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Namibian secondary-level school learners' lived experiences of Physical Geography

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Abstract

In Namibian schools, structured and organised outdoor learning opportunities are not accessible to everyone or equally distributed. All Namibian learners do, however, have access to lived experiences outside of school and are exposed to different everyday environments. Learners' lived experiences are not always recognised by teachers as a potential and relevant geographical resource for teaching and learning. The aim of this research was to analyse the reported geographical lived experiences of secondary school learners from Namibia to establish the role of their lived experiences in the acquisition of geographical consciousness. In total, 28 Grade 11 learners from five Namibian government secondary schools in Otavi, Rundu, Keetmanshoop, Walvis Bay and Windhoek were involved in the research. Attention was paid to whether and how exposure to lived experiences led to the visualisation and awareness of geographical place, space, concepts, and processes. The findings revealed that each participant's lived experiences and the interpretations of their lived experiences are unique.

Keywords: Geography education; everyday Geography; lived experiences; interpretative phenomenological analysis



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Introduction

Teachers in Namibian government schools are confronted with a paucity of resources, such as textbooks and funds, and teachers are expected to teach content-rich subjects, in particular Geography, with limited media and teaching aids (Anyolo et al., 2018). Fieldwork or outdoor learning (e.g., Holton, 2017; Hope, 2009; Raath & Golightly, 2017) are essential proactive components in Geography education, however the limitation is that such beneficial and planned fieldwork opportunities are not accessible to all learners nor equally distributed among and evenly within Namibian schools (Sitali-Mubanga et al., 2018). Whereas some Namibian schools do offer educational tours and field trips, these are usually dependent on whether the parents of the children and/or the school can afford the excursions. This often creates significant discrepancies between school learners in the same school because of the restrictions on learning opportunities of children from low socio-economic backgrounds. Further, it can be dependent on the teacher's own fieldwork skills and knowledge (Anyolo et al., 2018). Simasiku (2012) argues that Geography teachers in

Namibian secondary schools do not necessarily have the required skills and knowledge to use fieldwork as an enquiry-based teaching method. Kasanda et al. (2005) make the case that most teachers in Namibia use traditional teaching and learning strategies while resisting learner-centred approaches, thereby making their learners passive listeners. Fieldwork, according to Simasiku (2012), is not explicitly stipulated in the government's environmental education policy document nor in the Senior Secondary School Geography curriculum. The inevitable result is teachers being reluctant to teach fieldwork skills (Simasiku, 2012).

Namibian learners do, however, have access to a diversity of lived experiences outside of school as they engage with everyday environments and contexts. Unfortunately, in-depth research investigating the value and contribution of non-formal learning opportunities such as lived experiences are often neglected (Attwell, 2007; Duman & Karakas-Ozur, 2020; James & Williams, 2017). However, based on the researcher's observations and experiences, everyday lived experiences are often assumed, taken for granted or not considered as worthwhile

geographical resources for teaching and learning in Geography classrooms.

This research investigated learners' geographical consciousness from the perspective of lived experiences with a focus on the potential geographical awareness, knowledge, skills, values, and attitudes to be gained from them. The research interest centred on the nature, context, and content of the lived experiences (occurrences, phenomena, concepts and processes) and the meanings extracted from them that are relevant to Geography.

Literature Review

Understanding lived experience

A prerequisite for exploring the meaning of lived experience as understood and used in this research, is the essential relationship between sense modalities, varieties of experiences and consciousness. Individuals' consciousness of phenomena in their daily lives rely on their sensory encounters (Bayne et al., 2020). A personal event or a lived experience consists of specific content and/or a variety of experiences which depend on the sensory encounters

with, and consciousness of, phenomena. When a person experiences an environment, the individual's body encounters it through smell, touch, hearing, sight, and taste (Franco et al., 2017). Due to these sensory modalities, consciousness involves qualities such as colours, textures, shapes and location in space and time (Marvan & Havlík, 2021; Seager, 2016). This concurs with the explanation by Chalmers (1996) that a mental state is conscious when it has a qualitative feel. These qualitative feels are known as 'qualia', that is the subjective qualities of imagery and perception that are said to be the most puzzling aspects of human experience (Kanai & Tsuchiya, 2012).

Lived experiences can range from daily experiences described in phenomenology as the 'natural attitude' that require little reflection, to 'phenomenological attitude' where reflection takes place on both how something is experienced and the meaning of those lived experiences (Zahavi, 2021). It is common, according to Eatough & Smith (2008: 181), for researchers to use the term 'lived experience' to describe the "embodied, socio-culturally and historically situated person who

inhabits an intentionally interpreted and meaningfully lived world.” For memories of a lived experience to be fully retrieved, an individual has to draw upon the context of the experience in totality, remembering all its social, personal, and physical facets (Falk & Dierking, 1997). This means that all lived experiences are interpreted and channelled through subjective filters and personal constructs (Perrotta, 2019).

