ASSESSING THE EFFECTIVENESS OF MUNICIPAL MONITORING AND EVALUATION FRAMEWORKS FOR ENVIRONMENTAL EDUCATION IN SCHOOLS AND COMMUNITIES: THE CASE OF VHEMBE DISTRICT MUNICIPALITY, LIMPOPO

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Submitted in fulfilment of the requirements

for the degree

DOCTOR EDUCATIONIS

in

Environmental Education Curriculum

in the

College of Education

at the

University of South Africa

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2025

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I, do hereby declare that this thesis is a product of my effort and that all sources used in this work have been acknowledged using complete references and that anything similar to other works that may be found unacknowledged may be due to mere coincidence.

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ACKNOWLEDGEMENTS

To begin with, I thank the Almighty God who has made it possible for me to complete these studies**.**

I would like to express my appreciation to:

➢ My supervisor, Prof. A.S. Mawela, for his assistance, patience and encouragement throughout this study;

➢ The local Department of Education for granting permission to conduct my study in the Vhembe District;

➢ All principals who allowed me to interact with their teachers in their schools;

➢ All teachers who participated in this study;

➢ My family, especially my wife and my children, for the support they gave me throughout the period of this study;

ABSTRACT

This study was conducted to investigate the effective monitoring and evaluation of Environmental Education (EE) initiatives within schools and communities for sustainable living in the Vhembe District, South Africa. The central focus was on assessing the implementation and impact of EE programmes in schools throughout the Vhembe District Municipality. To achieve its objectives, the study employed a mixed-methods design, which was crucial for addressing various research questions. The integration of both qualitative and quantitative data holds equal significance in deriving meaningful insights.

The study's sample encompassed a diverse group of 130 participants, including 10 municipal officials, 10 school teachers and 110 learners from five distinct schools across the Vhembe District. Among the participants, 10 were designated as key informants, specifically chosen from the municipal officials, who provided invaluable insights into the local governance and implementation processes. The larger participant group, consisting of 110 learners and 10 school teachers, engaged with a self-administered, semi-structured questionnaire designed to capture their perspectives and experiences regarding the execution of the EE programme. Purposive sampling was strategically employed to identify the key informants, ensuring a rich and informed dataset.

In terms of data analysis, the study delineates detailed procedures for both qualitative and quantitative information. Thematic analysis was conducted on qualitative interviews, allowing for the identification and exploration of recurring patterns and themes within the data. In contrast, quantitative data were meticulously coded and analysed using advanced statistical software, facilitating the generation of descriptive statistics and testing of relationships between various variables.

The findings of the study underscore a notable disconnect between the formulation of environmental education policies and their practical implementation by municipal officials in the Vhembe District Municipality. Furthermore, it highlights a critical deficiency in standardised monitoring and evaluation mechanisms across the region. While the dedication of teachers to infusing environmental awareness through both curricular and extracurricular activities is commendable, their efforts are significantly undermined by a shortage of teaching resources, limited opportunities for experiential

learning, inadequate administrative backing, and insufficient funding to conduct thorough monitoring and evaluation of EE programmes. The study reveals disparities in support, with some schools benefiting from regular visits and oversight by municipal representatives, whereas others enjoy little to no external assistance. This inconsistency in engagement manifests as significant accountability gaps and sends ambiguous signals about the importance of EE.

Among its comprehensive recommendations, the study emphasises the urgent need for the establishment of standardised, evidence-based frameworks for monitoring and evaluation. The findings point to the detrimental effects of the lack of uniform tools and protocols, which have resulted in inconsistent and incomparable evaluations across the district. Ultimately, the study outlines essential elements to incorporate into a viable framework designed to enhance the successful monitoring and evaluation of EE programmes both in schools and within the wider community.

KEYWORDS: Environmental Education (EE), Sustainable Living, Monitoring and Evaluation (M&E), Vhembe District Municipality, Community Engagement, School-Based Environmental Programmes, Environmental Sustainability, Municipal Performance Management, Environmental Awareness and Education for Sustainable Development (ESD).

ACRONYMS

CIPP	Context/Input/Process/Product
CO	Critical Outcomes
DAFF	Department of Forestry, Fisheries and the Environment
DoE	Department of Education
DPME	Department of Performance Monitoring and Evaluation
EE	Environmental Education
ESD	Education for Sustainable Development
GESAMP	Guidelines for the Monitoring and Assessment of Plastic in the Ocean
GDRC	Global Development Research Center
GST	General Systems Theory
IUCN	International Union for the Conservation of Natural Resources
M&E	Monitoring and Evaluation
NCS	National Curriculum Statement
NGO	Non-Governmental Organisation
NQF	National Qualifications Framework
OBE	Outcome-Based Education
OECD	Organisation for Economic Cooperation and Development
RNCS	Revised National Curriculum Statement
RSA	Republic of South Africa
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Program
UNESCO	United Nations Education Scientific and Cultural Organisation
USSR	Union of Soviet Socialist Republics
WCED	World Commission on Environment and Development
WHO	World Health Organisation
WWF	World Wildlife Fund

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CHAPTER ONE: STUDY POSITIONING

1.1 INTRODUCTION

This study explored the viable monitoring and evaluation of schools and communities' EE programmes for sustainable living in Vhembe District, South Africa. The focus was on the monitoring and evolution of implementation of Environmental Education (EE) programmes within Vhembe District Municipality schools. The first section of this chapter presents the background information on the topic of the study and positions this research. This is followed by the presentation of the rationale of the study, problem statement and the structured research questions and the aim and objectives of the study. The theoretical framework and the conceptual framework are both introduced, followed by a brief review of literature. This chapter also presents a brief description of the research methods which include the research paradigm, approach and design, and the research methods which include the population, and the study sample, data collection and data analysis. The final sections present issues of trustworthiness as well as ethical considerations. The last part of this chapter gives definitions of terms used in this study and an outline of each of the chapters.

1.2 BACKGROUND

There is increasing agreement among scholars that many forms of environmental harm including climate change, biodiversity loss, pollution and unsustainable resource use are primarily due to human activity and present a systematic threat to both ecosystems and human wellbeing and economic sustainability (Celik, 2020; UNEP, 2021; IPCC, 2023). Although the extent and urgency of the current environmental crisis is well established throughout contemporary literature, little theoretical clarity exists with respect to the structure, operation and assessment of responsibility for mitigation of the environmental crisis at sub-national governance levels. Specifically, the function of municipalities as an intermediate governance body between national environmental policy objectives and community-level behavioural changes remain untheorized (OECD, 2020; Shackleton et al., 2021).

The continued advancement of Environmental Education as a primary means to address environmental degradation is based upon the premise that the acquisition of

knowledge and awareness will result in pro-environmental attitudes and practices which support sustainable lifestyles (Leicht, Heiss & Byun, 2021; UNESCO, 2022). Recent studies have cautioned however, that educational interventions are insufficient to produce meaningful outcomes if they are not located within supportive institutional and governance structures (Sterling, 2021; Tilbury, 2020). The function of Environmental Education at the municipal level is one of both pedagogy and policy instruments; thus, requires coordination of planning, implementation, monitoring and evaluation. However, much of the previous research has examined environmental crises, education responsibilities and local governance as separate entities; therefore, analyses are often fragmented and do not provide sufficient explanations for how municipal accountability mechanisms affect the effectiveness of Environmental Education programs (Lotz-Sisitka et al., 2023; Rieckmann, 2020).

