



Initiatives in Schools to Promote Environmental Education Programmes: A Case Study of Muden Schools

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Abstract

This paper examines the extent to which the curriculum, implemented in rural schools, is geared towards the sustainable and thorough integration of Environmental Education. This paper evaluates topics taught in sampled schools in rural KwaZulu-Natal to determine the perceptions of the participating educators and the challenges they face in this regard. The researcher employed a qualitative case study approach to examine the topic in a natural setting, by gleaning the views of the study participants. Purposive sampling was used to sample learners and teachers in Muden schools. The study employed social learning theory and social constructivism to guide the data analysis and interpretation. Three primary schools were sampled for observations, document analysis and interviews. The sample size comprised three Natural Science (NS) teachers of Grade 7s for face-to-face interviews, while 18 Grade 7 NS learners participated in focus groups. The findings of this study revealed that there are a number of activities which schools conduct in unique ways, to ensure the delivery of education for sustainable development. As the findings showed, teachers are innovative in integrating Environmental Education in lessons, and in extracurricular activities aimed at enhancing environmental awareness. The study revealed not only the practices implemented, but also the challenges confronting teachers and learners when it came to Environmental Education in the primary school context. Based on the findings, the researcher made recommendations for the broad implementation of Environmental Education as a subject.

Keywords: *Environment, environmental education, sustainable development, rural schools*

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1. Introduction

The environment is critical to both healthy living and the continued existence of life on the planet. For habitat, food, air, water, and other necessities, all species are reliant on the environment (Brigham Young University,2021). The environment is self-sustaining, and humans must make every effort to avoid interfering with that process. The study on schools' initiatives in environmental education programs such as formal, informal, and non-formal education has been highlighted as one of the most potent tools available to address the world's environmental crisis UNESCO (1977:12); Masemene,2020). Schulze (2002) reminds us of an important role played by teacher behaviour in promoting and enhancing their position as role model for children. By involving those who have extensive understanding in nurturing and protecting environment as well as advocating their teaching techniques. Teachers can create a positive environmental ethos in schools, for example, most schools in Muden have bottle/glass and paper banks where they deposit and recycle the used bottles and papers. Learners are taught by teachers to do this as the way of helping the community to stay clean and encourage learners to show interest in their surroundings. learners should investigate problems in their environment (Loubser,2007:61). It is vital to teach learners to ask questions and immerse themselves in understanding the environment. By doing so we will be paving the path to the world where there is less poaching of scarce and endangered species and human who relate to environment in a matured and decent manner. Therefore, education is a necessity because humans have a tremendous impact on the environment. The increase in human population leads to an increase in environmental challenges and risks faced by the world. As a result, it's critical that students in environmental education are made aware of these issues. The research examines how teachers and students in rural schools launch environmental initiatives by appreciating the value of a diverse range of living and non-living things in their surroundings. It further discusses how do they help each other to sustain the environment. Furthermore, the study introduces the endeavours done by the school community in upholding environmental awareness. The rational for the study should respond to the question, why it is important for one to research about the school initiatives that teachers, learners and support staff engage in when trying to promote education for sustainable development. Education for Sustainable Development must try to educate people about looking after their habitat, to be a better place for generations to come soon

(UNDP,2015). The South African Government has introduced many acts and incentives that induce schools and community to participate in promoting healthy and clean environment. These notions play a critical role in current environmental management in South Africa and will play a critical role in future environmental management (NEMA,1998).

2. Literature review

This section presents different scholars' thoughts or points of view on diverse initiatives undertaken to promote Environmental Education programmes. Some researchers' opinions about the international history or the roots of Environmental Education are given here, before the focus shifts to the trajectory of Environmental Education in Africa and South Africa. The status of South Africa's education system is also briefly discussed in this chapter. The researcher reports on how Environmental Education is being integrated into different subjects within the local school curriculum, and touches on classroom-based initiatives as well as extra-curricular activities aimed at promoting education about the environment. The final section in this chapter highlights the challenges facing all educational stakeholders (teachers, learners, policy makers) in promoting Environmental Education.

