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THE INFLUENCE OF ENVIRONMENTAL EDUCATION ON NATURE CONSERVATION IN SOUTH AFRICA

(Research article)

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Abstract

This research paper aimed to explore the effectiveness of Environmental Education (EE) in promoting nature conservation in South Africa. The study examined the key factors that impact the effectiveness of EE initiatives and their contribution to sustainable conservation practices using South Africa National Parks as a case study. The research employed a qualitative approach, particularly conducting in-depth interviews, focus groups and document analysis to analyze opinions, experiences and observations related to the influence of EE on nature conservation. The findings revealed that EE plays a crucial role in fostering awareness, knowledge, and positive attitudes towards conservation principles and biodiversity. However, the effectiveness of EE is influenced by various factors, including educator training, curriculum design, stakeholder engagement, and the availability of resources and infrastructure. Therefore, the study emphasizes the need for educators, policymakers, and conservation practitioners to address these factors and enhance the effectiveness of EE programs. Ultimately, the research aims to contribute to the broader discourse on the intersection of EE and nature conservation in South Africa.

Keywords: Environmental Education, nature conservation, South Africa National Parks

1. Introduction

Nature conservation is one of the core concerns of Sustainable Development Goals (SDGs) which are an urgent call for action for all nations worldwide, and South Africa is no exception (Brett, 2019; Dube & Nhamo, 2021). In particular, SDG 15 insists on the need to restore, protect and promote sustainable use of terrestrial ecosystems, combat desertification, sustainably manage forests, reverse land degradation, and possibly eliminate biodiversity loss (Munasi, 2019; Ruthaman *et al.*, 2021). Accordingly, as the Department of Forestry, Fisheries, and the Environment (DFFE) (2021) maintains, nature conservation is indispensable in ensuring the sustainability of ecosystems and safeguarding the biodiversity in South Africa. Mbokazi *et al.* (2021) and Tichaawa and Lekgan (2020) agree that Environmental Education (EE) has a crucial role to play in fostering knowledge, awareness, and skills necessary for individuals, organizations, and institutions to become active participants in nature conservation. However, Matshusa *et al.* (2021) and Manaka and Maile (2022) reinforce that identifying, understanding and addressing key factors that affect the influence of EE initiatives is a pre-requisite of ensuring sustainable practices to preserving South Africa's unique natural resources.

Regardless of South Africa having a diverse range of ecosystems including unique and iconic landscapes such as the South African National Parks (SANPARKS), Cape Floral Kingdom

(CFK), wetlands of KwaZulu-Natal and Kruger National Parks (KNP), these natural treasures keep facing various threats (Chidakel & Child, 2020). These threats, according to DFFE (2021), include pollution, habitat loss, climate change and unsustainable human activities. That said, Nsukwini (2019) argues that proper and effective adoption and implementation of EE results in improvement in nature conservation by fostering a deep understanding of conservation principles, ecological process and the importance of biodiversity. Manaka and Maile (2022) and Mutai (2019), however, cautions that the effectiveness of EE initiatives in promoting nature conservation is determined by multiple factors. These factors, according to Nkoana (2020), Mbokazi *et al.* (2021) and Baki (2022), include educator training, curriculum design, community engagement, and the availability of resources and infrastructure. Each of these factors play a crucial role in promoting environmental knowledge, attitudes, and behavior among individuals, organizations and institutions.

Therefore, the purpose of this paper was to explore the influence of EE on nature conservation in South Africa, particularly shedding light on the key factors that impact the effectiveness of EE on nature conservation within the country. Thus, by analyzing the underlying factors that determine EE's effectiveness on nature conservation, the paper seeks to provide valuable insights for educators, policymakers, and conservation practitioners to enhance the effectiveness of EE programs and promote sustainable conservation practices. Ultimately, this research paper seeks to contribute to the broader discourse on the intersection of EE and nature conservation in South Africa.