The increase in the environmental crisis has been linked to natural growth in the population but more particularly, the increase in population in the cities resulting in rapid urbanisation (Cobbinah, Poku-Boansi, & Peprah, 2017) and the challenge of urban sprawl.

Other environmental issues that have a major impact on the environment include the clearing of forests and land for various development which results in a decline in biodiversity contamination of both water and land and the disposal of hazardous waste. This in turn, leads to climate change, depletion of the ozone layer and global warming (Jena & Behera, 2017; Grunwald, 2018). From the above point of view, human action has a significant effect on the environment, and it is in this regard that people need to change their attitude towards the environment.

The study argues that rapid growth in the population and urgency of people wanting to improve their standard of living is currently a challenge faced by numerous developing countries. The impact of the increase in the population is that it increases the exploitation of natural resources as people want their needs met (Österlin & Raitio, 2020). According to Wassie (2020), humans use natural resources at a faster pace than natural resources can regenerate, and this has a major impact on the resources. Biodiversity is important for human health and food security, providing a wide array of nutritious foods and is the source of countless medicines. Several scholars have highlighted the concern that the loss of biodiversity wealth is caused by human

activities (Mie et al., 2017). Biodiversity refers to the variety of life on Earth, specifically types of animal and plant species existing in specific ecosystems (van der Plas, 2019). Human actions negatively affect biodiversity such as the high rate of deforestation which causes soil erosion.

The environmental problems, which are damaging to the environment and the life of all organisms, has occurred over time and it is vital to find ways to create a sustainable environment through managing natural resources responsibly to meet present needs. According to van der Plas (2019), it is vital to protect the environment to ensure a sustainable future.

Environmental Education (EE) has been identified by Chaichana, Srijuntrapun and Rawang (2019) as one of the important answers to the current global environmental challenges. The United Nations Environment Program (UNEP) together with Non-Governmental Organisations (NGO) have held conferences to discuss solutions to the world environmental crisis (Linnér & Selin, 2013). The conference concluded that education is a very important tool for empowering the community to assist in solving environmental problems as a way of ensuring sustainable living (Linnér & Selin, 2013).

South Africa currently is experiencing various environmental crises. According to Singh and Singh (2017), the main causes of the environmental crisis in South Africa are rapid population growth, pollution, climate change and waste disposal. The environmental crises in South Africa are more associated with the changes in culture and social style of living and how people perceive the world (Vogel, Scott, Culwick & Sutherland, 2016). The need for economic growth and the creation of jobs exacerbates the environmental state (Nhemachena et al., 2020). According to van der Plas (2019), the South African population is growing at an alarming rate, which puts pressure on the increasing need for food, land, energy and water resulting in people exploiting natural resources to advance the quality of lives to match the high standard of living.

Several scholars such as Verster and Bouwman (2020) and Schenck et al. (2021) have raised concern about the illegal dumping and littering in South Africa as this has a major effect on the environment. Unresolved environmental problems have an impact on the health of the citizens and members, which cause many types of illness such as lung cancer. The study done by Bruce and Limin (2021) on recent advances on water pollution research in Africa has found that the life value of about 23 percent

of African populations is seriously affected by water pollution and poor hygiene such as inadequate sanitation and air pollution, which contributes to the high death rate in Africa.

The Constitution of the Republic of South Africa states that

> Everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of the present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development (RSA, 1996:11).

The concept of Environmental Education (EE) was developed as early as the 1960s gaining full attention in 1989 as part of the formal education curriculum in South Africa (Nkoana, 2020). Benjamin and Adu (2019) revealed that there has been visible progress in incorporating EE into the educational curriculum of South Africa, which indicates the concern by government about the degradation of natural resources. According to Fauville, Lantz-Andersson and Säljö, (2014), the issue of EE should be discussed in the media more often as a way of ensuring that environmental concerns are raised with members of the community not only to improve individual's health but to take care of their own environment. However, a study conducted by Teane (2021) on environmental awareness revealed that there is less information on the status of the progress of EE in rural areas in Africa, especially in schools with fewer resources.

The government of South African has devised several strategies and procedures to ensure that the citizens' constitutional rights are implemented which includes the right to a safe environment which is not harmful to their health (Manji et al., 2023). To ensure that such rights are upheld and services are delivered, the Department of Performance Monitoring and Evaluation (DPME) was established in 2010. This department focuses on the monitoring and evaluating of government department and how they perform to enhance the provision of services to the public (Kariuki & Reddy 2017). South African municipalities such as the Vhembe District Municipality implemented such system to assess and evaluate the provision of services to communities (Lavhelani & Ndebele, 2016).

Although there has been widespread acknowledgment of the devastating effects of environmental degradation on both a global and local level, there exists a lack of cohesive discussion among scholars of environmental sustainability, Environmental Education (EE), and municipal governance accountability. While existing research addresses environmental crisis from a biological and behavioural perspective, Environmental Education as a form of pedagogy, and municipal systems as forms of administrative structure for service delivery, there is very little research examining how each domain interacts with one another in a unifying governance framework (Lotz-Sisitka et al., 2023; UNESCO, 2022; OECD, 2020). As a result, despite the demonstrated need for urgent action in addressing environmental issues, the conceptual mechanisms by which municipal monitoring and evaluation structures influence the effectiveness and long-term sustainability and behavioural outcomes of EE programs have not been fully examined, especially in subnational areas in developing countries.

The disconnection among these domains creates an important theoretical gap. It is typically assumed that Environmental Education will automatically lead to environmentally responsible behaviour, however recent sustainability literature indicates that educational interventions may be ineffective in creating behavioural change unless they are situated within accountable institutional structures, coordinated policy mechanisms, and evaluative governance mechanisms (Rieckmann, 2023; Sterling, 2021). Similarly, municipal monitoring and evaluation structures in South Africa exist to provide oversight over all aspects of service delivery, including evaluating the effectiveness of behavioural and sustainability focused programs, such as Environmental Education (Cloete & Thornhill, 2023; DPME, 2022).

Thus, the fundamentally unresolved relationship between the mitigating of environmental crises and the implementing of Educational Programs through the use of Municipal Monitoring and Evaluation Systems represents the central problem being addressed in this study.

In the South African case, there are various governance and development challenges specific to the country that present a particular set of difficulties regarding the effective monitoring and evaluation of Environmental Education for sustainable living. However, the difficulty of monitoring and evaluating Environmental Education is not unique to

the South African context as international research shows that the inclusion of Environmental Education in accountable governance frameworks varies significantly across both developed and developing countries (Leicht, Heiss & Byun, 2021; UNESCO, 2022; Rieckmann, 2023).