2.1 What is environmental education?

Environmental Education is a process that allows individuals to explore issues dealing with our natural and man-made environment, to engage in problem solving, and take action to improve their immediate and expanded environment, thereby allowing them to gain a deeper understanding of environmental matters, with a view to acquiring the skills to make informed and responsible decisions (Environmental Protection Agency [EPA], 2021). Environmental Education was historically defined as the study of nature or the natural environment, which includes flora, fauna, soils and water (EPA, 2018). Palmer (2002) claims that a paradox characterizes the field of environmental education. Despite the widespread consensus that it is critical and vital to learn how to live sustainably, environmental education is currently not given the attention it deserves in formal education worldwide. Another definition indicates that Environmental Education requires people to make decisions about, and formulate, a code of behaviour in respect of issues concerning the quality and sustainability of the environment (EPA, 2018). Environmental Education, according to Loubser (2005), is a process

that aims to increase environmental awareness, knowledge, skills, and positive behaviours. The emphasis here is on the actions that must be taken to maintain, solve, improve, and restore the environment (p. 36). All these points of view and definitions of the concept appear to be in agreement that Environmental Education can help to promote education for sustainability. Thus, from the definitions given here, the process of Environmental Education expands people's knowledge and skills in respect of the world around us.

2.2 Components of Environmental Education

Environmental Education not only advances our awareness of, and sensitivity to, the environment, it also seeks to open our eyes to environmental challenges, to expand our knowledge and understanding of the environment, the living things in it, and natural phenomena (Leedy, 1997, p. 71).

To do justice to the components of Environmental Education, teachers and learners must be aware and mindful of their surroundings. It is essential to be sensitive to the natural environment, and how mindless human actions cause devastation. Knowledge and learning allow us to become more aware of how environmental issues can either advance human progress or have a detrimental impact on a global scale. Environmental Education seeks to change people's views, and to foster a compassionate attitude toward the natural world, and the desire to maintain or improve the quality of life of living beings. After all, our environment affects how we live, work, and play. By developing certain skills in people, they gain the ability to identify environmental problems, and contribute practical solutions in line with current trends and the available technologies. Participation is a valuable component of Environmental Education, as funding initiatives and programmes that lessen the impact of environmental degradation ensure that the money they invest will benefit the environment. Teaching young children to value the resources we have, by allowing them to participate in such programmes, is an investment in the future. By promoting green facilities, stakeholders can establish the necessary infrastructure to achieve a balance between humans and nature, and popularise “green” or “eco” projects. All of these actions can increase public awareness, and support the development of healthier relationships between people and the living and the built environment, and give rise to innovative projects such as self-sustaining schools or kitchens.

2.3 Components of Education for Sustainable Development

It is largely recognised as an integral element, that ESD empowers learners with the knowledge, skills, values, and attitudes to recognise, if not address, the interconnected global challenges we are facing, including climate change, environmental degradation, loss of biodiversity, and inequality (Unesco, 2012, 2013). Learning must prepare the learners of today, who will be the leaders of tomorrow, to find solutions to pressing challenges, and possible future concerns. Education should capacitate learners to make informed decisions, and take individual as well as collective action to change our societies and care for the planet. Sustainable development encompasses the three primary dimensions of human existence: the, ecological, human, and economic (Engelbrecht et al., 2015). The reason why the first component is so important, is that human needs and desires are the driving force behind social and economic activity. Economic growth is not exclusively determined by a country's gross domestic product (GDP) and does not quantify the medium- and long-term benefits to be derived from environmental protection. Sustainable development thus means striking a fine balance between economic growth and environmental protection. The human factor in sustainable development is essential, since the concept of justice includes the sustainable evolution of human civilisation (Wright, 2015).

2.4. Economic Component

According to Duran et al. (2015), economic development is needed to produce a maximum flow of income in terms of rational use and resource efficiency (particularly scarce resources). Therefore, development, as a process, must be understood to be multidimensional, involving major changes in social structures, attitudes towards local and national institutions, attempts to accelerate economic growth, and efforts to reduce inequality and alleviate poverty (Duran et al., 2015). The economic dimension aims to ensure a balanced and sustainable trade environment by producing goods and services on a continuous basis, to maintain manageable levels of government and external debt, and avoid extreme sectoral imbalances which will affect agriculture and industrial production, and the creation of a competitive industry, the diversification of the means of production, and efforts to attract investment (Duran et al., 2015).

2.5. Ecological Component

Environmental development is sustainable if humans nurture the environment, while ensuring the renewal of natural resources and the protection of our rich environmental heritage (Duran et al., 2015). The problem of waste management has arisen relatively recently in developing countries, where there is little history of the implementation of formal or informal community Environmental Education awareness programmes (see Zhang et al., 2023). Starting such programmes is essential for rapidly educating the public and facilitating the development of ecologically friendly community waste disposal solutions. To be successful, programmes should be designed to engage the target audience, rather than solely increasing their environmental knowledge – their skills, attitudes and daily behaviour must be changed as well. Valuable lessons about waste disposal still need to be learnt in South Africa (Msezane, 2014).

