

Article

Positioning Environmental Education in the South African Classroom: The Case of the Grade 11 Geography Curriculum

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Abstract: The teaching of environmental education in the South African classroom is challenging. Although the Curriculum and Assessment Policy Statement (CAPS) provides for the integration of environmental education across subjects and grades, there are contextual limitations that educators (in the case of this study geography educators) face when having to teach environmental education. This problem is further compounded by limited research on the contextual challenges faced by geography educators when teaching environmental education and environmental awareness principles. This study investigates how geography educators conceptualise and teach environmental education and environmental awareness principles in the geography grade 11 classroom. The findings indicate that educators' conceptualisation of environmental education, and how they teach it varies according to the setting that they are in. They expressed challenges faced due to inadequate resources to teach environmental education, as well as the inability to assess learners' pro-environmental behaviour due to it not being allocated in the curriculum.

Keywords: Environmental education; environmental awareness; geography curriculum; pro-environmental behaviour; sustainable development

Introduction

Within itself, either as a school subject or in higher education, geography encompasses both the physical and human sciences and integrates these distinguished disciplines seamlessly (Ahiaku, Mncube & Olaniran, 2019). This multidisciplinary characteristic of geography has led to it being one of the subjects in the South African basic education system which has encompassed environmental education extensively in its curriculum. However, this integration has taken years and an array of policies both nationally and worldwide, to be successfully implemented. Rachel Carson's book *Silent Spring* highlighted the effects of climate change as a phenomenon that could change the world, and its reception led to the incorporation of environmental issues into the United Nations' agenda henceforth. Thus, documents such as Agenda 21 and the IUCN strategies for the conservation of nature represented environmental education as a necessity in understanding the root causes and symptoms of environmental and development problems (Tilbury, 1995).

Therefore, an educator teaching within the CAPS framework must be empowered enough to be able to discuss prevalent environmental problems, the threats posed by them, and the challenges that society faces concerning these issues (De Beer, Dreyer, Hattingh, Irwin, Le Grange, Le Roux, Lotz-Sisitka & Schulze, 2014) in and outside of the classroom. This means that the educator becomes a crucial part of the entire knowledge system; acting as a conduit that disseminates environmental awareness principles and assesses the progress of their students. Against the above background, the objectives of this study were to:

- i. Explain how geography grade 11 educators conceptualise and teach environmental awareness principles,
- ii. Determine why geography grade 11 educators teach environmental awareness principles the way they do.

These objectives are captured in two main questions that were used to frame this study and present its findings. These are:

- i. How do Grade 11 geography educators conceptualise and teach environmental awareness principles?
- ii. Why do Grade 11 geography educators teach environmental awareness principles the way they do?

Literature Review

Education is an important conduit for disseminating environmental awareness. In the formal school setting, the teacher is the most important element in this process. Dada, Eames & Calder echo this by stating that it is unlikely that environmentally literate learners can result from an education whereby their educators lack the knowledge, skills, and commitment to incorporate environmental knowledge in their curricula (2017). The environmental education teacher is the curator of quality environmental education, who imparts environmental literacy, encourages a positive environmental attitude, and participates outside of the school grounds (Boiyo, Koech & Manguriu, 2015).

1. Environmental Education in the Classroom

In a classroom, the educator takes the role of the environmental expert, as the curriculum content to be taught, how it will be taught as well as how it will be assessed and designed by the teacher. Therefore, every teacher in training could be considered an environmental education expert, or at the least environmental education competent enough to facilitate learning about the environment. Accordingly, all teachers in training must acquire the opportunity to be developed in the spheres of environmental education design and implementation so that they are confident in teaching it within any subject into which it is incorporated (Dada, Eames & Calder, 2017). This links with the summations of a study conducted by Ahiaku, Mncube & Olaniran (2019) in which they state that a formalised knowledge of the content that should be taught in the geography classroom (in this case Geographical Skills and Techniques) is not the only factor that determines the success of the teaching experience. The second most crucial factor is teaching experience (2019). The more experience a teacher has in teaching a particular chunk of subject content, the more confident the teacher grows and can structure lessons in a way which will resonate with the changing needs of society.