For instance, in the European context, many studies have demonstrated that while sustainability education has been strongly embedded in national curricula, there is little systematic evidence of monitoring mechanisms designed to measure long term behavioural and societal outcomes (Rieckmann, 2023; UNESCO, 2022). Although many countries report robust policy commitments to Education for Sustainable Development (ESD), the methods used to evaluate these policies typically focus on the reporting of compliance with policy requirements rather than measuring the impacts of these policies. Therefore, whilst behaviour transformation is assumed to occur based on these policy commitments, such transformation is rarely empirically proven (Sterling, 2021; Rieckmann, 2023).

Similar patterns can also be seen in the OECD member states. Local government sustainability education initiatives are often undertaken without the use of clearly defined performance indicators or longitudinal assessments (OECD, 2021; Tilbury, 2020). Furthermore, the monitoring systems employed by OECD member state municipalities typically prioritize the measurement of the effectiveness of their infrastructure and economic service delivery activities over their ability to measure behavioural and attitudinal changes (Lotz-Sisitka et al., 2023; Leicht, Heiss & Byun, 2021). This indicates that Environmental Education is positioned in an ambiguous structural manner throughout municipal governance architectures internationally.

Research in Asia demonstrates that while Environmental Education programs are often implemented with enthusiasm at the school level, the institutional coordination between educational authority departments and municipal governance departments is frequently fragmented (Tilbury, 2020; Rieckmann, 2023). Moreover, due to the decentralized nature of monitoring frameworks, these frameworks are often inconsistently applied resulting in the variability of program quality and limited comparability of results between different geographic locations (UNESCO, 2022; Leicht, Heiss & Byun, 2021).

In addition to the challenges associated with coordinating monitoring frameworks in other regions of the world, resource constraints and uneven institutional capacity exacerbate the difficulty of establishing the necessary institutional infrastructure required to support the implementation of Environmental Education programs in many areas of Latin America and Sub-Saharan Africa. Research indicates that many Environmental Education programs initiated in these regions are often implemented as a result of external donor funding and therefore lack integration into formal municipal monitoring and evaluation systems (Lotz-Sisitka et al., 2023; Rieckmann, 2023). Therefore, the sustainability of these programs and the accountability of the people implementing them becomes heavily reliant on the presence of individual leadership and/or short-term funding streams rather than being supported through established governance processes (Leicht, Heiss & Byun, 2021; Sterling, 2021).

Finally, even in highly industrialized countries, researchers note a consistent gap exists between the ambitions of environmental policy and the measurable educational outcomes of those policies. The field of sustainability education worldwide suffers from "evaluation fragility," which refers to the absence of systemic mechanisms capable of monitoring and documenting profound behavioural change despite strong aspirational goals for sustainability education (Sterling, 2021; Rieckmann, 2023; UNESCO, 2022).

In order to frame the municipal monitoring and evaluation systems as not only administrative bodies, but also as evaluative governance institutions which facilitate the transition of environmental policy into educational practice and community behavioural change, the study places a greater emphasis on the governance-education interface. By doing so, the study will move beyond the descriptions of environmental concerns and will contribute to the development of a theoretically integrated analysis of how effective municipal monitoring and evaluation structures can support the success of Environmental Education programs in schools and communities in the Vhembe District Municipality.

1.3 RATIONALE FOR THE STUDY

Beyond its relevance for the design of effective policies and programs, this study also has intellectual justification based upon its potential contribution to our theoretical and

scholarly understanding of municipal monitoring and evaluation of Environmental Education and sustainability governance. To date, much of the existing body of scholarship has conceptualized municipal monitoring and evaluation as an essentially technical and administrative function concerned with ensuring compliance with programmatic requirements and with evaluating the performance of municipal services. The dominant technocratic model of municipal monitoring and evaluation emphasizes monitoring and evaluation systems as tools for assessing performance but does not treat them as evaluative governance practices that produce knowledge about what is being assessed and how it is being validated (Cloete & Thornhill, 2023; Goldman et al., 2021).

In addition, Environmental Education research has been almost exclusively focused on issues related to curriculum development, student learning, and behavioural outcomes, with relatively little theoretical analysis of the evaluative governance structures through which Environmental Education programs are monitored and interpreted at the municipal level (Lotz-Sisitka et al., 2023; Rieckmann, 2023). Thus, a conceptual disconnect exists in the literature: Environmental Education is studied pedagogically, municipal monitoring and evaluation is studied administratively, and sustainability outcomes are evaluated normatively without an integrated epistemological framework to explain how evaluative governance systems facilitate the connection between educational interventions and sustainable living.

This study addresses this ongoing epistemic disconnect by reframing municipal monitoring and evaluation of Environmental Education programs as a systemic and epistemological phenomenon rather than simply a technical process. In doing so, the research examines the institutional logics, governance assumptions, and knowledge production processes embedded in municipal M&E practices, providing a more nuanced theoretical explanation of how evaluative systems define, legitimize, and operationalize conceptions of program effectiveness and sustainability outcomes.

By examining municipal M&E in the governance-education nexus, the study provides new knowledge to scholars in Environmental Education, Public Administration, and Sustainability Governance through an integrated analytical lens. Specifically, the study provides contextually grounded knowledge about how local government evaluative structures influence the implementation and perceived success of EE programs in

schools and communities, especially in rural and resource-poor municipal areas, like the Vhembe District Municipality. Such knowledge cannot be derived solely from pedagogical or administrative studies because it emerges from the critical evaluation of evaluative governance as an epistemically constructed institutional practice.

Thus, the study provides an original scholarly contribution by theoretically framing municipal monitoring and evaluation of Environmental Education as a governance-based evaluative system producing knowledge about sustainable living outcomes and not just measuring program outputs. By providing both theoretical discourse and empirical scholarship, the research presents a reconceptualized framework that integrates Environmental Education, municipal governance, and epistemologically informed monitoring and evaluation into a single analytical construct.

1.4 STATEMENT OF THE PROBLEM

Although environmental damage and unsustainable community behaviours continue to be widespread issues across South Africa and the world at large, current research has primarily studied these topics through separate lenses of environmental crisis, Environmental Education (EE) and municipal services (Adeniran & Shakantu, 2022; UNEP, 2023). Specifically, the predominant view of Environmental Education is as a form of pedagogy that fosters behavioural change, while municipal monitoring and evaluation (M&E) is viewed as an administrative/technocratic and regulatory process that ensures compliance with performance standards. Because of this fragmentation, there is very little theoretical exploration of how municipal evaluation systems work as forms of governance that impact the success, knowledge production and long-term sustainability of EE programs.

In terms of practice, South African municipalities have increasing environmental problems including improper waste disposal, illegal dumping, and dangerous community behaviour that contributes to environmental harm; these behaviours are commonly caused by lack of environmental awareness and poor program implementation (DPME, 2022; Adeleke et al., 2021). Schools are perceived as the primary institutional settings for developing environmental knowledge and sustainable values; however, the presumed causal link between Environmental Education delivery and pro-environmental behavioural changes is poorly explored in evaluation governance frameworks (UNESCO, 2022; Rieckmann, 2023). Therefore, EE

programs are often delivered without robust, context-specific evaluation systems to assess the real effects of these programs on community-based sustainable lifestyles.