Geography education in Namibia

Until the end of 2018 school Geography in Namibian schools was a compulsory subject in government schools from Grade 8 to Grade 10, but according to the new National Curriculum for Basic Education learners are expected to take three promotional core subjects, three promotional elective subjects and four support subjects in Grades 10 and 11 (Ministry of Education, Arts and Culture, 2016). Senior Secondary School Geography forms part of the subject areas: natural sciences and social sciences. After Grade 11 learners can select three to five promotional elective subjects and two support subjects. Geography is one of the subjects that can be selected as a

promotional or support subject.

Positionality of the researcher

This paper forms an integral component of a PhD thesis. This research was mainly inspired by the researcher’s experiences as a Namibian citizen attending primary and secondary school in Namibia (1999 to 2008) and teaching experiences as a Geography teacher in a government school in Namibia (2016). Like the learner participants in this study, the researcher once found herself, 12 years ago, sitting in the Grade 11 Geography classroom. Because of her personal and professional history, she is closely familiar with the Namibian schooling system, the operability of the Ministry of Education and the Namibian syllabi. The researcher also felt that she will best understand and relate to the individual experiences of secondary school learners in Namibia because of her familiarity with the country itself, the people, the different traditions, the slang, and jargon used as well as her own experiences as a child growing up in Namibia. Conducting research in Namibian schools is therefore a personal preference because of the researcher’s

connection with and understanding of the Namibian context. The researcher believes that her positionality makes a significant contribution to understanding how Namibian school learners perceive the world around them and how they are understood by others.

Research approach and design

This research is positioned in a constructivist - interpretivist research paradigm. Due to its constructivist nature, this research is grounded in a relativist ontology and a subjectivist epistemology with methodological procedures routed in naturalism. In the constructivist - interpretivist paradigm reality is not fixed and an environment is experienced differently by each person in that environment (Costantino, 2008; Levey et al., 2020; Reiners, 2012). Reality is therefore regarded to be highly subjective, and it differs from person to person. Reality is individually constructed, depending on how it has been mediated by an individual's senses. This research considers reality to be highly context dependent and complex, with a great likelihood of multiple and differing perspectives existing among the participants. The environment(s) and

situational contexts in which the participants are located, and function are deemed vital in the construction of their lived experiences and identities.

The philosophy of phenomenology relates to the constructivist paradigm. Phenomenology was selected for this research so that (1) the phenomena as experienced by participants can be described and (2) the phenomena as experienced by participants can be interpreted. To reveal the thematic aspects of lived experiences both Husserl's and Heidegger's phenomenological approaches were used (Ali & Abushaikha, 2019; Dieumegard et al., 2021; Neubauer et al., 2019; Urban & Schortman, 2019). To achieve this, interpretative phenomenological analysis (IPA) was selected. Pietkiewicz & Smith (2014: 8) explain IPA as follows: "... a method which is descriptive because it is concerned with how things appear and letting things speak for themselves, and interpretative because it recognises there is no such thing as an uninterpreted phenomenon." IPA's main purpose is to uncover and illuminate individual subjective experience (Eatough & Smith 2008). IPA studies also explore matters that demand reflection and (re)interpretation for the individuals

concerned (Eatough & Smith 2008).

Selection of research sites and participants

The aim of the research was to analyse the reported geographical lived experiences of selected secondary school learners in four Namibian towns and one city to establish the role of their lived experiences in the acquisition of geographical consciousness. One state school was selected in each of the four towns (Otavi, Rundu, Keetmanshoop and Walvis Bay) and one city (Windhoek). The purposive characteristics were that the schools had to be located in a range of contexts (rural and urban), in relatively close proximity to certain geographical features or landmarks, spread out across Namibia and the schools had to offer Geography as a school subject up to Grade 12. Four to six Grade 11 Geography learners per school could indicate their willingness to participate in the study. In total, 28 school learners participated in the research. Grade 11 Geography learners were selected because it is assumed they are well acquainted with the subject Geography and have had geographical experiences. Their ages ranged between 16 years of age and 18

years of age with one participant being 21 years of age.

Data collection methods and procedures

The research findings expressed in this paper are based on the data of both the individual interviews and participatory drawings. First open-ended, in-depth, and semi-structured individual interviews with an informal format were used to capture the learners' past experiences relevant to Geography. Open-ended interviews grant participants the opportunity to fully describe their experiences. A pilot test was undertaken to determine the feasibility and practicality of conducting interviews with learners using an interview schedule. The interview questions and probes were tested in an interview with a female Grade 11 Geography learner after obtaining the necessary parental consent. The pilot interview led to a number of amendments being made. The main change was to increase the duration of each interview from one session of 30 to 40 minutes to two sessions of 25 to 30 minutes each per participant. This was needed to give ample time for reflection on the lived experiences. The age of the

participants also had to be considered because of the shorter concentration spans of minors and the probability of one long continuous interview session being too tedious. The phrasing of questions of the questions was also considered, for example, the pilot test participant found it difficult to answer questions that included a 'feel' aspect. Consequently, a question like 'How do you feel about the city/town/village where you live?' was complemented and clarified by questions such as 'Do you like the city/town/village where you live? Why? Why not?' and 'What makes the city/town/village different?' were included to provide clarification. The pilot test confirmed that the interview questions and the types of questions sufficiently and effectively addressed the intended aim and objectives of the research and that the increased time allowed deeper reflection.

