a very costly process - before it can be consumed.

Do your taps ever stop producing water? If yes, why do they do this? If this happens, where would you collect water from? Would you drink water from your nearest stream, river or dam? If not, why not? How do you carry enough for all your needs, and how would you clean it and make sure it was safe to drink?

Usable water in the world



People around the world access water in different ways. This table shows the main methods used to collect water (Table source: Water Explorer)

How do people access water? ¹	Is it safe to drink?	Explanation
Water Tanker		When piped water is not available, some people might buy water from water carts or trucks. Using the tap on the truck they fill up their own containers. People don't always know whether the water is safe to drink.
Well		A hole is dug into the ground until the water table is reached. Wells are usually shaped like a cylinder with concrete or rock walls.
Public taps or Standpipes		Hand pumps or taps that are placed somewhere in the middle of a town for everybody to use.
Rainwater tanks		Tanks such as <i>Jojo</i> tanks capture and collect rainwater, usually from the roof of a building.
Surface Water		Water that collects on the surface of the land, such as a river, dam, lake, pond, stream or canal. Surface water is usually unsafe to drink, and has to be treated.
Taps		Water is piped from a Water Treatment Facility into a person's house. They access the water by turning on their taps.

Tube Well or Bore
Hole



An iron pipe with a steel point is dug into the ground until it reaches the ground water. A suction pump is then used to bring the water to the surface.

Springs



A spring is where water naturally runs up from the ground to the surface. To make the water safe to drink, the spring needs to be protected by a concrete barrier with a tap.

Water ATM



In India some communities get their water from a water ATM. This works just like a cash ATM. You put in your card or your money and you get water out. We have acknowledged that water is a basic human right and this system basically says that if you do not have money, you can't get water. These ATMs are run by private companies who make profits from people accessing their basic need.

Bottled Water



When there is no fresh water available, people sometimes have no choice but to buy bottled water. Unfortunately, not everyone can afford to do this. Also, it takes between 3 and 8 litres of water to produce 1 liter of bottled water! And an estimated 1 500 plastic bottles end up as waste in landfills and in the oceans, every second. Bottled water is NOT an environmentally healthy choice!

Now consider this: globally, approximately 1 in 10 people don't have access to clean drinking water. This means they have to walk, sometimes over great distances, to collect water from a source that is often polluted and not safe to use. 31% of all the schools in the world don't have access to clean water. This situation is referred to as *water scarcity*, which is either the lack of enough water (quantity) or lack of access to safe water (quality). So while some people have seemingly endless access to water while others are struggling to access clean water for basic needs like drinking and sanitation. The need to walk far distances to fetch safe water is usually

the role of women and girls, and so the water crisis also has an unequal affect across gender, and access to schooling.

In some areas, the lack of water is an even more profound problem. There simply isn't enough. That is known as *physical scarcity*. Add to this industrial and farming activities, and degraded sanitation systems, have made many of our water resources unsafe.

Globally, water scarcity is mounting. As water intensive farming, mining in water reserves, degraded urban sanitation systems and water intensive factories put ever-increasing demands on limited supplies, the cost and effort to build, or even just maintain access to water, continues to increase. This, compounded by climate change impacts, creates huge challenges for us all. The World Health Organisation predicts that by 2025, half of the world's population will be living in water stressed areas. The situation places an enormous responsibility on all humans to manage and use our water sources wisely.

With an average annual rainfall well below the global average (464mm compared with the global average of 786mm), South Africa is regarded as an arid country. This physical scarcity has been further exacerbated by climate change impacts, and neglected water provision infrastructure, leaving many communities without functioning water systems. Scientists predict that by 2030, based on South Africa's current freshwater consumption, we will be using 17% more water than is available!

Today there is an urgent need to care for our water commons and ensure that we work sustainably with what we have. However, as the crisis is experienced differently across our country and across the world, our responses will look different. So, for some, the task is to *reduce water consumption*, for others the task is to *improve water access* for those who live without enough water to meet their basic needs.

Discussion questions

Which dam(s) provide water to your Province? How far does piped water have to travel to get to your school? Who pays to install the pipes, and maintain them? Is it easy to find answers to these questions? If not, why not? Should we pay for piped water? South Africa is a dry country – how do we prevent water shortages?