Critically, the academic study of municipal monitoring and evaluation continues to be narrowly focused. The bulk of the literature views M&E as an administrative, compliance driven and performance management tool tied to regulatory requirements such as the Municipal Systems Act 32 of 2000, instead of as a governance process that produces knowledge about the effectiveness of environmental governance programs such as EE (Goldman et al., 2021; Cloete & Thornhill, 2023). This technocratic approach obscures the role of M&E in determining what will be measured, how effectiveness will be determined, and how environmental governance programs such as EE will be legitimized, enhanced, or continued in municipal systems.

Additionally, most existing studies on Environmental Education in South Africa and other countries primarily explore the development of environmental curricula, students' awareness of environmental issues and students' attitudes towards environmental issues, with much less scholarly attention paid to the institutional evaluation processes that connect EE program implementation from schools to communities to municipalities (Teane, 2021; Lotz-Sisitka et al., 2023). Thus, the governance-education nexus, through which municipalities collect, interpret and utilize evaluative information about EE programs, is undertheorized. Hence, there exists a significant epistemological void: While EE is promoted as a strategic solution to environmental crises, there is an inadequate theoretical understanding of how municipal M&E systems generate, verify and operationalize knowledge about the effectiveness of EE programs in promoting sustainable lifestyles.

Within the Vhembe district, municipalities are required to develop and implement performance measurement and monitoring systems to assess programs and services provided within their area of jurisdiction. However, it remains unknown how these evaluation systems conceptualize, measure and interpret the outcomes of Environmental Education programs that are being implemented in schools and communities. Therefore, the absence of a viable, theoretically grounded municipal M&E system for EE indicates not just an implementation failure but a broader conceptual failure in how environmental governance, educational intervention and evaluative accountability are related within local governance scholarship and practice.

Consequently, the central issue examined in this dissertation is epistemic rather than simply operational: municipal M&E of Environmental Education programs are generally treated as an administrative compliance activity rather than as a systemic and knowledge-generating governance practice that can explain and improve the effectiveness of EE programs in promoting sustainable lifestyles. These limitations to both scholarly comprehension and practical capability to create functional evaluative systems for EE programs within municipal contexts limit the potential for viable monitoring and evaluation systems for EE programs.

Thus, there exists a requirement for a theoretically informed and locally-situated assessment of viable municipal M&E of EE programs in schools and communities in order to redefine M&E as an integrated governance mechanism linking EE programs, institutional accountability and sustainable lifestyle outcomes within the Vhembe District Municipality of Limpopo Province.

1.5 THE RESEARCH QUESTIONS

Based on the problem statement mentioned above, the research undertakes to find answers to main research question: *What constitutes effective monitoring and evaluation of EE programmes for sustainable living in the Vhembe District of Limpopo?*

The following are the research sub-questions for this study developed to support the above main research question:

1. How are the monitoring and evaluation of Environmental Education programmes within the Vhembe District Municipality institutionally organised and conceptually conceptualised?
2. What governance logics and epistemic assumptions underpin municipal monitoring and evaluation practices for Environmental Education programmes in schools and communities?
3. How do municipal monitoring and evaluation structures influence the effectiveness of Environmental Education programmes in promoting sustainable living?
4. What theoretically grounded and contextually viable municipal monitoring and evaluation framework can be developed for Environmental Education programmes in schools and communities?

1.6 THE AIM AND THE OBJECTIVES OF THE STUDY

The purpose of this research project is to critically examine the Institutional Logic and Epistemological Structure that guide the municipal monitoring and evaluation of environmental education programs for both school and community settings, with the ultimate goal of developing an empirically based framework that transforms how municipalities are currently engaged in Monitoring & Evaluation (M&E) as a governance system for advancing Sustainable Living in the Vhembe District Municipality.

1. To examine the institutional and conceptual structuring of municipal monitoring and evaluation of EE programmes.
2. To analyse the underlying governance logics and epistemic assumptions shaping municipal M&E practices.
3. To explain how these evaluative structures influence the effectiveness of EE programmes in promoting sustainable living.
4. To propose a theoretically grounded and viable municipal M&E framework for EE in schools and communities.

1.7 THEORETICAL FRAMEWORK

The concept of a theoretical framework includes the utilisation of theory to build an understanding of the situation in hand (Luft, Jeong, Idsardi & Gardner, 2022). The theoretical framework is the significant base of the study and denotes the viewpoint considered by the researcher on the grounds of the provided literature of the topic to be researched (Van der Waldt, 2020). It further presents a point of view on all aspects of the study including the identification of the research problem and the justification of the need for the study. The significant impact of the theoretical framework is to influence the focus of the researcher on building sense from the gathered data. The theoretical frame enhances the perspective of how the researcher understands the topic of the study.

Sperka (2019) describes the theoretical framework as an analytical framework of certain psycho-social processes that can be applied in many circumstances to help understand the provided occurrences more easily. Theories serve as frameworks that concretise our understanding of the world around us by making it easier to understand

how different elements of specific events relate and function. Therefore, in this study, the theoretical framework serves as the basis for the theory and construction of research. This study was based on the following theories, Critical Theory in Education, Systems Theory, Programme Evaluation Theory and Environmental Education Theory, which are fully discussed in Chapter 2.

1.8 CONCEPTUAL FRAMEWORK

A conceptual framework explains how a researcher interprets the variables and elements included in the study and how they relate to each other (Hughes, Davis & Imenda, 2019). The conceptual framework's goal is to use pertinent literature to explain the concepts being studied (Van der Waldt, 2020). The conceptual framework assists researchers in articulating their emerging concepts in a clear and concise manner, allowing readers to understand the study's significance and the links between concepts (Hughes et al., 2019). In this study, the conceptual framework was significant as it assisted in providing a lens to view the interrelated concepts emerging from various theories as way of elucidating the relationship between various variables in the study.

The adoption and utilisation of the conceptual framework was important more especially for a description of the monitoring and evaluation and its relation to the implementation of EE in the high school education system (Mensah et al., 2020). Furthermore, the conceptual framework enhanced the understanding of the problem of the study through developing a specific framework drawing on various concepts arising from theories (Van der Waldt, 2020).

1.9 REVIEW OF LITERATURE

One of the significant parts of the research is building on and relating it to the available knowledge (Snyder, 2019). A review of literature is the procedure of reading materials which are published and related to the identified topic of the study (Varsha, Chakraborty & Kar, 2024). The main aim behind conducting a review of literature is to devise an understandable research problem to be researched. Hadi and Afandi (2021) indicate that reviewing literature assists the researcher in understanding the phenomena related to the topic of the study. This further shows that the review has significant impact on aim of the study, research design, research problem, gathering

of the data, analysis of the collected data and the interpretation of the data. The process of searching and reviewing literature is a continues process which begins at the start of the research process and assists in identifying gap in the literature related to the topic of the study.

For this study, the review of literature was significant in developing a clear understanding of the topic. Furthermore, it assisted the researcher in acquiring different theoretical views of EE and the implementation of EE programmes within the Vhembe District Municipality. It was through the review of literature that a gap on viable monitoring and evaluation of schools and communities' EE programmes for sustainable living was identified. The literature for this study, detailed in Chapter 3, was reviewed from a global perspective to a local South Africa perspective and the objectives assisted in guiding the search of the literature.