Second, participants were invited to partake in a drawing activity. The drawing activities complement the individual interviews. By drawing a picture, participants were afforded the opportunity to repeat what they had explained during the individual interview and/or to draw and share new or different lived experiences. The learners were asked to draw a response

to the statement that "Geography is all around me.' Draw a picture illustrating your own experience(s) with this statement." This was the only instruction given. They were encouraged to draw their own interpretations of the statement and not those of the researcher or anyone else. After each participant had completed their drawing, the researcher asked them to 'describe their pictures' by guiding them through a process of interpretation. Each element in the drawing was interpreted first and then the drawing as a whole.

Data analysis

The interview data were analysed based on the recommendations made by Pietkiewicz & Smith (2014), Smith & Osborn (2008) and Colaizzi (1978) on how to approach an IPA. The first step was to make notes. It was important to grasp the participant's lived experiences, to make meaning as a whole and to gain a holistic perspective on the 'who', 'what' and 'how' reflected in the interviews. The second step was to use the detailed and comprehensive notes made in the first step and to transform them into emerging themes. The third step was

to cluster the emerging themes into subordinate and superordinate themes.

In the analysis of the drawings, the focus was placed on what was produced in the drawing (contents) rather than how it was produced (artistic quality). The participants' own accounts of their lived experiences (verbal descriptions of what they had drawn) were the primary objects, the researcher's interpretations thereof remaining secondary. To further systematise and interpret the drawings, Boden & Eatough's (2014) hermeneutic phenomenological

framework for the analysis of the drawings was used. The framework is set out in Table 1. Detailed commentary was given on each of the drawings, resulting in an explicit exploration of each element of the framework.

Ethical considerations

Before the research commenced, the research was subjected to an ethical clearance process. Clearance was obtained from the University of South Africa CAES Health Research Ethics Committee, and permission was

Table 1: Framework for analysing the participants' drawings

1. **Contents:** Describe each of the distinct elements of the drawing. Is there a relationship between the elements drawn?
2. **Composition:** How are the elements spatially laid out on the page? Are they sparse or dense, are there areas of blank page, do the elements overlap? Is there a sense of repetition, 'rhyme' or pattern?
3. **Balance:** How do elements interplay? Is there a sense of equilibrium or disequilibrium? Is there symmetry or pattern?
4. **Geometry:** What shapes are used? How do these interplay?
5. **Texture:** What are the textural characteristics of each element?
6. **Colour:** How have hue (colour), saturation (vividness) and value (lightness/darkness) been used?
7. **Depth and Perspective:** What spatial depth and perspective have been created through space and colour?
8. **Temporality and Dynamism:** Is there a sense of rhythm or movement? Does the drawing suggest a snapshot, continuity, or duration? One environment/context or multiple environments/contexts?
9. **Focus:** What is the visual focus of the drawing? What is your eye drawn to?

10. **Expressive content and Empathic reaction:** What is the emotional tone of the drawing? What feelings does the viewer have in response (bodily, emotional, memories, images)?
11. **Signs and Symbolism:** Are there any overt symbols or cultural references included?
12. **Style:** Does the image 'shout' or is it 'quiet', or something in between? Does the drawing seem to imitate or reflect a particular trend or style, e.g., cartoonish, childlike, modern, romantic, pop art, etc?
13. **Text:** Has any text been included, for example a title? Where has this been placed? In what way has it been included? What style, font, capitalisation, etc. are used?
14. **Distraction and Noise:** Do any elements draw your attention away from the main focus? Is there a sense of confusion or clarity in the drawing?

Source: adapted from Boden & Eatough (2014)

granted from the Permanent Secretary of the Ministry of Education, Arts and Culture of Namibia. This letter of approval was presented to the Regional Directors of Education of each study region (Erongo Region, Otjozondjupa Region, Khomas Region, //Karas Region and Kavango-East Region) in which the schools are located. Letters granting permission by the Regional Directors of Education were presented to the school principals at the respective schools. Parents or legal guardians provided consent by signing an informed consent agreement. All the learners participating were informed as to the nature of the research, that participation was voluntary and that they could withdraw at any stage. This study used pseudonyms in the place of participants' names, thereby giving the participants added confidentiality and

protection.

Findings

The analyses of the interviews and drawings repeatedly identified four Physical Geography phenomena, namely dunes, rivers, weathering and erosion, and elements of weather. The naming and classification of these phenomena were derived from the topics stipulated in the Namibian Senior Secondary School Geography Curriculum.

Dunes

Of all the participants, the Walvis Bay participants made the most references to dunes. In her interview Christel indicated that she feels that having seen the dunes she better understands the different types of dunes that had

been dealt with in the Geography classroom. At first, 'dunes were dunes' and 'all dunes looked the same' but since living in Walvis Bay she can look around and identify the different types of dunes in her surroundings. Jeremy noticed how dunes change and recognised the different types of dunes when driving in a 4x4 vehicle with his cousin. Box 1 further showcases some of the participants' experiences with dunes. All the Walvis Bay participants mentioned dunes and/or dune formation during their interviews. Anita, for example, explained that she frequently visits her aunt who lives at the 'back' of Narraville very close to the dunes and that she has climbed Dune 7 a 'million times.' Chanel admits that the location of Walvis Bay and the fact that they are surrounded by dunes, make it easier to understand that various types of dunes. Dunes featured in four of the five Walvis Bay participants' drawings (e.g., Figures 1 and 2), Jeremy's being the exception, suggesting that Walvis Bay participants have many and frequent experiences with dunes due to the proximity of the dunes to Walvis Bay. However, participants from other research sites also make references to dunes (e.g., Philip, Keetmanshoop and Emma, Otavi) (Box 1). These

participants have experienced dunes sporadically and their descriptions are of a more general nature. Their experiences with dunes are predominantly dependent on their vacation visits and field trip opportunities.