Day Zero, when will we learn?

During 2017-2019, Cape Town made it through the worst of a historic drought, without having to turn off the taps. The City managed to evade disaster through a combination of water conservation and efficiency measures, smarter use of data, and a little help from Mother Nature—this serves as a largely hopeful precedent for cities globally, facing increasing risk of extreme environmental

Water Purification

Water purification, or drinking water treatment, is the process of removing contaminants from surface water or groundwater to make it safe for human consumption. Surface water sources must be carefully monitored for the presence of contaminants. For example, run-off from agriculture will load water sources with toxins such as herbicides, pesticides and fertilizers. Groundwater is cheaper to treat, but once aquifers are depleted (through boreholes), they can take thousands of years to refill.

A wide variety of technologies may be used to purify water, depending on the raw water source, contaminants present, standards to be met, and available finances. The basic process involves these 6 steps.

How do Water Treatment Plants Filter Water?



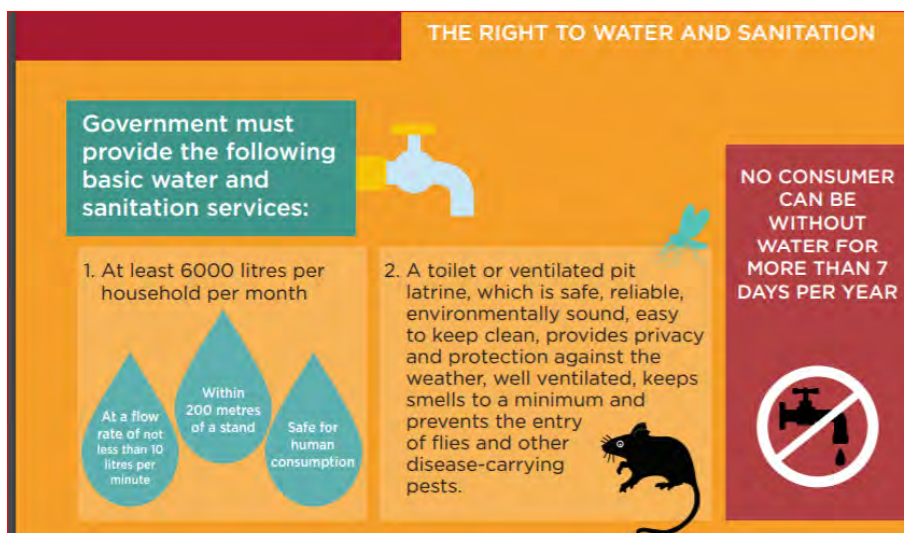
Sanitation

Sanitations are conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.

We all know what water is, but **how does it relate to sanitation?**

One of the reasons why we are able to live closely together in cities (now over 60% of the world's population lives in cities) is because we have water-based sewerage systems. In these systems, water carries our toilet waste to treatment plants where it is cleaned and recycled. So, sanitation management is clearly directly related to our health and well-being. (However, water-based sewerage systems are not the only sanitation option: check out composting toilets!).

Alongside everyone having the right and access to sufficient clean water, South Africa's Constitution also makes way for provision for everyone being able to access *“a toilet or ventilated pit latrine which is safe, reliable, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keep smells to a minimum and prevents the entry of flies and other disease carrying pests”*



While the rate of improving sanitation is still slow in South Africa, about 82% of households recorded in 2017, had access to either flush toilets or ventilated pits. This is a 20% increase since 2002. Of course sanitation also relates to water access.

Why do we have the sanitation system we do?

Our sanitation system was developed by the Dutch colonial settlers, and is based on sanitation systems in Europe - a water rich part of the world. This may not have been the best idea for a water scarce region like South Africa. Think about it – does it really make sense to urinate in 10 -12 litres of drinkable and scarce water and flush it away?