1.10 RESEARCH METHODOLOGY AND DESIGN

This section briefly outlines the research methodology and design which guided the conduct of this research. An in-depth description is given in Chapter 4.

1.10.1 The Research Paradigm

Muzari, Shava and Shonhiwa (2022) define a research paradigm as the researcher's inherent perspective of the world, a lens through which they perceive and interpret their surroundings. This paradigm embodies a philosophical worldview that intricately influences the researcher's thought processes. By adopting a distinct way of thinking, researchers pave the way for generating knowledge from the data they diligently gather (Djafar et al., 2021). Thus, a research paradigm is not simply a conceptual framework; it is fundamentally a philosophical outlook that guides the course of inquiry.

Allemang, Sitter and Dimitropoulos (2022) elaborate on this notion by describing a research paradigm as a cohesive set of beliefs and practices that significantly shape how researchers formulate study questions and select the methodologies and approaches for exploring those questions. Consequently, the chosen research paradigm plays a pivotal role in determining the designs and methods of a study, steering researchers in their efforts to unravel the complexities of their subjects (Muzari et al., 2022). In the context of this study, the term research paradigm refers to

the philosophical framework that guided the processes of identifying, collecting, analysing, and interpreting both qualitative and quantitative data, ultimately illuminating the pathway to meaningful insights regarding the research issue.

This study aligns itself with a research paradigm that supports mixed methods research. Hampson and McKinley (2023) identify four paradigm perspectives relevant to mixed methods research, which warrant careful consideration: pragmatism, transformative emancipation, dialectics and critical realism. Among these philosophical paradigms, this study opted to adopt the pragmatic paradigm. As discussed in Chapter 4, the pragmatic paradigm is based on the belief that a variety of methodologies should be employed in research to effectively address specific questions, particularly those aimed at resolving real-world challenges such as skills development and graduate employability. This paradigm advocates for the integration of diverse approaches, unaffected by the rigid philosophical or paradigmatic beliefs of the researcher (Lim, 2023).

1.10.2 An Overview of the Research Design

The study aimed to devise a viable municipal monitoring and evaluation system for school and community EE programmes in promoting sustainable living in the Vhembe District of Limpopo. According to Leedy and Ormrod (2010), research is seen as a method-based procedure of collecting, analysing and interpreting data to enhance understanding of a phenomenon. Research is the systematic process of gathering and logical analysis of data to establish facts or solutions to an existing problem (McMillan & Schumacher, 2006). Research design is the plan or blueprint to investigate the phenomenon and answer the research questions. This is achieved by planning the process and procedures to be followed in conducting the study (Kumar, 2018). The research design involves planning for gathering and analysing research data and ensuring that relevant data is collected for the research.

The study employed a mixed methods research design by integrating both quantitative and qualitative research methods. A mixed methods research design provides a framework for how the qualitative and quantitative components are combined, ensuring a logical approach. A mixed methods research design is often used when a single approach such as a qualitative or quantitative approach is not sufficient to fully

answer the research question. Creswell (2009) explains that mixed methods research involves the mixture of quantitative as well as qualitative research methods in a study. In a mixed methods research design, the data are gathered simultaneously' both the qualitative and quantitative data are gathered at once.

McMillan and Schumacher (2010) indicated that concurrent triangulation happens when the research collects both qualitative and quantitative data simultaneously and merges them utilising both quantitative and qualitative data analysis methods and further provide an explanation of the collected data. The qualitative research method was the primary method in this study, and the quantitative research method was utilised to offer a supporting role to the qualitative research method.

Qualitative research seeks to get answers to the questions that begin with 'why', 'what', or 'how'? and quantitative research asks questions such as 'how long', 'how many' or 'what percentage'? (Ishtiag, 2019). Small (2021) describes qualitative research as multi-methods in focus and a method that provides an interpretation of a naturalistic approach to the matter. From this point of view, qualitative research has been described as a method that studies things in their ordinary settings, trying to ensure an interpretation of the situation. The natural setting for this study is the execution of EE programmes in schools within the Vhembe District. In addition, the study aimed assess the impact of monitoring and evaluation of school and community EE programmes for sustainable living in the Vhembe District, South Africa. Quantitative research collects data in the form of numbers and utilises the statistical form of data analysis. This means quantitative research focuses on measuring something such as the percentage of people and for this study, the impact of EE programs on students and the community will be measured. Feng (2019) indicated that quantitative data includes closed-ended information like information on attitude, performance, or behaviour.

1.10.3 Research Methods

Research methods are the systematic approach to collecting and analysing data to answer a research question. These methods include sampling from a population, data collection and data analysis.

1.10.3.1 Population and sampling

The population in a study is the entire group of objects on which the researcher's concern is based (Kumar, 2018). In all studies, identifying and explaining the population is significant. This is to ensure that every member in the population is considered as well as members who cannot be accessed with ease to participate in the study. The target population of this study comprised teachers, learners of the schools within the Vhembe District Municipality and municipal officials of the Vhembe District Municipality.

Sampling is the method in which a portion of the population is chosen as representative of the entire population (Kumar, 2018). There are two forms of sampling namely non-probability and probability sampling. Examples of non-probability are convenience, snowball, quota sampling and purposive sampling. Examples of probability sampling are simple random samples, multi-stage, random, stratified, systematic and cluster (Kumar, 2018). For this study, purpose sampling was used to select schools and participants. Five schools were selected from the population for participation in this study and two teachers per school were sampled. The teachers and learners involved in the execution of EE and the municipal officials as the significant stakeholders in the execution of EE programmes in schools and within the community, were sampled as participants.

1.10.3.2 Data collection

This research assessed how viable municipal monitoring and evaluation of EE programmes in schools and communities to promote sustainable living in the Vhembe District Municipality of Limpopo is conducted. Data were collected by using questionnaires and interviews.

a. Questionnaires

The questionnaire was designed to collect data concerning the state of municipal monitoring and evaluation of EE programmes in schools and communities as a way of promoting sustainable living in the Vhembe District Municipality of Limpopo. Two separate questionnaires were developed, one for the learners and one for teachers The demographic factors of the population were included in the questionnaire such as gender and age.

b. Interviews

The interview is a research instrument utilised to gather data from the participants regarding the state of Vhembe District's municipal monitoring and evaluation of EE programmes in schools and communities. Interviewing involved the researcher asking questions and recording the participants' answers (Husband, 2020). The interview is a verbal interchange which is most often carried out face-to-face or using the telephone. In qualitative interviews, the participant plays a vital role in providing information therefore also providing understanding of the world (Leedy & Ormrod, 2019; Nieuwenhuis & Smit, 2012).

Semi-structured interviews were conducted with the sampled municipal officials; the interviews were recorded and transcribed for analysis purposes as part of the research process and procedure. The participants were chosen based on their direct involvement in the implementation of EE programmes at municipal level. This means that municipal members were interviewed using semi-structured interviews as a qualitative technique of collecting data.