However, an educator's teaching experience does not translate into the quality performance of learners (Ahiaku, Mncube & Olaniran, 2019) because a lack of resources in schools affects every teacher equally, no matter their competencies. Preferably, every educator should have adequate content knowledge and be allowed to gain experience in teaching this content. In addition, the teacher should have access to the tools needed to teach in a 21st-century classroom: maps, textbooks, computers with access to the internet and fieldwork which is incorporated into the contact time of the subject. Without these, a teacher can only do part of the lesson which requires rote learning of the content, and very little chance to assess the practical part of environmental education which is the challenge faced in many non-fee-paying schools in South Africa. These sentiments are echoed in Velepini, Martin & Smucker's (2018) study, wherein the challenge was a lack of an integrative approach to incorporating environmental education into the curriculum and environmental lessons were taught in isolation from each other, thereby rendering continuous integrative learning and assessment impossible.

2. Challenges Learners Face in Environmental Education

Boiyo, Koech & Manguriu (2015) conducted a study that aimed to establish the relationship between attitudes and level of participation in environmental activities in the Kasarani and Kibera Divisions of Nairobi, Kenya wherein a sample of 320 secondary school learners participated in the study. The study found that most of the learners behaved in an environmentally appropriate way when they were instructed to or were near the schools' authority. However, the learners also displayed independence in the environmental awareness principles in

that 69.3% of the learners in the Kasarani region turned off running water as opposed to the 60.9% in the Kibera region which difference could be due to the water supply challenges faced in the Kasarani region.

These results indicate that there is a direct relationship between learners' interest in environmental issues and their environmental behaviours, especially if these environmental issues affect their daily lives (Owusu, Kwakye, Welbeck & Ofori, 2017). Williams (2017) expands on this viewpoint by giving an example of recycling habits between rural and urban communities in Oklahoma, USA. The divergence in recycling habits was found to be due to a lack of solid waste management programs in rural communities, and as such people in these areas were not equipped to be recyclers because they did not have access to information and recycling bins, and for some recycling, sites were too far to reach.

Both teachers and learners must be empowered enough to undertake pro-environmental behaviour independent of the curriculum and social norms, as these are the most common factors which hinder environmental education and literacy in many schools. Dada, Eames & Calder state that teachers should be allowed the opportunity to act, instead of just being given the knowledge on how to act for the environment (2017). This idea ties in with the Israeli approach to environmental education, which encourages autonomous environmental action by issuing "green school" certifications to schools with active sustainability programmes. This certification aims to make sustainability become learners' mindsets and the school's organisational culture (Goldman, Ayalon, Baum & Weiss, 2018).

3. The Tbilisi Principles

The Tbilisi Principles of Environmental Education (TPEE) of 1978 are the conceptual framework of this study, as they were the first environmental education principles and guidelines ever drafted in the United Nations for environmental education exclusively. The TPEE conceptualise environmental education in a constructive, workable manner which is incorporated into the daily lives of citizens worldwide. They encourage an active citizenry by providing every individual with the opportunities to obtain the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment (UNESCO-UNEP, 1978).

Methodology

This study employed the qualitative research approach because this approach is suitable for research that is concerned with an instinctive; rather than objective; assessment of attitudes, opinions, and behaviour (Kothari, 2004). Therefore, to assure the validity and quality of the research conducted, the qualitative researcher must first begin with the acknowledgement of self and the contextual factors surrounding the study (Neuman, 2014). The research paradigm chosen for this study was the interpretivism paradigm, which allows the researcher to assign meaning to the subjects being interpreted (Leavy, 2017) without changing the message that is conveyed by these subjects. Since the research study would have an abundance of transcribed data, the interpretivism paradigm ensured that the voice of the participants was not lost (Creswell & Creswell, 2018). To explore the teaching of environmental awareness principles successfully and accurately in grade 11 geography, phenomenology is the research design that guided this study in representing the dissimilar perceptions and outlooks of the participants (Cohen, Manion & Morrison, 2018) with as little manipulation from the researcher. The population of this study was geography grade 11 educators from the Kwa-Mashu Circuit of Kwa-Zulu Natal province, from which five educators were sampled. Table 1 below presents the pseudonyms which the schools and participants are referred to in the study, for anonymity:

Table 1. Participants of the study

Participants of the Study	
Schools	Participants
School A	Participant A
School B	Participant B
School C	Participant C
School D	Participant D
School E	Participant E
Total: Five participants from five schools	

The data acquisition process was two-fold: semi-structured interviews were conducted per participant and recorded via voice recorders to create an open enabling environment that allows participants to speak extensively, without time or any constraints (Goldkuhl, 2019). The recorded data was transcribed verbatim, and then the edited transcription method was applied to eliminate phrases and pauses which were not necessary for the research (Kara, 2015). To speak to the research aims, the findings from the study are presented under the research questions and objectives that underpinned the study.

Findings

In this section, the findings of the study are presented according to the research objectives they satisfy.

1. Explain How Geography Grade 11 Educators Conceptualise and Teach Environmental Awareness Principles

Geography educators are not only concerned with imparting the knowledge, skills, and values that students need to develop but also with how these elements affect the learners' lives (Chang & Kidman, 2018). Educators conceptualise and teach environmental awareness principles by incorporating contextual factors in their lessons (Blanco, Rudman, Greene, Razafindrainibe, Andrianandrasana & Welch, 2020). Participant A cogitates that:

“When we are talking about the development of the entire country, it needs the conserved environment and the sustainability of the environment. As well as the social factor should be there because whenever you are talking about the environment you cannot leave the social factor. Because we are dealing with the primary sector, the secondary sector contributes to most of the pollution, this makes environmental education fit perfectly into the geography class”.

Participant C echoes the same sentiment, but gives a practical way it has been used in the past:

“I have never been involved in such except once when we called a meeting to make the community aware of the effects of the pollution of a nearby river, where many people fish”.

The participant educators indicated that incorporating social factors in their environmental education lessons brings about challenges that hinder the success of their teaching. Participant C reiterates that:

“These days the main focus is just teaching, there is no space in the curriculum to test environmental education practically. Unless one utilises their own time”.

This short statement indicates that the challenges faced when teaching environmental education and awareness are exacerbated by parameters put in place by the curriculum. In South Africa, the challenge that the geography curriculum poses is mainly the curriculum structure (Maharajh, Nkosi & Mkhize, 2016); a large amount of content to be covered at very unrealistic timeframes, as well as a lack of time allocated for field trips and excursions (Ahiaku, Mncube & Olaniran, 2019). Participants D and E augment this sentiment by stating that:

“We do not get the time to engage in practical action, there are time frames, and the curriculum is very much packed. I hope one day there will be time for such things”. (Participant D)

“Environmental studies is an interesting subject, but the limited resources do not allow me to be as creative as I want to be. I have eight textbooks, for a class of forty. Therefore, because we do not have posters, I was impressed to find that some learners created incredibly good posters, which we still use to this day”. (Participant E)

Participant B offered a much more detailed response to this enquiry by giving a practical example of how he conceptualises and teaches environmental awareness principles:

“Yes, I am familiar with these aims and objectives, since I deal a lot with them across Grades 10 to 12. However, I cannot reach them because a lot of the things we need to achieve are usually out of our reach as a school. However, there are a lot of things I notice about the school, like the fact that the school is located in a catchment area and it’s getting a lot of water, I also look at perhaps that if entities like municipalities assist us with things like boreholes, where we can take water, this could help us to use this water for farming. But observations such as these, one ends up not being able to make them successful because there are a lot of shortages for the school and you find that you are the only one demanding these resources as a teacher, you understand their importance but there are none. And when that is compounded with the fact that you will now have to face your curriculum and cover your curriculum, you end up... you know that these are the types of things that you would love doing but the time becomes scarce”.

The Tbilisi Principles maintain that environmental education is necessary to promote the value of local, national, and international cooperation in the prevention and solution of environmental problems (UNESCO-UNEP, 1978). However, the responses above are a harsh reminder that irrespective of the articulate aims and objectives of policy and curriculum documents, a lack of structural support from the government and the Basic Education Department can lead to these aims and objectives being unfulfilled (Malik, 2020).