2.6. Human Component

Authorities must be careful when converting raw resources or producing goods in accordance with the standards for efficiency and optimality. Workable alternatives must be found to preserve the fragile ecological balance. Human fulfilment and happiness, on a professional and social level, are contingent upon a high quality of life and strong labour standards (Duran et al., 2015). Human sustainability is reliant on social interactions, the forging of relationships, pre-determined behavioural patterns, and the common values of the majority of the people (Dempsey et al., 2011). Minica and Frant (2008) synthesise the human aspect of sustainable development worldwide as involving the following objectives: to promote education about, training in, and public support for, efforts to protect the environment; protecting and promoting human health (access to medical facilities – especially in rural areas – the control of infectious diseases, the mitigation of pollution and ecological risks); the fight against poverty (through access for the poor to sustainable livelihoods, by promoting human development and integrated policy on investment in human capital); and curbing demographic threats to sustainable development (by focusing on population growth, especially in developing countries). Clearly, some of these goals overlap with the 17 SDG goals of the UN.

The aim of this study is to investigate the types of activities schools undertake, with a view to improving environmental awareness.

Objectives:

- To investigate the range of environmental activities that teachers did and could use in the classroom
- To determine what extracurricular activities teachers and learners engage in, to enhance environmental awareness
- To look into the difficulties teachers and learners face, when implementing Environmental Education EE/Education for Sustainable Development (ESD) programmes in schools.

The research questions of the study have been formulated as follows:

Main question: How do teachers and learners embark on initiatives to promote Environmental Education EE/Education for Sustainable Development (ESD) programmes in Muden Schools?

Sub-questions: What initiatives do teachers take to integrate Environmental Education EE/Education for Sustainable Development (ESD) into the curriculum? What kinds of extracurricular activities do teachers and learners perform to promote environmental awareness, knowledge, and practice? What are the obstacles that teachers and learners face when it comes to introducing Environmental Education EE/Education for Sustainable Development (ESD) into the school curriculum?

3. Method of the Study

Research is the systematic process of collecting and logically analysing data for particular effort. Research methods are a range of tools that are used for different types of enquiries, just as a variety of tools are used for doing different practical jobs, for example, a pick for breaking up the ground or a rake for clearing leaves (Gwanya,2010). In all cases, it's important to know which tool to use for which job (William,2011). Research methodology are systematic and purposeful methods in which a researcher collects and analyses data. Research methodology includes a research design, a research approach, sampling methods and data collection methods. (MacMillan and Schumacher,2010:08; Mohammed,2016).

3.1 Research design

The research design is the overarching method you adopt to integrate the many components of the study in a coherent and logical manner, ensuring that the research challenge is adequately addressed (Berman,2014). The multiple case

study research design with an interpretivist worldview. The design allowed me to interact with participants to get in-depth information from them and to understand and interpret their experiences in the participants' natural settings (Mohammad, 2016).

3.2 Population and sampling

The study's focus population are teachers and their learners who are from the uMgungundlovu district's Mpofana Circuit. My population is made up of three schools which are in Mudén circuit. The purposive sampling method was used, also referred to as purposeful sampling. Conducted interviews with study-relevant participants. Three schools that took part of this study were located in the remote Mudén village where 350 learners attend school A, which employs 15 teachers. While School B has 8 educators and 380 learners, School C has 11 educators and 320 learners. The total population is 1084 people.

The schools which participated in this study are all located in the Mpofana Circuit of the KwaZulu-Natal Department of Education (DoE), in the uMgungundlovu District. The neighbourhood schools are a second home to many of the young minds who participated in this study, and are being taught how to nurture, protect, and preserve the environment in which they live.



Figure 1: Location of Mudén, in KwaZulu-Natal

Source: www.openstreetmap.org

4. Findings and Discussion

Findings of the study are presented under each related theme as in the following.