1.10.3.3 Data analysis

Data analysis involves organising and interrogating the information so that patterns emerge which lead to the development of themes and sub-themes, developing clarifications and making interpretations (Babbie, Wagner III & Zaino, 2022).

a. Quantitative approach

In the quantitative research approach, the data is analysed manually or electronically (Jackson & Bazeley, 2019). Quantitative data analysis includes methods such as the rates of variables, differences between variables, and probability (McBeath, 2020). In the current study, once data were collected through the use of questionnaires, it was transposed into numerical codes and captured Statistical Package for Social Sciences (SPSS) software where they were analysed in terms of percentage, mean scores and Chi-square statistics.

b. Qualitative approach

The recorded semi-structured interviews ensured that all the required data was captured accordingly. Point and Baruch (2023) support the concept of transcribing and

adds that through transcriptions, the researcher is able to capture the interviews correctly and take note of other gestures. The qualitative data in the qualitative transcriptions were thematically analysed. This form of data analysis is important for analysing and emphasising the likenesses and differences of the participants as a method of identifying unexpected insights (Newell, Norris, White & Moules, 2017).

1.11 RELIABILITY, VALIDITY AND TRUSTWORTHINESS OF THE STUDY

In the current study, numerous instruments were used to collect data as well as methods in ensuring the accuracy of the collected data. This was done to ensure clarity and verification of the repeatability of an interpretation of the data. Reliability, validity and trustworthiness of the study in mixed methods research refers to the confidence that can be placed in the study's findings ensuring that they are credible and believable. This entails the norms of reliability, validity and trustworthiness, all of which are discussed in detail in Chapter 4

1.12 ETHICAL CONSIDERATIONS

The collection of data may have the potential to result in ethical issues towards any person involved throughout the study. According to Davies (2020), ethics involves beliefs of what is right and what is not right from a moral perspective. The following guidelines are particularly important for any educational research.

i. The researcher should seek consent to conduct a study as it is unethical to gather data from participants without first explaining to them the procedure of the study and them showing willingness to be part of the study. Ethical Clearance was received from the university and consent was received from the Vhembe District municipality before the collection of the data. An information letter was sent to the schools which formed part of the population of the study, giving details of the research for the principal and sampled teachers; thereafter participants were requested to sign a consent form. The same applied to the participants sampled from the municipality. The parents of the learners sampled met the researcher at school for a full study briefing and were requested to sign an assent form.

ii. The researcher should always be honest with the participants about all attributes of the study. For the current study, the purpose of the research and how it would contribute to the participants was clarified.

iii. The researcher ensured that participants did not come to any harm. This included asking questions that might have caused discomfort, anxiety and harassment.

iv. The maintaining of confidentiality was ensured by the researcher with the privacy of the participants being protected. Any form of identity of the participants has not been revealed anywhere including in the report of the research.

1.13 DELIMITERS OF THE STUDY

Delimitations of the study have been described as defining the boundaries of the study (Akanle, Ademuson & Shittu, 2020). Delimitations in this research project do not only serve as boundary conditions of procedures, but also as ontological commitments of the nature of the phenomenon being researched and the level of reality of the phenomenon. In this research, Municipal Monitoring and Evaluation (M&E) of Environmental Education (EE) programs is conceptualized as a systematic evaluative governance mechanism that creates, legitimates and institutionalizes knowledge about program success and sustainable living. Therefore, the subject matter of the research is ontologically confined to a governance system that is located in institutional, educational and community environments instead of as a neutral technical process.

From a conceptual perspective, Municipal Monitoring and Evaluation is considered as a socio-institutional and epistemically constructed practice through which municipalities interpret, assess and validate the implementation and effects of EE programs. As a result, Municipal Monitoring and Evaluation is viewed as a governance mechanism and a knowledge generation system rather than as only a compliance tool or a performance management tool. By viewing Municipal Monitoring and Evaluation as an epistemically embedded governance phenomenon, the research can critically examine the institutional rationales, evaluative assumptions, and governance rationales that influence the way EE programs are monitored and understood in municipal systems.

Environmental Education is viewed as an institutional responsibility as well as a socio-educational intervention that is positioned at the nexus of policy, pedagogy and community engagement. Environmental Education is not viewed solely as a part of curriculum or behavioural training activities, but as a governance linked educational practice to promote environmental awareness, community participation, and sustainable living within local socio-ecological systems.

Similar to Environmental Education, the term "Sustainable Living" is ontologically framed not only as an observed behaviour, but as a governance oriented normative construct that encompasses environmentally responsible behaviours, community environmental awareness and long-term ecological stewardship. Sustainable living is viewed in this research as an emerging outcome from the interactions between educational interventions, municipal governance structures, and community environmental practices, rather than as an independent individual behavioural variable.

At the systemic level, the research is limited to the interactions among four distinct, yet ontologically connected layers: the municipal governance system, the school based educational system, the community socio-environmental system, and the larger ecological sustainability environment. These layers are not viewed as administratively separate domains, but as interdependent elements of a larger local governance ecology through which Environmental Education is implemented, monitored and translated into sustainable living practices.

From a geographical standpoint, the empirical scope of the research is limited to the Vhembe District Municipality in the Limpopo Province of South Africa. The empirical focus of the research is justified on the grounds that local municipalities act as intermediate governance institutions that mediate national environmental policy, educational implementation and community behavioural changes. However, the research is not extended to include provincial or national monitoring and evaluation systems unless they directly influence municipal evaluative practices.

Institutionally, the research is focused on the municipal monitoring and evaluation of Environmental Education Programs delivered in schools and communities. The research does not aim to assess Environmental Education Curriculum Design,

Pedagogy in classrooms independently or General Environmental Service Delivery Programs such as waste management infrastructure, unless they intersect with EE related monitoring and evaluative governance processes.

From an analytical, methodological and epistemological perspective, the research is limited to an analytical and explanatory assessment of the institutional structuring, governance logic and epistemic assumptions underlying municipal M&E practices. The research is not designed to generate experimental measures of environmental behaviour change or longitudinal assessments of ecological impacts. Instead, the research aims to explore how evaluative governance systems create, interpret and operationalize knowledge about the effectiveness of Environmental Education in achieving sustainable living.

Therefore, the boundaries of this research are determined not only by geographical and institutional scope, but by an ontological commitment to understanding municipal monitoring and evaluation of Environmental Education as a systemic, epistemologically embedded governance phenomenon operating within an interconnected municipal-school-community-ecological governance system. This delimitation provides the philosophical framework for the analytical framing, theoretical positioning, and knowledge contributions of this dissertation.

1.14 DEFINITION OF KEY TERMS

The key terms environment, environment education and evaluation as utilised for this study are defined in the following section.

Environment: The environment is a space in which both living and non-living things dwell together (Roubeix, Danis, Feret & Baudoin, 2016). According to Roubeix et al. (2016), the environment is the natural condition in which biotic and abiotic factors existent together. People and animals exist together in an environment. In this study, the definition connects to the importance of both the biotic and abiotic components attained in our environment.

The community and school learners live in what is described as the environment. For the current study to provide knowledge of the EE concept, it is important to begin by explaining the term ‘environment’. The community lives in the environment; however, the behaviour and attitudes of the members of the community towards the environment

differ. There are numerous influential factors which include social equality and community members have different understandings of the environment.