Composting toilets

The compost toilet is one alternative to the water-based sanitation system. If toilet waste is combined with enough dry carbon based materials (for e.g. branches, stems, dried leaves, peels, wood chips, sawdust pellets, shredded brown paper bags, corn stalks, coffee filters, coffee grounds, conifer needles, egg shells, straw, wood ash), the pathogens in the toilet waste (viruses, bacteria, fungi, protozoa and worms) are eliminated and it gets converted to manure. It requires care and space to work well and we should consult those who specialise in permaculture about how to make them. This manure can be used to replenish soils for growing food.

The ventilated Pit latrine (VIP)

Most rural schools in South Africa have Ventilated Pit Latrines (VIP) which work without water. As a result, these schools are indirectly saving hundreds and thousands of litres of water every year. There is a tendency for people to think of VIPs as unhygienic or inferior, but when well-built and managed, there is no reason why they shouldn't be as effective as any water-based toilet. And surely in a water-stressed country like South Africa, VIPs are really the best solution in less dense/rural and arid areas. We need to question what is seen as 'normal', and ask ourselves if it indeed is appropriate depending on the circumstances.

Benefits of improving sanitation

- Reducing the spread of diseases that globally cause suffering for millions;
- Reducing the severity and impact of malnutrition;
- Promoting dignity and boosting safety, particularly among women and girls. Often, schoolgirls miss out on their education because of the lack of clean, private toilets at school. Out of 130 schools, 82% of students said the school facilities were not sufficiently private.

How can we prevent poor sanitation?

- Access to safe drinking water (the management of water from the source to tap). Several major rivers stretch through South Africa, but sewage waste often contaminates its waters. Outdated infrastructure, poor management and lack of resources contribute to the contamination, rendering the water undrinkable and a public health risk.
- Access to improved **sanitation** facilities.
- Hand washing with soap at critical times (e.g. after toilet use and before the preparation of food) to prevent the spread of disease - something we have been reminded of only too well, during the Corona Virus Pandemic.

How do we use water and how can we use it better?

Have you ever measured or assessed your water use?

Isn't it funny that while we all use water EVERY day for so many things, very few of us have any idea of the actual amount we use! Do you?

If we need to think about saving water, it's a good idea to first know how much we use, so we can start to make real efforts to use less. Not only because South Africa is a water stressed country, but it costs a lot of tax money and effort to clean water. And even if YOU aren't paying for your water, somebody else is. There are many better ways for us to spend our tax money! Housing, schools and hospitals spring to mind...



Below are the approximate measurements of water used for various household and personal activities. Based on these estimates, how much do you use?

ACTIVITY	Average Use
washing hands	average use in litres: if tap left running 2l, if not 500ml
flushing toilet	Average toilet 10l
brushing teeth	If tap left running 6-8litres. If cup used 250ml
bathing	50litres if half full 100litres if full
showering	12litres/minute
washing clothes	250 l/per load or 80l handwashing in basins
cooking	3-4 litres/family
drinking (incl. juice/tea etc.)	2-4 litres
washing dishes	15litres per sink

Rural vs Urban?

On average, a learner from a rural school uses approximately 50 litres/day...

... compared with a learner from a city school who uses on average 200 – 250 litres/day! This takes into account 1 load of washing for each learner/week divided by 7 days.

During the Cape Town drought, water was rationed to 50 litres/person per day, but

Secret Water

Water is involved in nearly everything we do, but some uses of water are not as obvious as others. The term 'secret water' is used to refer to the amount of water needed to do or make something. It is also referred to as 'virtual', 'hidden' or 'embedded' water.

Food/Drink	How much secret water? (Litres)
One glass of milk	255
One glass of orange juice	170

1 can of coke	60
1litre of bottled water	8
One apple	70
One potato	25
One tomato	13
1kg of beef	15 000
1kg of chicken	3700
One slice of bread	40
1kg of pasta	1560
One bag of crisps	185
One chocolate bar	1700
Small french fries	1040
1 hamburger	2500
1 serving mixed vegetables	40
Margarita pizza	1260

Consider the amount of secret water in all of these food/drink items. Which foods use more water? Why do you think this is? Did you notice that meat has the most hidden water? By swapping just half of the red meat you eat, for vegetables, you can save 1L per day.

How do you feel about the amount of water used to create a hamburger? Think about how this amount compares to the water a running tap might use (6l/minute). How do you feel about using our very limited water resources for this item?