The participants highlighted time constraints as well as a lack of resources as the main impediments to their teaching of environmental awareness principles. The way educators conceptualise and teach environmental awareness principles is therefore meant to make an impact on the society around them because if environmental education is taught effectively, it can allow people to understand their roles and responsibilities towards the environment around them (Chang & Kidman, 2018). If the impartation process is consecutively impeded, it might create lessons that are unstructured and too vague to facilitate any meaning to the learners (Malik, 2020), thereby rendering the lesson unsuccessful.

2. Determine Why Geography Grade 11 Educators Teach Environmental Awareness Principles The Way They Do

To respond to this research objective, it is imperative to understand why educators conceptualise and teach environmental awareness principles in the manner that they do in their classrooms. The participants' responses to this enquiry are, unfortunately, negative. Only Participant A responded positively by stating:

“It makes me feel good to teach them, but in a practical way it is not happening, that is the thing. Because, in order to-we need to foster environmental sustainability, our kids should learn about environmental sustainability. Again, the correct method of learning this; is because it is something that pertains to the environment, so they need to do it practically”.

Participant A’s response supports the Tbilisi Principle which states that environmental education must highlight the complexity of environmental issues to foster a tendency for critical thinking and problem-solving skills in learners (Saito, 2013). Although Participant A indicates that she loves to teach issues of environmental awareness, the inability of learners to learn it is a hindrance to their learning about environmental awareness (Dube, 2014), which threatens the aim of creating critical-thinking environmental citizens in the basic education system.

The remaining four participants, in contrast, focussed only on the reasons why they could not teach environmental awareness in the way they wanted. Participant B provided a detailed explanation by cogitating that:

“Most of the things that we talk about in environmental education, they [learners] have never seen them. It was so easy to teach environmental education in rural areas because if you make an example of a river, there will be a river right next to the school. Here, [in the townships], the learners say they understand it, but you can see it in their eyes that they do not. Of course, they understand the concept such as river rejuvenation. But they have never seen it. It is unlike in rural areas, where you can make comparisons on rivers to identify river rejuvenation”.

Participant B's response to this question was reminiscent of Blanco et al. (2020) study on environmental education in Madagascar. In this study, Blanco et al. found that students from village schools scored higher percentages asserting that trees come from seeds and valuing forests as much as rice paddies. Participant B and Blanco et al. study indicates that learners' areas of living and the socio-cultural factors surrounding them have a considerable effect on their perception of environmental awareness. Hence, they behave differently. This discrepancy is then exacerbated by a lack of resources, the most basic resource such as a geography textbook, which impedes the purpose of a lesson. Participants C and D state respectively:

"There are no resources to teach, the teacher only has the textbook. Even if a teacher wants to use media, there are no resources for such. You can google phenomena, such as droughts, but how do you show it to learners without media resources and the internet? You can only tell a story about it. You do not have information or sources that are factual". (Participant C)

Participant D *"Township schools lack resources to such an extent that, basic things such as books. You find that learners do not have books. It is exceedingly difficult, to go out there with learners to do practical whilst the learners do not have the theoretical knowledge of the subject. Whenever you go to the classroom you have to think of means of how you will access resources. Another thing that destructs us currently is that during holidays the schools are vandalized, we are not encouraged to generate more resources because sometimes these schools can be burnt for no reason. It is unsafe, and unwise to bring personal resources here".* (Participant D)

Both responses lament a dearth of textbooks as a learning and teaching tool in and outside of the classroom. This challenge is reflected in a similar study by Malik (2020), who found that from a survey of select (44) first-year geography students at the University of Kwa-Zulu-Natal, 43 % of students (19) reported that they were given notes supplied by their teacher and not provided with a textbook in their Grade 12 year. Thirty per cent (13) of the students who responded had outdated textbooks from previous curricula (Malik, 2020). There is no doubt that a shortage of textbooks poses a serious challenge to the teaching and learning of environmental awareness principles, as neither the educator nor the learners have material to reference, irrespective of lacking the technology to make the learning more informative and interesting. The textbook is like the foundation, and all others are used to build on what is in the textbook (Dube, 2014). Participant E stated that there is a challenge with accessing textbooks, but the most strenuous issue is the fact that an educator is required to teach:

"a curriculum [which is] is packed, and it does not offer practical times. We just theorise in a classroom, which has limited resources. Then you give them homework. You go an extra mile as a teacher, such as an essay on the impact on the environment, so that they can do their own research".