1.1 Statement of the problem

The effectiveness of environmental education (EE) initiatives in South Africa in promoting nature conservation is determined by multiple distinct factors which may explain the existence of an on-going poor state of nature conservation across the country (Pretorius *et al.*, 2022). Despite alarming concerns over increasing environmental degradation and poaching, EE has been identified as one of the key solutions to addressing nature conservation issues. Recognizing the potential of EE to address these issues, there is still limited knowledge about the specific factors that determine the effectiveness of EE initiatives in South Africa. Against this backdrop, this paper aimed to explore the underlying factors that influence the effectiveness of EE in promoting nature conservation in South Africa, focusing on the case of SANPARKS.

1.2 Research questions

Drawing from the above statement, the paper sought answers on the main research question:

- What is the influence of EE on nature conservation in South Africa?

The following sub-question unpacks the main research question:

- How do conservation factors affect the effectiveness of EE in South Africa?

The aim of the paper, therefore, was to explore conservation factors that affect the effectiveness of EE in South Africa.

2. Theoretical Background

2.1 Literature review

This main focus of this literature review falls on analyzing and synthesizing scholarly opinions, observations and conclusions regarding the influence of EE on nature conservation. Specifically, it aims to explore the factors that affect the effectiveness of EE in South Africa. Therefore, the following scholarly discourse provides information crucial in understanding and addressing the identified research problem which boils down to the persistent issue of nature conservation in South Africa.

The influence of EE on nature conservation is a significant area of research and there is no doubt of getting a positive outcome where EE is rightly practised (Ardoin *et al.*, 2020; Brett, 2019; Pretorius *et al.*, 2022). Accordingly, EE play an essential role in fostering positive attitudes towards nature conservation, promoting a deeper understanding of environmental issues, and encouraging sustainable practices among individuals and across communities (Zafar *et al.*, 2021). Through EE initiatives, individuals gain knowledge about the interdependence of human activities with the environment and the importance of biodiversity, ecosystems (Dube & Nhamo, 2021; Mbokazi *et al.*, 2021). Such awareness usually results in a greater sense of willingness and responsibility to take action in protecting and preserving natural resources (Dillon & Herman, 2023). Therefore, Tichaawa and Lekgan (2020), Matshusa *et al.* (2021) and Manaka and Maile (2022) emphasize that sustainable and environmentally conscious society is possible through sound EE.

However, the effectiveness of EE in developing economies such as South Africa rests on several underlying factors (Baki, 2022; Nhamo, 2021). This means that mere EE is not effective in promoting nature conservation (Pretorius *et al.*, 2022). Ruthanan *et al.* (2021) identifies government support and coordination as one of the main factors that determines the effectiveness of EE in pursuing nature conservation. Brett (2019) clarifies that inconsistent policies, insufficient funding, and a lack of clear mandates from the central government undermine the integration of EE into formal education systems therefore limiting its impact on nature conservation. Dzerefos (2020) and Ardoin and Bowers (2020) agree if the government fails to put in place a well-defined and cohesive EE framework, the adoption of EE usually become fragmented and lack necessary resources and infrastructure to make a considerable impact. Dube and Nhamo (2021) add that limited awareness of the benefits of EE and competing priorities also contribute to the government's reluctance to support EE, especially across developing economies.

Another pertinent factor is public awareness and perception on EE (Chidakel & Child, 2020; Dzerefos, 2020; Zafar *et al.*, 2020). The understanding and awareness of the importance and value of EE among the general public can influence EE's adoption and implementation

(Giddy *et al.*, 2020). Thus, misconceptions and limited public awareness about environmental issues, and a lack of public demand for EE can undermine its prioritization and support from decision-makers (Chidakel & Child, 2020; Matshusa *et al.*, 2021; Tichaawa & Lekgan, 2020). Dube and Nhamo (2021) reveal that the lack of public awareness of EE in South Africa is attributed to various factors. Matshusa *et al.* (2021) and Ardoin and Bowers (2020) add that these factors include limited outreach and education efforts, insufficient access to information, and the dominance of other pressing issues.