For the community to preserve its environment, it is important to acquire knowledge and develop skills relevant to its environment. Verster and Bouwman (2020) found that a community which has a thorough understanding of their environment and a relationship between the aspects of the environment, will develop much-needed respect for their environment. The community will have an understanding that the effective use of available resources will offer other individuals the opportunity to use the same resources. Teane (2021) indicated that the best way to acquire the necessary knowledge about ensuring the achievement of environmental sustainability is through education focusing on the environmental crisis.

Environmental Education: Environmental education is a method that produces familiarity and understanding with regards to the correlation between humans as well as their numerous environments – natural, man-made, cultural and technological (Tseng & Wang, 2020). For the current study, the focus was on the monitoring and evaluation process of programmes related to EE in both schools and the community.

Ibáñez, Muñoz and Claros (2017) indicate that it is important to know that environmental knowledge is significant for enhancing community members and learners' consciousness of their environment. From this point of view, when the community is concerned about the environment, they develop pro-environmental behaviour. However, Tseng (2020) and Jickling and Sterling (2017) have different perceptions about the components of environmental education. Ardoin, Bowers and Gaillard (2020) describe EE as education about the environment. In contrast, Mol, Sonnenfeld and Spaargaren (2020) state that EE cannot be perceived as education about the environment; he suggests that it is a learning process aimed at expanding awareness of the environmental crisis and further broadening the knowledge about the environmental problems. EE assists in helping the community acquire the knowledge and develop the vital skills to acknowledge the relationship between the environment and its people (Zhu, 2018). To ensure the smooth execution of EE in schools and within the community, there is however, a significant need to measure its implementation.

Monitoring and Evaluation: Several authors such as Kariuki and Reddy (2017) and Mubangizi (2019), define monitoring and evaluation in various ways, although the definitions are similar. Through monitoring and evaluation, the performance of programmes can be determined which control and manage their output and outcomes (Kariuki & Reddy, 2017). Many scholars define monitoring and evaluation separately (Dali & Husain, 2020; Kabeyi, 2019; Neumann, Robson & Sloan, 2018). Neumann et al. (2018) have defined monitoring as the ongoing function which mainly aims to allow the management of continuous interventions with early indications of advancement or lack therefore in the attainment of the outcomes. Dali and Husain (2020) define evaluation as a selective process to assess the progress systematically and objectively towards the achievement of the results. The process of evaluation does not happen at one time in programmes; it is the process of assessment of different levels and phases done at numerous points in time to ensure to developed needs response. Monitoring and evaluation are the processes of determining changes against the programme objectives and deciding if the programme is cost-effective (Kabeyi, 2019). Dali and Husain (2020) indicate that this can be achieved by having a system of gathering data for reporting purposes on the outcome to ensure full accountability.

1.15 CHAPTER OUTLINE

The study comprises six chapters:

Chapter 1: This chapter served as an orientation and background for the study. The research topic was introduced and then motivation for conducting this study was presented. The research questions, the aim of the study and the objectives of the study were briefly explained in this chapter. A brief overview of the research design and methodology, issues of trustworthiness and ethical considerations were presented. The final section offered a definition of terms used in the study.

Chapter 2: The theoretical framework of the study is outlined in Chapter 2

Chapter 3: This chapter presents the critical investigation of existing literature related to the topic of this study.

Chapter 4: This chapter describes the research methodology and design and the procedures followed in the collection and analysis of the data.

Chapter 5: This chapter presents the analysis and the interpretation of the data.

Chapter 6: This chapter provides a summary of the findings, draws conclusions and offer recommendations.

1.16 CHAPTER SUMMARY

This chapter presented the introduction and orientation to the research which aimed to assess how viable municipal monitoring and evaluation of EE programmes in schools and communities in promoting sustainable living is conducted in the Vhembe District of Limpopo. The background of the study, rationale for conducting the study, problem statement and research questions have been emphasised. A preview of the theoretical framework, the conceptual from and a brief review of literature was given. An overview of the research design and methodology employed in the study was also presented.

CHAPTER 2: THEORETICAL AND CONCEPTUAL FRAMEWORK

2.1 INTRODUCTION

Environmental Education plays a pivotal role in shaping individuals' awareness, knowledge, and attitudes toward sustainable living practices, making it imperative for municipalities to monitor and evaluate its implementation within schools and communities. This section presents the Conceptual Framework for investigating municipal monitoring and evaluation for school and community EE programmes in promoting sustainable living in the Vhembe District of Limpopo. The study draws on several theoretical frameworks to inform its design, including EE Theory, Programme Evaluation Theory, Systems Theory and Critical Theory in Education. The anticipated relationships between variables, informed by these theoretical perspectives, will elucidate the dynamics at play within the municipal monitoring and evaluation processes and their impact on EE outcomes.

2.2 THEORETICAL FRAMEWORK

Understanding the dynamics of municipal monitoring and evaluation of EE within the Vhembe District Municipality requires a comprehensive theoretical framework that illustrates the multifaceted nature of this endeavour. In this section, the theoretical framework that underpins the study are discussed, providing a lens through which to analyse the complex interplay of factors shaping EE practices. The theories that make up the framework include EE Theory, Programme Evaluation Theory, Systems Theory and Critical Theory in Education.

2.2.1 Environmental Education Theory

Environmental Education (EE) Theory provides a conceptual foundation for understanding how environmental knowledge, attitudes, and behaviours are developed and supported through structured learning processes. The roots of EE Theory can be traced to the work of David W. Orr, who articulated the importance of environmental literacy and ecological awareness as essential for fostering sustainable societies (Orr, 1992). Orr’s foundational contribution emphasised the interconnectedness of human and ecological systems, asserting that environmental degradation is deeply embedded in social, economic, and institutional practices.

The concept of EE has emerged in response to the pressing challenges facing humanity in the contemporary world, ranging from climate change and biodiversity loss to social inequality and environmental degradation (UNESCO, 1977). As these challenges become increasingly urgent and interconnected, there is a growing recognition of the need to re-evaluate the fundamental goals and essence of education. EE catalyses this re-evaluation, prompting a shift towards more holistic and sustainable approaches to learning and development (WCED, 1987).

Within the context of Western civilisation, EE encompasses two distinct perspectives that reflect different approaches to addressing these challenges. On one hand, it is viewed as an integral component of a broader educational theory that seeks to revolutionise traditional pedagogical practices (UNESCO, 1976). This perspective advocates the integration of philosophical, social and educational ideologies into a cohesive framework known as the ‘new education’. EE plays a central role in this paradigm shift, catalysing transformative change and innovation in educational systems.

Conversely, a narrower perspective sees EE as a pragmatic response to immediate environmental concerns. Rather than aiming for revolutionary change, this approach focuses on practical initiatives tailored to specific community needs and contexts (Le Grange & Reddy, 1997). It acknowledges the limitations of imparting complex environmental concepts to individuals primarily focused on meeting basic needs, emphasising the importance of localised, contextually relevant education. However, implementing EE poses numerous challenges. Questions about its definition, integration into curricula, methodology and broader societal impact remain unanswered (UNESCO, 1977). Moreover, the cultural connotations and terminologies associated with EE often reflect Western values and may not fully resonate with local perspectives and Indigenous knowledge systems. Overcoming these challenges requires a deep understanding of cultural diversity and a commitment to inclusivity.