4.1 Theme 1: Initiatives Teachers Take to Integrate Education for Sustainable Development into The Curriculum.

As a researcher when conducting interviews, I needed to understand what the participants (learners and teachers) impressions were of the steps that schools take to promote education for sustainable development (ESD) programs in Muden schools. Teacher A, a teacher of natural sciences in grade 7, reported that she knows about the benefit of having an environmental committee within the school and has done some research on Eco schooling and how it benefits the community. This is how she expresses her understanding:

“I did research; eco-school is a large global program and it start in the school and expands to the community. Learners act in the environment which include reducing carbon footprint and improve planting and building habitant and the improve watershed sometimes when we have water crises.”

The educator is aware of what an eco-school is and how it may help the entire community. If the educators at the schools and the learners are aware of the environmental expectations. The eco-schools program aids in the greater understanding of social, economic, and environmental sustainability among students, educators, and the larger school community. Through Eco-Schools, learners gain greater knowledge about environmental challenges, investigate methods to use what they have learned to live more sustainably, and advance sustainability practices both inside and outside of the classroom.

When referring to the overall perception on school initiatives to promote education for sustainable development the teacher responded with the following statement:

” Promote environmental protection, and the conservation and to promote social equity. And use our resources in that manner. I guide learners to follow the rules and regulations and teach them to become responsible citizens.”

The teacher refers to conservation in the passage above, which involves protecting the environment via wise use of natural resources. The environment is shielded from destructive human activity through preservation. She also hinted that she coaches learners on how to follow the steps they take to promote education for sustainable development. Cut back on and recycle paper. Recycling is a quick and easy approach to save resources and lessen your personal carbon impact. The most significant source of soil and marine pollution, which threatens both land and marine life, is plastic, the school has plans for waste materials. When purchasing a product, consider the product's environmental impact and how to dispose of it after use. Plastic isn't biodegradable and is frequently devoured by animals who mistake it for food. (Unicef.2020).

With the help of education for sustainable development, learners of all ages may confront interconnected global concerns like climate change, biodiversity loss, unsustainable resource use, and inequality. It equips learners of all ages to make wise choices and take both individual and group action to improve society and protect the environment. Education for sustainable development is a component of high-quality education and a process of lifelong learning. It includes learning objectives and content, pedagogy, and the actual learning environment and improves the cognitive, socioemotional, and behavioural elements of learning (UNESCO,2023). There are several initiatives that teachers engage themselves and learners to promote education for sustainable development in their school. The following response was based on the question which was about whether the teacher thinks learners are aware of what Education for Sustainable Development and what responsibility do they have in ensuring that they promote education for sustainable development in the community. Teacher A alluded that to a large extent learners are aware of what is education for sustainable development and that they have a responsibility to ensure that they promote education for sustainable development in the community.

“I Studied environmental and biological conservation.”

The teacher affirmed that she studied environmental and biological conservation at university level. When teachers are informed it makes things much easy because it makes them aware of their content and can play a genuine role in promoting environmental related roles. If learners have role models, there able to respond when asked if they know the importance of the environment. Learners replied that *“the environment is important because it gives us the air we breathe, the food we eat, the water we drink and the material that is needed at school.”*

Other learners said It gives us oxygen. They explained that education for sustainable development helps to keep the environment clean by reducing water and land pollution and provide for the unemployed. Learners further mentioned that environmental content taught by teachers in the school gives them knowledge and skills to fight against integrated global challenges such as climate change and biodiversity loss.

Learners who participated in a focus group interview also indicated that the method of sorting and recycling is used at their school to persuade learners to quit littering and share their thoughts on who should oversee maintaining the school environment. The majority thought that since they are the ones who throw papers and other materials such as cans and plastic on the floor, they should clean. Other learners believed that teachers should be responsible since they cut and paste papers. Other learners believe that since they consume sweets and discard papers, they should be responsible to ensure that the school environment is kept clean.