Fragmented implementation approaches are another significant factor (Brett, 2019; Dillon & Herman, 2023; Pretorious *et al.*, 2022; Zafer *et al.*, 2021). The effectiveness of EE on nature conservation in South Africa is minimized by fragmentation (Munasi, 2019). Various organizations and institutions tend to work independently without sufficient coordination in implementing EE (Nhamo, 2021). Therefore, this lack of synergistic efforts and collaboration often leads to inconsistent messaging, duplication of efforts, and inefficient use of resources in embracing EE (Nkoana, 2020). The root cause of the fragmented implementation approaches in adopting and practicing EE in South Africa is mainly attributed to the absence of a centralized authority and coordination mechanisms responsible for overseeing and guiding EE initiatives (Tichaawa & Lekgan, 2020). Without an effective central coordinating body, it becomes challenging to align the efforts of various institutions, resulting in a lack of cohesive implementation strategies (Ruthanan *et al.*, 2021).

The integration of EE into formal curriculum is another important factor to consider as far as the effectiveness of EE on nature conservation is concerned (Mbokazi *et al.*, 2021). Thus, the integration of EE into formal curriculum is vital for enhancing the effectiveness of EE (Ardoin *et al.*, 2020). However, in South Africa, EE is often treated as an extracurricular or add-on activity rather than being fully integrated into core subjects (Manaka & Maile, 2022). This limited integration can result in a lack of dedicated instructional time and reduced emphasis on environmental content (Nkoana, 2020). One of the main reasons why EE is not fully integrated into the formal curriculum in South Africa is the lack of appreciation among educators and policy makers about the importance of EE (Pretorious *et al.*, 2022). Dillon and Herman (2023) maintain that if educators and decision-makers do not fully recognize the importance and value of EE, they do not prioritize its integration into formal education.

Among the main factors, access to resources and infrastructure emerge as one of the factors that affect the effective of EE in South Africa (Manaka & Maile, 2022). Some communities and schools, particularly those in disadvantaged areas, often have difficulties in accessing adequate resources and infrastructure to support EE (Zafer *et al.*, 2021). This includes a lack of field trip opportunities, teaching materials, technological resources, and outdoor learning spaces (Brett, 2019; Dillon & Herman, 2023). Manaka and Maile (2022) argue that insufficient resources hinder the implementation and development of comprehensive EE initiatives, including curriculum development, teacher training, and provision of infrastructure and teaching materials.

The effectiveness of EE also largely depends on the skills, knowledge, and attitudes of educators (Pretorious *et al.*, 2022). However, inadequate educator training and capacity building programs in EE often results in a lack of competence, confidence, and motivation among educators to deliver quality environmental education (Dillon & Herman, 2023). This has led to ineffective implementation of EE first in the classrooms and second in practice (Ardoin & Bowers, 2020). Mutai (2020) insists that inadequate teacher training and capacity building in South Africa contribute to the lack of resources in supporting EE. Mbokazi *et al.* (2021) adds that the majority of educators in the country lack formal training in EE strategies and methodologies and strategies. Similarly, Dube and Nhamo (2021) reveal that a considerable number of educators feel ill-equipped to incorporate environmental practices and concepts into their teaching due to limited access to training programs and professional development opportunities focused on EE.

The aforementioned review highlights that EE plays a crucial role in deepening understanding of environmental issues, fostering positive attitudes towards conservation, and promoting sustainable practices. However, the effectiveness of EE in developing economies like South Africa is influenced by various factors. These include the lack of government support and coordination, insufficient funding, inconsistent policies, and limited public awareness on EE. Fragmented implementation approaches, the limited integration of EE into the formal curriculum, the need for educator training and capacity building, and inadequate access to resources and infrastructure also impact the effectiveness of EE in South Africa. Therefore, addressing these factors is essential for enhancing the impact of EE on nature conservation in the South Africa.