Dunes as a landform evidently grabbed the attention of all the participants that have been exposed to them. Dunes, such as Dune 7, are identified by participants as prominent landmarks in the Namibian landscape. In some drawings, dunes are emphasised as a key element while in others they are part of the natural environment. According to their descriptions, the participants appear to be very aware of the characteristics of dunes and/or the different types of dunes found in Namibia. They refer to barchan dunes (Wilmien, Keetmanshoop), star dunes (Christel, Walvis Bay) and longitudinal dunes (Ben, Rundu) (reconstructed lived experience). Some participants (e.g., Philip) associate Namibia with the Namib Desert and dunes. These desert features apparently contribute to the participants' sense of place (Ann, Keetmanshoop) and they have been identified by participants as a crucial part of the identity and image of Namibia. The contribution dunes

Box 1 Experiences of dunes

The sand dunes, you find that side of Swakopmund is just amazing that wind blowing, and coming to drop particles of sand on a specific place can actually form a dune as high as, or even higher than a building. (Emma, Otavi)

And that's like suspension when small, small particles like dust are eroded, they are blown by the wind and then they hit you, you just feel it that then I used to remember like oh, so that's what's happening in the desert for it to form a sand dune or maybe a crescent dune, just like that. I can imagine now, I like, even a longitudinal dune like I can just bring my hands on a sand then I can just bring them together; I can see it is a longitudinal. (Ben, Rundu)

Like in Walvis Bay, the dunes, the dunes just stay on one place, or, just next to it, it is clean. Like I said, I understand now that the wind does not blow from one side but also from the other side. This prevents the dune from moving (Ann, Keetmanshoop)

So like in Luderitz - I've been in Luderitz for a long time. So when you see the environment everyday you see it shifting you can see how the dunes are shaped, how the winds actually shapes it, how the amount of sand that which - it influences their shape, their size and a lot of factors. (Philip, Keetmanshoop)

We usually have family dinners and then we go to the beach and then we go to the dunes. We go for 4x4 driving on the dunes and fish as well. (Melanie, Windhoek)

Because we live in Walvis Bay, I can easily go to Dune 7. I already climbed Dune 7 like a million times so it is relatable because most of the stuff that we are doing is geography is around us. (Anita, Walvis Bay)

The different types of dunes because we live in a town surrounded by dunes. You get different types of dunes. I see it around me and the geography teacher told us that we should go and look if we can see the different types of dunes and try to classify them so that we can remember them more easily. (Chanel, Walvis Bay)

make to Namibia's identity is illustrated in Ann's drawing (Figure 3). She perceived 'Geography is all around me' from the perspective of a dune. When she thinks about Geography then the Namibian context comes to

mind, which is according to her, best illustrated with a dune. Participants' perspectives, including Ann's, are particularly relevant in the national context of Namibia, a country well-known for boasting the highest dunes

Figure 1: Anita's drawing**Figure 2: Chanel's drawing**

in the world (Government of the Republic of Namibia, 2020).

To conclude, dunes, as a concept in Physical Geography, have been experienced first-hand by all the participants from Walvis Bay and by some participants from Windhoek, Keetmanshoop and Otavi, but not by

any participants from Rundu. When participants describe their lived experiences relating to dunes, they deal not only with the types of dunes but with information about the formation of dunes themselves. Hence, their descriptions refer to the height of dunes, how the wind shapes

Figure 3: Ann's drawing

and changes a dune, how sand particles are transported during the construction or reshaping of a dune and how dunes are used for recreational and tourism purposes. A clear distinction can be made between the lived experiences of Walvis Bay participants and the other participants regarding dunes. The main determining factor appears to be participants' access and exposure to dunes, with Rundu participants having very limited lived experiences of dunes.

Rivers

Rundu is situated in north-eastern Namibia, next to the Okavango River and Angolan border. For this reason, a few Rundu participants' experiences of

rivers are explored first, followed by the attention to the experiences of participants from the other research settings. These experiences are presented in Box 2. Riana, and Timothy, indicated that they spend much time at the Okavango River swimming and doing washing. This highlights the material aspect of rivers. For these two learners the Okavango River has great significance as it serves as a source of water to support their daily activities, such as ensuring good personal hygiene.