Average litres of hidden water used in different diets in one day		
15 140 litres	Meat Eaters	People who eat meat, dairy products, eggs, vegetables, fruit and most other foods.
1542 litres	Vegetarians	People who eat vegetables, fruit and plant derived products. They also eat eggs, dairy and honey, but no red meat, poultry and fish.
1136 litres	Vegans	People who eat only food that comes from plants i.e. no animal products whatsoever (no meat, dairy, honey).

Consider some other items we use daily

Item	How much secret water?
	(Litres)
Pair of jeans	10 500
Pair of shoes	8000
1 T-shirt	2500
1 A4 sheet of paper	10
1 cup of coffee	140
1 cup tea	30

Reducing our Water Footprint:

How can we be more water wise?

There is lots we can do to reduce our **direct water footprint** by:

- turning off the tap while brushing your teeth
- using water-saving toilets, or flushing only when necessary
- installing a water-saving shower head
- taking fewer and shorter showers
- only washing your clothes when necessary
- fixing household leaks
- using water tanks and grey water for watering the garden
- not disposing medicines (take back to a pharmacy), paints or other pollutants like oil (<https://rosefoundation.org.za/>) down the sink or toilet.

There is clearly more to using water wisely, than just turning off taps. **Reducing your indirect water footprint is powerful and can make an even bigger difference.** Here are some suggestions of the achievable goals you could work toward:

As demonstrated above, the food we eat makes up a huge part of our personal water footprint, and implementing some of these changes could have knock-on benefits for your health too.

Examples include:

1. **Eating less or no meat.** Beef is the most water-intensive protein, needing 15,000 litres of water per kg. Other, less water-intensive proteins include pulses like beans, lentils and peas. If you're not ready to become vegetarian or vegan just yet, giving up or just cutting back on meat will help.
2. **Eating less processed food.** Water is required at every stage of food production - refining, processing, canning, packaging. Eating fresh food means consuming less water, and unhealthy sugar, salt, preservatives, chemicals and colourants.
3. **Consuming more local produce.** Producing a tank of petrol requires a lot of water, so reducing the amount of miles your food has to cover from farm to plate will also help save water. And you will be supporting local suppliers and farmers.
4. **Grow your own food** – where possible grow some of your own vegetables, even if only one item, as again you will be saving on food miles and packaging. You also won't be using any water intensive and polluting pesticides and herbicides.

Regarding any other manufactured goods, we should consider this:

5. **Buying quality, not quantity:** The production of clothes, uses huge amounts of freshwater. Cotton fabrics and denim jeans are particularly greedy. Buy a few well-made clothes that are intended to last, rather than huge amounts of cheaply-produced items that will need to be replaced shortly after you bought them. The same goes for any other consumer product, as all manufactured products - from electronics to books and cosmetics - consume water in the production process. Buying less will protect the world's water supply and your wallet.
6. **Swap or 2nd Hand:** When you do need more or 'new' clothes, buy second hand or have a clothes swap party!

Step 2: Planning your activities

School water assessment

25% of schools in South Africa are well serviced and include basic infrastructure to enable learning to occur. Learners in the other 75% of schools experience inadequate infrastructure for learning.

How much water does your school need? How much is enough?

- Does your school have a reliable water supply?
- Do you collect rainwater in Jojo tanks?
- Do you have water-wise gardens, that are suitable for the specific area and don't require excess watering?
- Has your school eradicated all water thirsty alien invasive plant species?
- Do you water the garden only during appropriate times, that is before 10:00 and after 16:00?
- Do you regularly check for and fix leaking toilets and taps?
- Do you have a grey-water collection and re-use system?
- Do learners drink under running taps or from cups/water bottles?
- Does your school meet the Education Department's mandated minimum standard of one toilet per 35 learners?
- How many taps and toilets are there?
- How many taps and toilets are broken?
- How many taps and toilets are available to school learners?
- Do girls regularly have access to toilets, sanitary towels and water?
- Do you have tippy taps available? These are not limited to rural schools only, as their water saving potential is high and they offer more opportunities to keep hands clean.