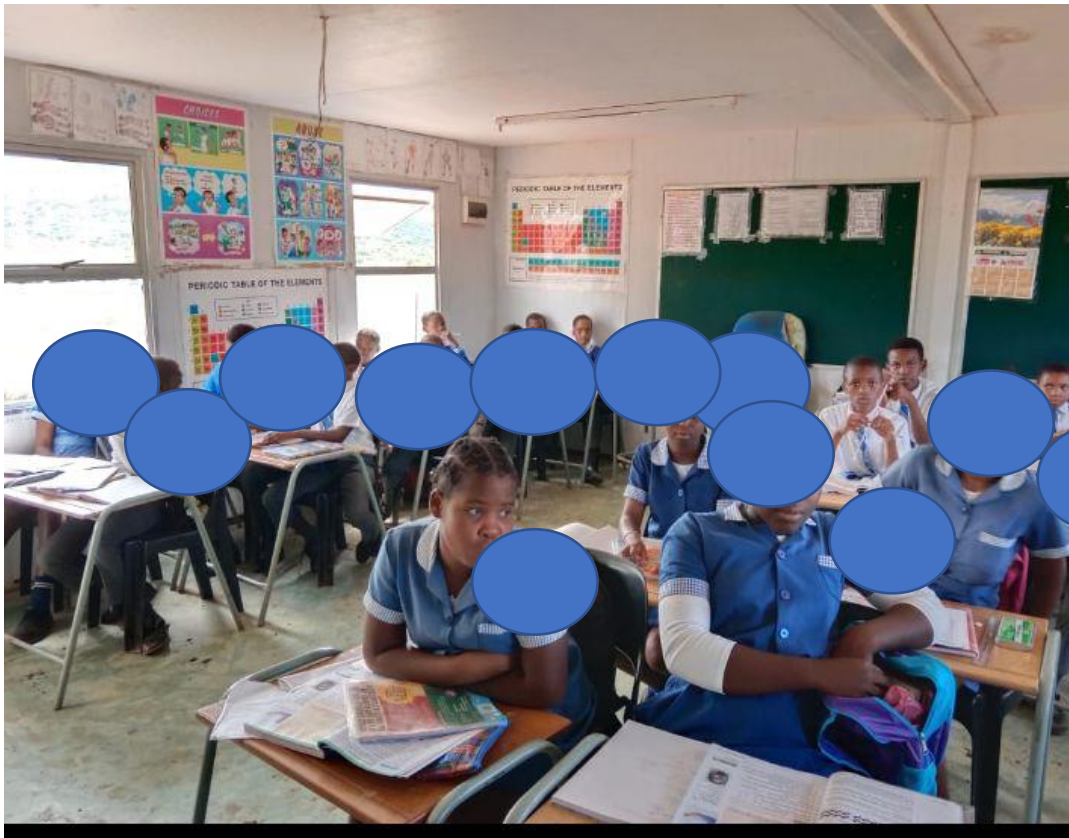


Figure 2: School A Primary school learner during the Natural Science class activity with teacher A. Picture taken by the Researcher

In curriculum, the knowledge strands are used as a tool for organising the content of the subject Natural Sciences. Life and living, matter and materials, energy and change, planet earth and beyond. Each knowledge strand is developed progressively across the three years of the Senior Phase. The knowledge strands are a tool for organising the subject content. When teaching Natural Sciences, it is important to emphasise the links learners need to make with related topics to help them achieve a thorough understanding of the nature of and the connectedness in Natural Sciences. Links must also be made progressively, across grades to all Knowledge Strands (DOE,2014). When teacher A was asked which Natural Science topics does she find easy or interesting to teach and how does she ensure that her lessons influence learners through school activities such as sorting and recycling materials, to promote education for sustainable development? She responded by saying that “Life and living because when teaching life and living within the natural science it helps research things which occurred naturally on earth in the world and capture the data with experiment.” She mentioned that; “Recycling is resourceful because it also helps learners to be involved through hands on activities such as sorting. We do apply the 3Rs it reduces littering and the raw material, thus protecting the environment and, we also save money through this process.”

4.2 Theme 2: extracurricular activities that teachers and learners engage in to enhance environmental awareness, knowledge, and practice.

Academic and extracurricular activities that are required to be completed as part of the formal curriculum are referred to as curricular (Zedua.2018). When teaching environmental-related subjects, teacher in school A claim that due to time constraints, they are only able to conduct lessons and question-and-answer sessions. Having committed educators in schools might help to solve the fundamental environmental problems. To transform the world, "committed teachers are those who have excitement, passion, desire, enthusiasm, and energy." (Yildiz & Celik, 2017). When the researcher asked, “How do you ensure that your lessons influence the entire school through school activities such as sorting and recycling materials, to promote education for sustainable development teacher A replied, as follows:

“Recycling is resourceful because it also helps learners to be involved through hands on activities such as sorting, save water, save energy, and we

apply the 3 Rs to reduce the needs of use of the previous natural resources and the raw material, protect the economy and, we also save money through the processes.”

The teacher mentioned that she engages in activities that support the education for sustainable development, such as recycling, school cleaning strategies, and water conservation. This confirmed exactly what the learners said when they explained that they have trash-picking techniques and would love to participate in recycling competition in future. The teacher knows about Eco-schooling, and it benefit to the community. Believing that learners can benefit from the programs and expanding the opportunity to the community.