2.2 Theoretical framework

This study draws on Mezirow's Transformational Learning Theory (TLT) as its theoretical foundation. According to Mezirow (2018), transformative learning involves critically examining and evaluating one's expectations and assumption, leading to a deep change in perspectives, thoughts, feelings, behaviors, and convictions. Uyanik (2016) adds that transformative learning facilitates a fundamental shift in individuals' worldviews, permanently altering their understanding of the world. Therefore, the TLT provides a theoretical framework that aligns with the objectives of this study, which aims to explore the factors that determines the effectiveness of EE on nature conservation. Thus, by adopting the theoretical lances of TLT, this paper seeks to explore the factors that affect the effectiveness of EE on nature conservation, while also establishing the epistemological and ontological foundations of the study. Overall, in essence, the theoretical framework offers a substantiated and well-defined basis for investigating the research problem and presenting coherent arguments in relation to the issue at hand.

3. Methodology

This paper adopted a qualitative research methodology to examine and possibly address the identified research problem. A qualitative research methodology, according to Yin (2016), is

a systematic approach used to explore and understand the subjective perspectives, experiences, and opinions of individuals within a specific context. Accordingly, Creswell (2014) and Gray (2017) add that a qualitative research methodology focuses on gathering detailed, rich and non-numerical data to uncover nuances and complexities of social phenomena. Therefore, Saunders *et al.* (2016) insist that the primary goal of employing a qualitative research methodology is to capture the uniqueness and diversity of individual experiences, opinions, and beliefs and the social processes that shape them, rather than seeking to generalize findings to a larger population. Therefore, the qualitative research methodology was chosen for this study specifically for three reasons. First, it enables an in-depth exploration of subjective experiences (Morse, 2015). Second, it provides contextual understanding of the unique socio-cultural and environmental factors (Flick, 2011; Yin, 2016). Third, it uncovers the complex issues such as conservation factors that impact effective EE in South Africa (Saunders *et al.*, 2016).

3.1 Research paradigm

This study draws on principles and assumptions of the interpretivism research paradigm in seeking answers on the raised research questions. Unlike positivism and pragmatism, as Morse (2015) and Saunders *et al.* (2016) point out, which prioritize objective truths and the use of multiple methods, interpretivism emphasizes understanding social phenomena through subjective perspectives, recognizing the significance of meanings and interpretations in shaping human behavior and interactions. In literature, Dillon and Herman (2023), and Dube an Nhamo (2021) reveal that individuals, organizations and associations perceive and value EE differently, as such considering their subjective experiences pertaining the issues at hand seem logical. Gray (2017) support this decision by maintaining that interpretivism is the most appropriate and suitable research paradigm to adopt in exploring subjective issues.

3.2 Research design

While there are various qualitative research designs which includes phenomenology, grounded theory, and ethnography, this paper is grounded on the phenomenology research design (Morse, 2015). Creswell (2014) points out that phenomenology seeks to explore the lived experiences and perspectives of individuals regarding a particular issue. Saunders *et al.* (2016) clarify that, in using phenomenology, the study's main aim is on seeking to understand the essence and meaning of these experiences by conducting in-depth interviews or analyzing personal narratives. This primary goal of interpretivism squares perfectly with the aim of the study which was to explore factors that affect the effectiveness of EE on nature conservation drawing on individuals' opinions and lived experiences.

3.3 Research context

This study was conducted at South Africa National Parks (SANPARKS). The organization had a total of 87 employees: 22 managerial; and 65 are non-managerial. SANPARKS oversees several parks in South Africa including Kruger National Park; Table Mountain

National Parks; Addo Elephant National Park; and Golden Gate Highlands National Parks (SANPARKS, 2021). Regarding the sample size eight participants – three managerial and five non-managerial – were purposively chosen from the target population of 87 employees. Saunders *et al.* (2016) defines purposive sampling as a non-probability sampling technique where participants are deliberately selected based on specific characteristics or qualities that align with the research objectives. Participants who had some experience in delivering EE in South Africa were engaged. The sample was determined by data saturation, which is, according to Morse (2015), the point in qualitative research when collecting additional data no longer yields new or meaningful insights, indicating that the research has achieved a sufficient understanding of the phenomenon being studied. In the study data saturation was achieved at the 8TH participant.