Riana has been on a Grade 11 Geography field trip to Kasote that she experienced to be highly educational and sparked great enthusiasm and interest in her because, according to her, 'river processes is [sic] the best'. She had previously never seen erosion

of a cliff but during the field trip she came to realise that the things being taught in the Geography classroom are indeed 'real'. Timothy indicated that he frequently walks along a footpath that runs parallel to the Okavango River, and therefore sees a river every day as he walks to and from school. He experiences how the river water influences temperatures close to the river and how the river meanders (Box

2). Timothy points out that he deliberately spends time at the river to observe what is being taught in the Geography classroom with regards to river processes as the observations aid his understanding.

Amanda explained that, during summer, she usually spends plenty of time at Rundu Beach (situated alongside the Okavango River). She is proud of Rundu having its 'own' well-

Box 2 Experiences at a river

And people even in flooding time they go and just to wash in the river, having a bath. Some they even fish and some they use nets to fish but it is not safe. There are crocodiles in the Kavango river. (Miles, Otavi)

How the river meanders. I have seen it so at least I have an idea of how the river meanders, I have a practical idea. (Martha, Rundu)

The things is like if you, there are some rocks, if you go in the river now, you'll find out there's some rocks that are big and some are small. You ask yourself now, what's really causing these to be small and some bigger? Maybe it's when there're being carried by the river there're hitting each other and that makes them to break. Or if you go there to the riverbank you'll see that somewhere on the river banks it's like eaten away. Those rocks there are eaten away. (James, Rundu)

It's like I really like – whenever I come to school I pass the river way each and every day in the mornings. So when I come I just feel like that – the cooling of the river and I used to see the meander – because my teacher teach me meander, and that's the way it really is, I used to see it so I observe like nature, the way the river flow. Sometimes I used to go there and I just sit down and watch what we are being taught, like the beach processes and transportation of materials... (Timothy, Rundu)

Once our teacher told us that during summer, the water in the river, usually – it's colder – and then it gets heated, but the land usually gets hot during the day – but during the night the water gets hot and the land gets cold. That's the reason why the people go to the beaches

during summer. Because I also tried it out. Like I went to the river, during daytime, and then around 4, I went to the river to see if it's really true. And then when I got to the water, it was warm. (Amanda, Rundu)

I have just been there to swim or to... Just all that stuff, to wash; sometimes, to wash stuff. (Riana, Rundu)

And, what really helped me to understand geography is the day that we went to Kasote and the river was there. It was really wonderful that things that I was told in class were not just spoken but, I could see it physically. And that really; seeing things really makes me understand much better. Not just talking, talking, talking. It really helps when you see things because you achieve it, not just reading, reading what you have never seen, a cliff or something, and the waves hitting the base of the cliff. I have never seen erosion on a cliff, and the day that I saw it, it was educational. It was fun. And, I really believe that these things are really happening, not just being taught in class. You just imagined the river... You could just imagine the river and think it is the cause of something; but, the things that are happening at the river and the sea are all the same. (Riana, Rundu)

And then I was remembering when we were young, when our parents told us to go and play. We lived next to this big river in the village. And then we would actually dig holes. We dug holes so deep, the underground water started – the water came up. And we actually never knew why the water is coming up. We would actually dig so deep that sometimes we actually found frogs in the ground, and the water came up. (Owen, Windhoek)

known river. Amanda used her experiences and time (Box 2) at the Okavango River to note the change in water temperatures during different times of the day to understand land and sea breezes along the coast and voiced her concern with regards to river and soil pollution.

James, on the other hand, provides elaborate descriptions of river erosion processes that he has seen and experienced, both at the Okavango River and in rivers in Angola when he

visited his father. James relates that he has made detailed observations in the past about rivers, such as how riverbanks and beds erode and how the size of rocks in a river system differ. He has also witnessed how rivers are used for fishing purposes (Figure 4). A man fishing in the river and cattle grazing along the river indicate James' experience with the utilisation of natural resources to sustain people's livelihoods and for everyday survival.

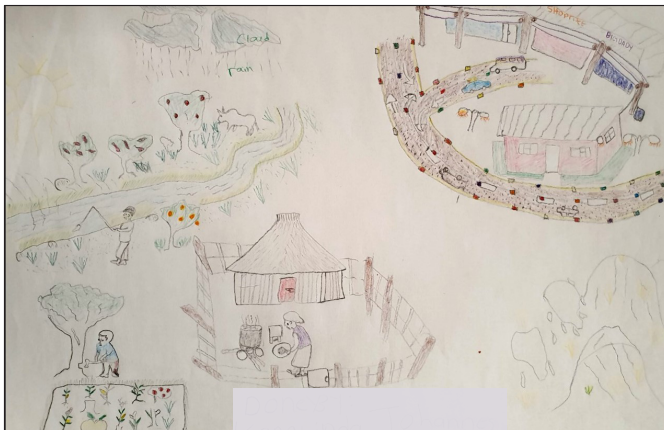
Owing to the proximity of the Okavango River to Rundu, river environments form an integral part of Rundu participants' daily lives, being located close to their home environments. This means that they have frequent (if not daily) contact with the river as they walk to school, spend time at the river to socialise or to access water. These frequent interactions provide opportunities to make observations and to experience a flowing river first-hand. As with those participants experiencing a farming environment, living close to, and reliance, on the river very likely influence how they perceive rivers.