From the above statement the researcher gathered that the school is involved in environmental activities that promote education for sustainable development. And most of it stems from observation. One of the most valuable resources on Earth is water, and its value rises year after year. It is essential to understand how to use this resource more effectively in all settings, including the business, school, and home. Because of how it is organized, school may initially appear to be the most challenging setting (MiquelMin,2023). You can reduce the amount of water needed to prepare food at school, install low-flow water outlets, establish a water action plan, correct any water leaks you may have, or alter the school grounds' landscaping, among other things. Water conservation in your school needs to be a conscious effort. You would need to carefully consider your options before developing a practical water action plan. This strategy is what would sustain the practice of water conservation for a very long period. As part of school's extracurricular activity to promote Education for sustainable development the teachers and learners created water bottle poles in gardens to water their plants. This was found in front of each school block, created as a school initiative in ensuring that rainwater is stored for watering the flowers.



Figure 3: School initiative in ensuring that water is stored for watering the flowers

There are number of things that teachers and learners do to promote education for sustainable development. Some of these methods include ensuring that the environment is kept clean without destroying natural resource. In school A they gather papers, burn them in a pit hole behind the school, and occasionally utilize the ashes to make compost at a sacred spot for them to burn waste products without endangering the environment. You run the risk of setting adjacent buildings and other items on fire if you ignite a fire. Make sure you are not endangering surrounding structures if you decide to burn paper rather than dispose of it in another manner. There are numerous techniques you can employ to safely burn unneeded paper products, minimizing harm to you and the environment. The primary consideration is to burn the papers in a small area so the fire won't spread (wikiHow.2023).

The school appeared to have water saving methods as it appeared that they have water tanks and water bottles in all corridors for learners to wash their hands. Near each corridor there was a JOJO tank for drinking and cooking water to help during times where there is a shortage of water



Figure 4: JoJo Tank at School A Primary school for water use such as cooking and drinking. Picture taken by the researcher

4.3 Theme 3:

Difficulties that teachers and learners confront when implementing environmental education programs in schools. To keep education for sustainable development relevant to the needs and interests of the school, environmental educators must develop new knowledge and techniques that address the demands of a constantly changing social and technological landscape. These obstacles to education for sustainable development force us to reevaluate how we conduct research, educate environmental specialists and educators, and disseminate environmental knowledge to the public. Teacher A when asked about the challenges that they are facing when implementing environmental programmes in schools, she replied by saying.

“Being at a rural school has an impact on how I teach natural science because of the infrastructure; we don't have enough facilities. I do enjoy teaching natural science since it promotes scientific understanding for learners and improves science in society.”

The statement above demonstrates that the teacher has numerous difficulties that make it difficult for her to effectively teach natural sciences. The biggest

challenge that many schools, including School A, face is the issues she raised, such as the lack of adequate infrastructure to meet the needs of teachers and students. The teacher mentioned how difficult it is for her to access and conduct some experiments or practical work. However, this challenge does not stop her from ensuring that that teaching and learning takes place. Teacher also mentioned that their morals are low because they are not considered for promotional vacancies and professional development in rural schools and this affects the way they teach in the classroom.

5. Conclusions

According to the study's findings, teachers in rural areas put in twice as much effort to produce work of the highest caliber, to ensure that education for sustainable development is incorporated into the curricula, and to do so, they use learning materials that are recommended by the Department of Education, including textbooks and the CAPS Document. The needs of the schools and the nature of the schools setting dictate the various extracurricular activities that teachers and learners engage in to advance environmental awareness, knowledge, and practice. Teachers improvise according to their school environment. Challenges brought on by long distance between homes and schools, a lack of resources, and a lack of departmental training combined with schoolteachers' ignorance or lack of understanding resulting from not knowing enough about education for sustainability are the challenges that both teachers and learners must overcome when attempting to integrate education for sustainable development into the curriculum. Additionally, it is intended that the results of this study would prompt the Department of Basic Education (DBE) to make sure that their department has environmental education specialists to ensure that integration is successfully done, and that all instructors are prepared in a way that will inspire them. Teachers will have the confidence they need to impart the gained content knowledge if they accomplish this. As a result, both teachers and students will be inspired to improve their behaviour towards the environment, which will in turn drive them to start working on the global environmental problems.

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