What have you learned from this assessment? What concerns do you think your school can focus on in terms of water?

Check list:

- Do you have an environmental action group you can involve?
- From your assessment do you have some targets? Have these been communicated to the school governing body?

- Have you collected past bills to check water usage?
- Have you identified taps, toilets or pipes which need to be fixed or replaced?
- Are there relevant cross-curricular links between grades and subjects?
- What is your plan?

Step 3: Action implementation

Here are a few actions ideas you should select based on the focus you have chosen above.

Action Project Ideas

Here are a few ideas you can use to better understand and save water:

Learn about your catchment: Organise a visit to your local water treatment plant. Arrange with the local council or water distribution to attend a talk on water distribution in your area (Here is a factsheet on how water is managed by different governments: <https://static1.squarespace.com/static/5a7859a10abd0477ecb31301/t/5f5f0a8688ce6e3f579156e3/1600064170829/EMG+fact+sheet+Government+of+Water.pdf>). Plan lessons on the different water sources – for example, storm water, rainwater, bore water, recycled water and grey water – and the water cycle. Where does it come from? Where is it going?

Reduce your water usage. Using less water reduces the pressure on the environment but it will also save your school money. Here are a few simple ways you can reduce your water usage (remember to link your actions back to what you found in step 2).

Short Term:

- Fix any leaking or broken taps/pipes.
- Make sure taps are turned off when not in use.
- Introduce BAB (Bring-A-Bottle-to-school) i.e. learners bring a bottle to school to re-fill at taps and don't drink water from running taps
- If you have flushing toilets, sand-fill 500ml plastic coke/sprite bottles and place them in the cistern saving 500ml – 1litre/flush depending on how many fit without compromising flushing.
- Set-up a number of tippy taps stands in key areas enable water efficient opportunities to keep hands clean.
- Place containers under taps to collect excess water for use elsewhere.

- Establish grey water reuse/harvesting: Start a “grey-water” Wednesday during the dry season where learners bring 2litres of grey water from home for keeping the gardens /lawns alive during drought/dry periods. Tally this collection and run inter-grade/class competitions to see which class brings the most over a term/month and reward with a civvies day or something similar.
- If you have irrigation systems, set timers to water early in the morning or late afternoon, for a short time only.
- Ensure you are not heating your water unnecessarily e.g. don’t leave urns on all day, store boiled water in thermos and turn-off geysers for certain hours.
- If you have a swimming pool, cover when it’s not in use.

Long Term:

- Install rainwater tanks.
- If you have flush toilets install dual flush toilets which use much less water than older toilets.
- Fit the taps at hand basins with aerators, which will reduce the amount of water flowing out of the tap.
- Install a data logger to record water flow on pipes and consumption on tanks.
- Phase out all alien invasive plant species and replace with water-wise indigenous plants

Collaborate with your community. Advertise your water savings plan in community newspapers and posters. Share your ideas with local businesses and try and form relationships which can be beneficial for everyone involved.

Celebrate the UN Environmental Days.

Plan some school events around these days

World Wetland Day	2 February
World Water Day	22 March
National Water Week	31-1 April
World Ocean Day	8 June
National Clean-up week	September
World Toilet Day	19 November

Focus Area Partners: Who can I contact for help at my school?

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Appendices: Materials for further investigation on the topic:

For more info and in-classroom resources and activities

<http://www.capetown.gov.za/Departments/Water%20and%20Sanitation%20Department> –
Dept of Water and Sanitation, City of Cape Town

<https://www.waterexplorer.org/download-resources> -free action-orientated lesson around
water-related issues

www.water-wise.org.za – Rand Water’s education portal, lots of resources available

<https://www.watercalculator.org/> - to calculate your waterfootprint, bear in mind it is
developed for the US

A fact sheet on water governance in South Africa:

<https://static1.squarespace.com/static/5a7859a10abd0477ecb31301/t/5f5f0a8688ce6e3f579156e3/1600064170829/EMG+fact+sheet+Government+of+Water.pdf>

Media pieces to probe thinking

#WaterCrisis: Bottling water will not stop its waste, AND add to pollution

(letter to the Cape Times January 29, 2018)

In response to Western Cape Premier Helen Zille's plea to SAB Miller about providing bottled water for the crisis (Cape Times, January 23): It is imperative that water users everywhere, not just the drought-stricken Western Cape, realise that using less water is more than simply reducing what we use on a daily basis.