None of the Walvis Bay participants referred to rivers, whilst participants from the other three research sites related experiences of

rivers. Miles, who is originally from Rundu but currently resides in Otavi, refers to his past experiences of the Okavango River, in full flood and he has observed how people use the river for domestic purposes such as bathing and washing clothes. Despite the potential danger of crocodiles and hippopotami in the river. Lizl, from Keetmanshoop, mentions that she and her friends sometimes play in the water of a non-perennial river close to the school when the river is in flood. She refers to the Fish River which she has visited. Windhoek participants, Kristen and Matthew, explain that driving past the Orange River, enroute to visiting family in Springbok, helps them to understand river meandering and to visualise how rivers flow.

Participants' experiences with

Figure 4: James' drawing



rivers are evidently dependent on their local contexts and their access to travelling opportunities to places close to perennial rivers. The Rundu participants draw attention to their observations made about and their experiences at rivers, particularly the Okavango River, which runs through Rundu. While some participants highlight the characteristics of rivers, such as how rivers meander, how water flows in a river system or how river water temperatures differ, others concentrate on erosion processes and transportation processes such as hydraulic action, attrition and abrasion which change the shape of rivers. These processes are not foreign to them because they are taught as part of the Namibian Senior Secondary School Geography Curriculum.

Furthermore, some of the descriptions of rivers address their use and pollution. It is apparent that for non-Rundu participants, rivers (in particular perennial rivers) are a geographical feature that they often see from a distance rather than something they experience close at home from nearby as the Runduans do. The non-Runduans provide short descriptions of sporadic encounters with rivers, with focus on the

appearance and (visual) characteristics of rivers.

Weathering and erosion

The processes of weathering and erosion loomed and are prevalent through the analyses of the interviews and drawings of the participants from all five research sites, clearly placing emphasis on their importance in lived experiences (Box 3). As with dunes and rivers there is an apparent direct relationship between access and exposure to environments and the participants' experiences of weathering and erosion. The following three examples testify of this:

1. Riana from Rundu indicates that she understands weathering and erosion better after she has seen erosion of a 'cliff' during the Geography field trip to Kasote close to Rundu.
2. Seeing different rocks and how weathering has changed some of the rocks at the Brandberg gives Anita from Walvis Bay a new understanding of this geographical process.
3. Jeremy and Christel from Walvis Bay explain that they understand weathering, more specifically

exfoliation, better after their realisation that 'Hangklip' (also known as Vogelfederberg and situated outside of Walvis Bay) was formed through exfoliation. Some participants are able to extend this understanding to the role of humans, human impact and environmental management on the natural environment and contribute to and accelerate weathering and erosion.

Humans' contributions to soil erosion are identified by Wilmien who has seen how motorists drive 4x4 vehicles on the beaches at Swakopmund and Lüderitz. The movement of the vehicles, according to her, leads to an apparent displacement of sea sand. When making sense of, and attempting to understand, weathering and erosion, it is common practice for the participants to rely on

Box 3 Experiences of weathering and erosion

Actually, we see this even in our street because when the rain is very heavy, sometimes we experience heavy rain in Otavi. The water doesn't infiltrate in the soil and then it actually just runs off, but as it's going it's going with the soil particles on top. So, now, it's weathered away and you can see, and not weathered away but erosion. Then you see the soil is deposited somewhere different. Then there's no soil. There're only rocks left. Sometimes we also see weathering because when you are walking from school to home you realise that there are holes in the rocks or even on the tarred road. It's not always about the vehicles but sometimes it's the erosion because as the water is going deeper, some water contains these gases from the atmosphere, which causes this acidic stuff and then the rock weathers away. (John, Otavi)

Like, I imagine myself as I walk from home to town, like you will find an area with grass and all that, and when I pass through a park I notice that I am also contributing to the erosion. My feet, or my sandals that I am wearing, are also eating up the grass. So, that is what I observe as I walk somewhere. (Riana, Rundu)

The things is like if you, there are some rocks, if you go in the river now, you'll find out there's some rocks that are big and some are small. You ask yourself now, what's really causing these to be small and some bigger? Maybe it's when there're being carried by the river there're hitting each other and that makes them to break. Or if you go there to the river bank you'll see that somewhere on the river banks it's like eaten away. Those rocks there are eaten away." (James, Rundu)

The wind process, because when it's blowing, when the wind is blowing it forms like a crescent

dune like when we kids play, when we play on the ground we just make like, when the wind is blowing you stand, you don't run in the house and you just stand, you will feel like the sand been hitting you. And that's like suspension when small, small particles like dust are eroded, they are blown by the wind and then they hit you, you just feel it that then I used to remember like oh, so that's what's happening in the desert for it to form a sand dune or maybe a crescent dune, just like that. (Ben, Rundu)

There are small heaps of sand that have been scraped together by a tractor. Every time when we come back, from vacation or something like that, then the heap looks shorter or smaller. That is erosion, then, so we have talked about erosion in class, then I understand, oh that is what happened to the heap of sand and that is what happens in Walvis Bay. (Ann, Keetmanshoop)

In front of the church the ground is uneven. When the water runs then you can see where the water ran, the track of the water and the normal ground differs. (Lizl, Keetmanshoop)