3.4 Data collection

The study collected qualitative primary data through semi-structured interviews, focus group discussions, and document analysis. Interviews were conducted in English, lasted up to 50 minutes, and were recorded while notes were taken. A focus group discussion involved three participants and lasted one hour and 15 minutes. Gray (2016) and Morse (2015) agree that the main goal of in-depth interviews and focus groups is to gather rich qualitative data by engaging participants in meaningful discussions to gain insights into their experiences, perspectives, and knowledge related to the research issue or problem. Additionally, document analysis included reviewing SANPARKS' reports, press releases, and articles related to environmental education and nature conservation in South Africa.

3.5 Data analysis

Thematic analysis was employed in analyzing the collected data. According to Saunders *et al.* (2016) thematic analysis is a qualitative research method that involves identifying, analyzing, and interpreting patterns or themes within qualitative data, aiming to capture the underlying meanings, patterns, and trends in a data set. In particular, thematic analysis was conducted by following a six-step process. The qualitative data, including interview and focus group discussion transcripts were thoroughly examined to gain familiarity. Initial codes were generated to identify meaningful units within the data. These codes were then clustered and to identify overarching themes. The themes were reviewed, refined, and defined, ensuring their accuracy and coherence. The final themes were solidified and described in a clear and concise narrative, supported by relevant findings. This process, as Morse (2015) advised, allowed for a systematic exploration of patterns, connections, and insights that emerged across the data.

3.6 Trustworthiness

Trustworthiness, as highlighted by Yin (2016), should be seen as a connected and interdependent set of aspects. Therefore, to increase the credibility of the study, the researcher spent an extended period of time in the field until data saturation was achieved.

Dependability was ensured by clearly outlining the data collection processes and employing consistent interview questions for all participants. Transferability was improved by providing comprehensive information about the research procedures and purposefully selecting participants with in-depth knowledge of the research topic. To enhance confirmability, the interviews were transcribed verbatim, capturing their latent content, and field notes were used as reliable records that supported the textual interviews and transcripts.

3.7 Ethical considerations

Throughout the research process, ethical considerations were addressed as follows: Informed consent was obtained from participants, ensuring they were fully informed about the study's purpose, procedures, and potential risks or benefits. Measures were taken to minimize harm or discomfort to participants throughout the study. Confidentiality and anonymity were maintained by ensuring the privacy of participants, using coding or pseudonyms to de-identify data, securely storing information, and reporting findings in a way that protected participant identities. Necessary permissions and approvals were obtained before conducting the research. These ethical considerations, as Morse (2015) advises, were implemented to uphold the well-being and rights of the participants involved in the research.

4. Results

The data collected from the in-depth interviews, the focus group discussion and analyzed documents revealed five distinct factors that affect the effectiveness of EE on nature conservation in South Africa. Firstly, the findings of the study revealed that resources, both financial and non-financial are a key factor to determining the effectiveness of EE on nature conservation in South Africa. Secondly, stakeholder support was shown to be one of the main factors that play a pivotal role in determining the effectiveness of EE across South Africa. Thirdly, formal curriculum has also been revealed a significant factor that controls the impact of EE on EE across the country. Fourthly, stakeholder's perceptions towards EE are also a critical factor that determines the effectiveness of EE on conserving nature in South Africa. Fifthly, the results of that study showed that planning, having objectives and targets in place, determines how impactful EE goes in promoting nature conservation in South Africa.

5. Discussion

Each of the identified themes is discussed in detail below.

5.1 Resources

The effective implementation of EE in SANPARKS has been shown to be significantly impacted by the availability of resources, including technical, human, and financial resources. A study conducted by Saudelli and Niemczyk (2022) showed that the limited success of EE implementation in South Africa is due to insufficient human and financial resources, as well as inadequate infrastructure. Kalungwizi, Gjøtterud, and Krogh (2019) also observed that financial and human resource shortages pose challenges for EE. These findings align with

Manaka and Maile (2022) which identified a shortage of skilled human resources as a factor influencing EE implementation in SANPARKS. The findings also agree with Dzerefos (2020), whose study focused on the South African context, emphasized that a lack of resources is a critical factor hindering the success of EE programs.