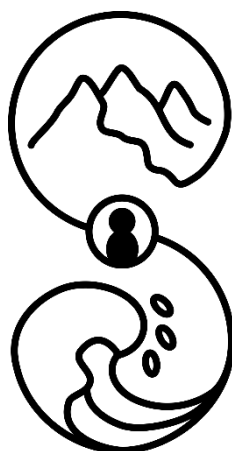
It is about consumption. Ignorance about the hidden water used in the bottled water industry, for example, is bound to hasten the looming disaster, as Zille proposes that SAB bottle 12 million litres of water to help address the water crisis in Cape Town. Ironically, this will waste even more water, as we in effect, will be polluting and using 96 million litres of water in production of the 12 million litres. It takes seven to eight litres to make every litre of bottled water. So essentially eight litres of clean water is wasted through the manufacture of the plastic bottles, and not only that - there is pollution of water in the process. The real solution lies not in bottling but rather in getting people to provide their own storage containers and provide stations for people to fill. The story of the plastic bottle also doesn't end here - most of us are very aware of the problems linked with sea and water pollution, as plastic always ends up in the ocean - the Pacific and Indian Oceans are garbage patches and the impact on marine eco-systems has been well documented and highlighted in

Sanitation school case studies

Source-to-sea; water and global citizenship course report:

Source to home to sea

ONLINE YOUTH ENGAGEMENT PROGRAM EXPLORING WATER AND GLOBAL CITIZENSHIP IN
CAPE TOWN SOUTH AFRICA.



Partners: Share education Centre, Cape Town Environmental Education Trust, Once Ocean Hub, Environmental Learning Research Centre Rhodes University

Introduction

At the time of COVID-19, it is important that we keep the conversation going about our environmental challenges, afterall, our food, water and well-being depend upon a healthy ecosystem.

At this time where our movement, daily activities and interactions have drastically changed, we would like to start a conversation about Cape Town's waterways and coastline and our position in this system. This will take the form of 3 webinars with some reflective home tasks inbetween.

Background

At this time of COVID -19 we, environmental educators in Cape Town, are wondering about innovations that might facilitate conversations with and amongst young people about environmental challenges. Not only is our ecological crisis still an ongoing concern, but it is very much interlinked with the immediate COVID-19 pandemic. We designed this course to explore the parts of the water cycle that intersect with urban space and the ocean. This will have a place-based focus on the city of Cape Town, as a coastal city interconnected with the ocean, economically, socially, spiritually, culturally through its various metabolism flows – an urban-ocean-ecology (Green, 2020). The availability of water is essential for life, health and understanding how we participate in it's journey is part of taking care of it, and taking care of ourselves.

Course concept

The course is focused on the idea of connections- interconnecting social ecological systems are critical concern for environmental educators (Rosenberg, 2004) However, in urban spaces and contemporary modern life these connections can be obscured. The same is true for

water, which connects us to catchments and the ocean as is for plastic which is produced sometimes in far away lands and ends up cluttering our communities.

Through exploring the journey of water, and our connections that are materialised in it, the course explores the notion of the ‘global citizen’ along a number of dimensions – response-ability, collective action, global as local and importantly re-establishing connections with the African continent. The approach is informed by Andreotti’s critical global citizenship grounded in epistemologies of the South (De Sousa Santos).

The course tries to link the source to home to sea journey to individual and collective agency. However, to focus both on the issues that are possible to respond to on an individual basis (for example using home-made eco friendly cleaning substances) and to the issues that are not, for example, removing plastic from the shop shelves.

Taking place on the zoom platform, this course is also exploring dialogue and interaction in that form. Each webinar includes each participant practicing the different functions on the zoom platform invoking a ‘space’ that is interactive and welcoming to all voices. As this medium is new, this will be a significant reflection on the part of educators at the end of the course.