The cars, on the, they drive on the beach. So they move the sand away and that causes erosion along the coast and on the beach. (Wilmien, Keetmanshoop)

There is some few things that in geography we have talked about before and then I would see maybe at home, like soil erosion and that things. And why some of the trees are growing like at a slanted angle and...I never used to understand why the sand would like slowly be moving down until the teacher explained it. The soil erosion well, there in my location there are areas where it's just bush, and then there would be some certain areas where you could see the soil has been eroded and then some streams or rivers would form there. Sometimes because of rain water, sometimes because of people's domestic water. (Kristen, Windhoek)

reconstructed lived experiences. Analysis of the quotes in Box 3 shows how some participants reconstruct and extrapolate lived experiences to imagine how a geographical concept might be like in real life. Some participants (e.g., Ben and Lizl) exhibit the ability to extrapolate everyday occurrences, using smaller-scale instances of a phenomenon, to visualise the possible influences can be

to aid their understanding of the two processes. One can argue that in cases where participants have a limited environmental range or have not been exposed to weathering and erosion at a large(r) scale (as often depicted in Geography textbooks and as experienced by the participants in the three examples), participants tend to refer to smaller-scale instances of weathering and erosion in their

everyday lives. Pertinent examples of this are weathering and erosion taking place on a tarred road (John), erosion caused by walking and the walker's shoes (Riana), the effect of discarding domestic water on soil (Kristen) and the impact of the wind on human-made features such as municipal sand heaps (Ann).

Experiencing weathering and erosion appears to be different to experiencing dunes and rivers as weathering and erosion, as geographical concepts, are more accessible to the participants, making it easier to imagine them and make deductions. Weathering and erosion are not as confined spatially to geographical locations as are dunes and rivers. These examples (Box 3)

demonstrate geographical thinking where the participants consider both the natural environment and humans. A final thought is that for participants (John and James) living in areas of high(er) rainfall, their references to erosion and weathering are associated with moving water, whereas others (Ann and Wilmien) referred to the influence of wind and humans in drier areas.

Elements of weather

Box 4 contains illustrative examples of participants' experiences of different elements of weather (e.g., temperature, precipitation, atmospheric pressure etc.) and their consequences on people and

Box 4 Experiences with elements of weather and their consequences

I've also seen the formation of clouds on the mountains. We have a mountain close to here. That mountain is the main place from where we receive our rain. Sometimes we'd see, you'd think that the clouds are on the mountain but actually there're not there. Then I would just think of what Ms xxx used to say in the class. It's because the side of the mountain is heating up faster during the day and then all of this causes the rain in Otavi. (John, Otavi)

I've experienced and I've seen orographic relief rainfall with my own eyes. That side of the Otavi Mountains. That was my first experience. (Joseph, Otavi)

And the town side is above the location. The location is below; on the low slopes. That's why we experience warmer. It's warmer during the winter times. It's warmer in the town and colder on the location. (Joseph, Otavi)

Weather changes, like for instance now that we have the seasons, you basically learn that during summer the sun rises straight up, and then during winter it moves, let me say at an angle or something like that. And rainy seasons during summer, rain also depends on the temperature and the humidity we have in the atmosphere, and the heat. So when the sun is actually at an angle, we don't receive much heat, and then now the clouds won't be able to be formed. But then when it is straight ahead there is more heat, which not evaporates water into the atmosphere from the clouds. (Emma, Otavi)

The place [Otavi] is good but the problem is like dusty and too much cold, I never used to this cold. (Miles, Otavi)

Okay, so I've noticed that like in the past 10 years there's been a drastic change in the natural environment. It's like a lot drier now. It hasn't been raining as much, so I guess grass is also like, really getting low at farms. And then cattle, there's a lot of cattle on the road. And also when we travel, I see that people are cutting down grass, probably for their farms and for their animals. So, and then the cattle's also not very in a good state, that I've seen on the road – all the sheep and cattle. (Matthew, Windhoek)

So I've learned to use less water, appreciate the water, because what we've learned, in other countries, there isn't as clean water as what we have here... And that I've also learned through what has happening in South Africa – Day Zero – so. Since we visit there so frequently, we could reinstate it here. (Matthew, Windhoek)

We were talking about the water table. And then I was remembering when we were young, when our parents told us to go and play. We lived next to this big river in the village. And then we would actually dig holes. We dug holes so deep, the underground water started – We started – the water came up. And we actually never knew why the water is coming up. We would actually dig so deep that sometimes we actually found frogs in the ground, and the water came up. (Owen, Windhoek)

biodiversity.

Participants' experiences can be grouped into three broad groups of experiences, namely the rainfall variability, the water cycle and comparing weather conditions. First, Otavi participants (Emma, John and Joseph) explicitly make references to

their experiences of rainfall in and around Otavi. John and Joseph point out that they have observed orographic rainfall at the Otavi Mountains whereas Emma has seen how rainwater flows during the rainy season. Originally, Sharon had reasoned 'a cloud is a cloud' but her

experience of rain now enables her to distinguish between different types of clouds. The lack of rainfall and the associated concerns are highlighted by Melanie and Matthew, mention the negative impacts on people, vegetation, and livestock. Matthew, who visited Cape Town during the time the city was experiencing severe water restrictions and was approaching Day Zero, explains that the situation in Cape Town made him aware of the importance of saving water. Subsequently, Matthew's family changed their water consumption habits and began to use water more sparingly.