5.2 Stakeholder support

The findings of the study also indicated that the effective implementation of EE is influenced by a lack of support from stakeholders involved in nature conservation. This includes private businesses, government agencies, non-governmental organizations, schools, and local communities, all of whom play crucial roles implementing and promoting EE initiatives. The lack of stakeholder support is also mentioned in existing literature. Munasi (2019) found that the absence of stakeholder support is one of the primary factors inhibiting successful EE implementation in SANPARKS. Similarly, Nkoana (2020) discovered that the effective implementation of EE is negatively affected by a lack of stakeholder involvement and support from South African communities and institutions.

5.3 Environmental Education curriculum

EE curriculum has been revealed as one of the factors that controls the impact of EE on SANPARKS. In particular, it has been established that the absence of a comprehensive EE curriculum in South Africa is one of main factors affecting the effective implementation of EE in SANPARKS. Supporting evidence from document analysis, such as the research document by Dube and Nhamo (2021), indicate that the role of EE within South Africa's curriculum and educators training is not clearly defined, leading to poor integration of EE within educational institutions. Consequently, the lack of a comprehensive EE curriculum hampers the successful implementation of EE initiatives in SANPARKS. Furthermore, Zafar *et al.* (2021) reported that incorporating EE into the curriculum is a challenging endeavor in many developing economies.

5.4 Stakeholders' attitudes and perceptions

Stakeholders' attitudes and perceptions towards EE were found to have a considerable influence on the successful implementation of related initiatives in South Africa. This has emerged across all participants' narrations, for instance participant 04 said, "A key obstacle to effective environmental education by SANParks is the lack of appreciation and support from critical stakeholders. Stakeholder attitudes and perceptions severely undermine EE implementation, as decision-makers and the public often fail to recognise its value, hindering our ability to deliver impactful, sustained programs across the parks." This discovery aligns with previous empirical studies, as mentioned by Ardoin *et al.* (2020), who attributed ineffective EE implementation to negative attitudes among stakeholders. Additionally, a study by Mutai (2019) found that the negative attitudes of community members delay or scupper EE efforts.

5.5 Planning

Planning was established a pivotal factor that determines the effectiveness of EE on nature conservation in South Africa. In particular, it has been revealed that the absence of comprehensive plans for EE have a considerable impact on the effective implementation of EE initiatives in South Africa. This is because these plans serve as guides for the successful execution of EE. The lack of planning has also been documented in previous studies. For instance, Nkoana (2020) discovered that lack of implementation planning, contributes to the unsuccessful implementation of EE. Zafer *et al.* (2021) also identified a lack of EE planning as a major barrier to EE. Ardoin *et al.* (2020:2) attributed ineffective implementation of EE to inadequate planning.

6. Conclusions

EE plays a crucial role in fostering awareness, knowledge, and skills necessary for individuals, organizations, and institutions to actively participate in nature conservation. However, the effectiveness of EE is influenced by multiple factors, including the availability of resources, curriculum design, stakeholder support, planning, and stakeholders' attitude and perception towards EE. Therefore, these factors need to be prioritized and addressed to enhance the effectiveness of EE programs and promote sustainable conservation practices in South Africa, particularly in SANParks.

This paper's findings, therefore, have several implications for policymakers, educators, and conservation practitioners. Firstly, there is a need for an ongoing and comprehensive training for educators to ensure they have the skills and knowledge to effectively disseminate EE. Additionally, curriculum design should prioritize the integration of EE into formal education systems and ensure dedicated instructional time for environmental content. Community engagement should be encouraged to foster public awareness and demand for EE, and resources and infrastructure should be made accessible to all communities and schools, particularly those in disadvantaged areas. Therefore, by addressing these factors, stakeholders can enhance the effectiveness of EE and contribute to the broader goal of nature conservation in South Africa.

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