Course aims

- Cultivate sensibilities for socio-ecological systems through a focus on the water system.
- Cultivate dialogical and technical skills for online engagements for **global ecological citizenship** education.
- Explore possibilities and challenges in **online engagement** with young people concerned about their environments in the time of COVID and;
- Encourage thinking about the **intersection of COVID crisis and ecological concerns**.

Structure and content

Contact sessions: (1.5 hours in duration on Friday afternoons)	<u>Home tasks</u>
Opening up the concept of global citizenship: Being, knowing and doing from our place in the journey of water. (14 August)	Complete the google form to confirm attendance
Home to Sea (21 August) : Focus on how homes connect directly and indirectly to the ocean.	Reflective writing task 1 in response to media article

Source to home (4 September) : Focus on how water catchments connect indirectly and directly to the home.	Reflective writing task 2 in response to media article
Closing, presentation of PA tasks and certificates. (11 September)	Practical / digital action: • Tracing plastic journeys – analysing plastic objects after a clean up and exploring the journey that one object travelled. 10. OR Histories and herstories of plastic – interview with an elder.

Webinars

Webinar 1: Being, know and doing global citizenship

(Run by Anna James from Environmental Learning research Centre, One Ocean Hub).

This webinar presents a series of slides opening up ideas that can be used to co-define global citizenship.

Webinar 2: Home to sea

(Run by the Shark Education Centre)

This webinar focuses on the direct and indirect ways in which we impact the ocean from our homes. It ends with a pledge to a small action that speaks to reducing the impact on this connection.

Webinar 3: Source to home

(Run by the Cape Town Environmental Education Trust)

This webinar focuses on the direct and indirect ways in which we impact our water resource before it arrives at our house. It engages the water-use calculator thinking a bit about how food stuffs and activities affect the total amount of water we use.

Tasks

Task 1:

Read the following article:

<https://www.dailymaverick.co.za/article/2020-04-29-beaches-at-risk-report-reveals-alarming-pollution-along-cape-towns-coast/>

or

1. What is your earliest memory of the ocean?
2. Do you and your family visit the beach? If so, which beach do you visit?
3. What was it like reading the article? Were there any words that you did not understand?
4. What do you take away from reading this article?
5. What questions do you sit with after reading this article?
6. What is the strongest feeling you have after reading this article?
7. Below is a short section from the article:

The report does note that the “discrete spikes in bacteria counts” at Simonstown’s Long Beach, which has also failed water quality guidelines for five years running and is the site of a sewage pump station, are “are almost certainly linked to sewer pump station failure and overflow, and, possibly, effluent from the wastewater treatment works discharging under certain ocean conditions”.

What does this short section tell you about how our city is **connected** to the ocean?

Educator note on Task 1: *At the completion of task 1, we will look over the responses to these questions and think about how they can inform the following tasks.*

Task 2: What is a global citizen?

1. Have you heard of these people before now?
 - Wangari Mathaai? yes: _____ no: _____
 - Ayakha Melithafa? yes: _____ no: _____
 - Greta Thunberg? yes: _____ no: _____
 - Aeshninna Azzahra? yes: _____ no: _____
 - William Kamkwamba? yes: _____ no: _____
2. **Do some investigating:**
 - a. Where do each of these people live?
 - b. What do they have in common?
3. What do you think a global citizen does?
4. What do they need in order to do this?
5. Do you see yourself as a global citizen?
6. What can a global citizen do in response to the pollution in the Cape Town ocean?

Task 3: Global citizenship action in digital space

It's time to craft a global citizenship action towards taking this conversation further. Select one of the three options below.

- Speak to your grandmother/grandfather or elder in your community about this issue; record the interview and write about what you learned. Record what you have written and make it into a **short audio essay**.
- Draw a map **using google maps** of how your house connects to the ocean through urban waterways. Include photographs of sites in your neighbourhood that link to the ocean (drain on the pavement, a canal). Add notes about the different ecosystems that link your house to the ocean.
- Make an **infographic** that can be shared on whatsapp about composting toilets as an alternative to water based sewerage works. Before you do this, speak to people in your community and ask them what they think about this idea.

Task 2 educator note: we can make a plan to mentor these projects over a space of time and they could be peer assessed...?