Without a textbook, average learners may not be able to do their homework, and therefore the lesson cannot be constructively reinforced. Insufficient learning and teaching material challenge educators' ability to incorporate environmental awareness principles in their lessons. Instead of the lack of basic resources, educators often find themselves unable to incorporate environmental education due to being trained in a positivist, traditional manner that is reliant on rote learning (Blanco et al., 2020). Contrary to Maila's (2003) observation that a lack of training support for teachers leads to them being lackadaisical about environmental education; the respondents of this study depict an inherent interest in teaching environmental education and awareness in their classrooms. Therefore, educators teach environmental awareness principles the best way they can, however, their lessons fall short because barriers such as a lack of basic resources and time are a hindrance to their goals (Bopape, 2006). Educators are therefore unable to use diverse learning environments and an array of educational approaches to instil pro-environmental behaviour among learners, as stipulated by the Tbilisi Principles.

Discussion

The findings of this study indicate that there are varying reasons why educators teach environmental education the way they do daily. The first reason is that they teach environmental education and awareness principles in

a textbook-based lesson because they are unable to incorporate practical lessons due to time and resource constraints, which then hinder the learning process. The study also found that the learners' areas of living and the socio-cultural factors surrounding them affect their perception of environmental awareness, and manifest in them behaving differently. This divergence is further exacerbated by a lack of teaching and learning resources that are as complex as field excursions and as basic as a subject textbook. A shortage of textbooks poses a challenge to the teaching and learning of environmental education and environmental awareness principles, as neither the educator nor the learners have the material to instil their learning outside of the classroom. Therefore, a lack of textbooks expands the problem even more than a lack of technology which makes learning more informative and interesting. This is because a textbook is a tool of introduction and reference to a subject, it is the foundation from which all other teaching and learning resources are built. A lack of teaching and learning resources creates an inequality in the education that learners receive. Those in more affluent or properly equipped schools might have an upper hand in the knowledge that they are exposed to compared to their counterparts, who are not as exposed, and this widens the inequality gap.

Therefore, without a textbook, an average learner may not be able to study in and outside of the classroom. In place of the lack of basic resources, educators often find themselves unable to incorporate environmental education due to being trained in a positivist, traditional manner that is reliant on rote learning. Although the sample of this study is smaller than the population from which it was extracted, we hope that the results of this study make a positive difference in how environmental education is taught in all schools in South Africa, be they adequately or under-resourced. Environmental education research is limited in Africa and South Africa, however, through this research we were able to identify researchers such as Boiyo, Koech and Manguriu (2015), Owusu, Kwakye, Welbeck and Ofori (2017) among others, who are contributing to this body of knowledge. We hope that this research study adds to the richness of environmental education research in Africa as a whole and that more environmental and educational researchers may begin to consider research in different schools, classes, and geographical areas of Africa. Environmental education is successful only when learners' pro-environmental behaviour is witnessed. Therefore, it is a practical subject, not a theoretical one. From this research, we hope that the CAPS Document, specifically for geography FET, can be reviewed and restructured to include physical activities such as fieldwork and excursions in its curriculum.

Conclusion

The objectives of this study were to understand how geography grade 11 educators conceptualise and teach environmental awareness principles, determine why they teach them the way they do and assess the challenges they face when teaching environmental education and environmental awareness principles. The findings suggest that educators are unable to teach environmental education in a manner that they need to due to the contextual challenges they face, which hinder their teaching as well as learners' learning process. These hindering factors include the crammed structure of the basic education curriculum which pertains to geography, the vagueness of the aims and objectives stipulated in the curriculum, limited timeframes allocated to teaching content, as well as a lack of time allocated for field trips and excursions. Although the research question was not answered in the most direct form, where educators explain how they teach environmental education; their responses to this question are indicative of the fact that they cannot implement their ideas because of the challenges stated above. Therefore, there is no "how" they teach environmental education when the situation around them does not allow them to teach constructively. It is, therefore, safe to suggest that the parameters established by the geography curriculum are the very reason for the lack of fulfilment of teaching environmental education and environmental awareness principles.

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