Participants mentioned that they 'experience' the water cycle and that the water cycle is something

surrounding them. This is particularly patently evident in the participants' drawings. The reasons for incorporating the water cycle in their drawings may be that it is a prime example of a cyclic process, or that participants are familiar with the water cycle after studying in the class, or that the participants visualised what is happening next to, above and below them (with reference to the 'Geography is all around me' prompt) (Figure 5). One can classify the water cycle as a 'universal' geographical concept rather than a context-specific geographical concept, and the water cycle is a component of Geography experienced by a variety of the participants irrespective of where they live. This is also true for the

Figure 5: Liz's drawing



incorporation of clouds and the sun in most of the participants' drawings. The literature (e.g., Villarroel & Villanueva, 2017) acknowledges the inclusion of clouds and the sun in drawings as a well-known occurrence and as a leitmotiv for pictorial expression.

Participants shared that the exposure to different environments assist them to draw comparisons between the weather conditions in one place and another (Box 4). By being exposed to more than one environment and able to make comparisons seem to make it easier for participants to understand how weather conditions can differ and what the influence of different elements of weather is on an area, vegetation, animals, and people's behaviour. John and Joseph from Otavi explain that they have felt a difference in the temperature at home and in town. Miles highlights that Otavi is much colder than Rundu and that moving to Otavi, after being accustomed to Rundu's weather, made him realise how people adapt to different weather conditions. During her interview, Anita, who lives in Walvis Bay, points out that Swakopmund is much colder than Walvis Bay and that she always wears a jacket when visiting

Swakopmund. While Melanie, a Windhoek participant, points out that she has experienced cold weather conditions along the coast but warm and dry weather conditions in southern Namibia where her family farm is situated.

Discussion

The findings strongly suggest that there is a direct relationship between the geographical concepts experienced by participants and their awareness of those geographical concepts. This implies that participants extract geographical meaning from their lived experiences. Most of the participants focused on physical Geography concepts such as soil erosion, the water cycle, river processes and dunes. The context, location and characteristics of the different research sites play a role in their awareness, with participants associating their local context with specific geographical characteristics and features. The understanding by individuals of these concepts is often, and to a large degree, dependent on the characteristics of their local context, their mobility and their travelling opportunities.

It is noteworthy that some

experiences are not necessarily based on their direct encounters with a specific Physical Geography concept, rather they are reconstructions of how they think or imagine the concept to be (often based on another lived experience). In some cases, participants demonstrated the ability to improvise by reconstructing lived experiences in such a manner that they support their understanding of certain Physical Geography concepts. This finding suggests that the lack of access by participants to first-hand experiences of physical Geography concepts can result in imaginative thought and the extrapolation of lived experiences to aid their understanding of the 'real' geographical concept. These findings shed light on the significance of 'other' everyday lived experiences which can easily be classified as unimportant. One can argue that the lack of direct lived experiences drives individuals toward 'grabbing onto' lived experiences (including the lived experiences of others and imagined lived experiences) that are relevant or significant to the 'real' geographical concept. These reconstructed lived experiences are often built on experiences in a different context or on a different scale than the 'real'

phenomenon. It appears as if participants who lack experience in particular contexts or of a specific physical geographical phenomenon, tend to reconstruct experiences in a manner that is to some degree comparable with the 'real' phenomenon. These reconstructed experiences and imaginations might or might not accurately reflect reality, but they strike one as assisting participants' understanding of certain physical geographical concepts, processes and phenomena.

There is a relationship between participants' proximity to physical Geography processes and phenomena and how concerned they are about the well-being of the bio-physical environment. Özgenel & Bay (2019) found that students display markedly higher affective levels from experiencing nature first-hand. Hunter, Strife & Twine (2010) have argued that postmaterialist values and objective material concerns can contribute to environmentalism. The authors found a positive correlation between spatial proximity to problems and environmental concern. Nisbet et al., (2009) explain that human–nature relationships have an emotional aspect that can influence individuals' interconnectedness with the natural

environment. Owing to their direct experiences with environmental degradation, the interview and drawing data suggest that the participants exhibit an awareness of, and concern for, environmental problems. Environmental perception is manifestly influenced by location (Hunter, Strife & Twine 2010). This highlights the importance of understanding and exploring lived experiences at an individual level.

Conclusion

The Physical Geography concepts that were described by the participants relate directly to those stipulated in the Namibian Geography curriculum policy document. Participants shared lived experiences that relate to Physical Geography. It is notable that their experiences of some physical geographical concepts (rivers and dunes) are dependent on where they live, their mobility and their travelling opportunities, whereas other physical geographical concepts (weathering and erosion and elements of weather) are less location specific. The understanding by individuals of these concepts is often, and to a large degree, dependent on the characteristics of their local context,

their mobility, and their travelling opportunities. The author is planning to write a follow-up paper detailing and analysing participants' awareness of and experience in environments at different scales.

Disclosure statement

No potential conflict of interest was reported by the author.

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