In addition to addressing conceptual and cultural challenges, EE plays a crucial role in promoting sustainability and resilience in the face of rapid technological advancement and ecological change (Jickling, 2005b). By fostering a deeper understanding of environmental issues and their interconnectedness with social,

economic and political systems, EE empowers individuals and communities to become active agents of positive change (Knutsson, 2020).

Environmental education represents a transformative paradigm shift in education, emphasising the interconnectedness of human society and the natural world. By integrating environmental principles and practices into educational frameworks, EE seeks to inspire a new generation of environmentally literate citizens, equipped to address the complex challenges of the 21st century and beyond (Catalano, Redford, Margoluis & Knight, 2017).

The study draws extensively on EE theory to frame its research questions, objectives, and methodology. EE theory is rooted in the recognition of the interconnectedness between humans and the environment, emphasising the need to educate individuals and communities about environmental issues, promote environmental awareness and foster a sense of responsibility toward sustainable living.

The Tbilisi Declaration, emanating from the Intergovernmental Conference on EE held in Tbilisi, Georgia, in 1977, is a foundational document in EE theory (UNESCO, 1977). It outlines the principles, objectives and strategies of EE, advocating for the integration of environmental concepts into educational curricula at all levels. The Tbilisi Declaration emphasises the importance of fostering environmental awareness, knowledge, values, attitudes, skills and participation among individuals and communities to address environmental challenges effectively (UNESCO, 1977).

Another key document in EE theory is the Belgrade Charter, adopted in 1975 during the International Workshop on EE held in Belgrade, Yugoslavia (UNESCO, 1975). The Belgrade Charter underscores the significance of integrating EE into formal and informal education systems. It emphasises the role of EE in promoting sustainable development, environmental conservation and social justice. The charter calls for the inclusion of environmental themes across various subjects and disciplines to cultivate environmentally literate citizens capable of making informed decisions about environmental issues (UNESCO, 1975).

In the context of the study, EE theory serves as a theoretical framework for understanding the goals, objectives and principles of EE programmes within schools and communities (UNESCO, 1975; UNESCO, 1977). It informs the research questions, which aim to assess the current state of municipal monitoring and

evaluation of environmental education, identify challenges, evaluate effectiveness and propose a suitable framework for promoting sustainable living.

By grounding the study in EE theory, researchers are able to explore how EE initiatives align with the principles outlined in the Tbilisi Declaration and the Belgrade Charter. This theoretical perspective guides the selection of research methods, such as qualitative interviews and quantitative surveys, to gather data on the implementation and impact of EE programmes (UNESCO, 1975; UNESCO, 1977).

Overall, EE theory provides a comprehensive framework for understanding the importance of educating individuals and communities about environmental issues, fostering environmental literacy and promoting sustainable living practices. By incorporating insights from EE theory, the study aims to contribute to the advancement of effective EE initiatives within the Vhembe District Municipality.

2.2.2 Programme Evaluation Theory

Programme Evaluation Theory is a theoretical framework to understand how public programs are evaluated with respect to their relevance, efficiency, effectiveness, impact, and sustainability. According to Michael Quinn Patton (Patton, 1978), the first comprehensive theoretical framework was articulated by him in 1978 when he outlined an approach to program evaluation that is both practical and utilisation focused and uses evidence to support decision-making. This foundational work of Patton has been instrumental in establishing evaluation as a separate field of study from social science research and has clearly identified that the purpose of evaluation is to provide information to assist in making judgements regarding the performance of programs and to enhance their effectiveness.

At its core, evaluation entails forming a judgement based on available information (Cook, 2010; Durning & Hemmer, 2010a). Hence, educational programme evaluation utilises information to assess the value or merit of an educational programme (Cook, 2010). More formally, educational programme evaluation involves the systematic gathering and analysis of information pertaining to a programme's design, implementation and outcomes, aimed at monitoring and enhancing its quality and effectiveness (ACGME, 2010). This process seeks to understand the programme through a structured and deliberate collection of data, identifying factors contributing

to its success and areas for improvement (Durning & Hemmer, 2010b). Essentially, programme evaluation aims to recognise both internal and external factors influencing programme outcomes and determining their desirability or undesirability. The framework used to define the evaluation process shapes its execution.

Data required for programme evaluation is typically obtained through measurement procedures. The selection of specific measurement tools, methods or assessments for programme evaluation is influenced by various factors, including the evaluation questions defining the desired understanding of the programme's achievements or deficiencies. Here, 'assessments' are defined as measurements or the strategies chosen to gather information necessary for making a judgement (Fyre & Lemmer, 2013)

At its core, evaluation entails making a value judgement based on available information. A robust programme evaluation process serves the dual purpose of ensuring accountability and providing educators with valuable insights into their programmes, fostering continuous programme improvement (Goldie, 2006).

Historically, evaluation frameworks primarily focused on measuring programme outcomes, with little emphasis on understanding the underlying programme processes (Patton, 2011). While traditional evaluation frameworks still serve an important role, newer frameworks prioritise learning about the dynamic processes within programmes, enabling a more comprehensive focus on programme enhancement (Patton, 2011; Stufflebeam & Shinkfield, 2007). In the following sections, both older quasi-experimental evaluation frameworks and newer, more sophisticated frameworks informed by contemporary theories, are discussed.

2.2.2.1 Theories of evaluation frameworks

This section explores theories relevant to evaluation frameworks to provide context for descriptions of common or useful evaluation frameworks. Educational evaluation frameworks did not originate from educational theories but rather from broader theories shaping scientific inquiry and knowledge acquisition.

One such theoretical perspective is reductionism, rooted in the Enlightenment Era, marked by a shift towards experimental inquiry and understanding the world through parts (Mennin, 2010). Reductionism assumes that phenomena can be dissected and

understood by analysing their constituent elements, leading to predictable outcomes. This reductionist view has deeply influenced both education programmes and evaluation methodologies (Stufflebeam & Shinkfield, 2007).

The reductionist approach assumes linear cause-and-effect relationships among programme elements, wherein changes in certain elements are expected to yield corresponding changes in outcomes (Frechtling, 2007). This perspective is evident in popular evaluation frameworks like the Logic Framework and the Before, During and After framework, which emphasise logical sequences from inputs to outcomes (Durning & Hemmer, 2010b; Durning, Artino & Pangaro, 2007). These frameworks imply that understanding the contributing factors enables explanation of programme success or failure.

Moreover, complexity theory challenges reductionist assumptions by acknowledging the intricate, non-linear dynamics of complex systems (Mennin, 2010). Complexity theory posits that educational programmes, influenced by multifaceted factors, exhibit emergent properties that cannot be fully explained by examining individual components (Mennin, 2010). Evaluating such programmes requires embracing uncertainty and recognising the contextual influences shaping programme outcomes.

These theoretical perspectives inform the selection and design of evaluation frameworks, guiding educators in structuring evaluations that capture the complexity of educational programmes. While reductionist frameworks may provide insight into linear relationships, complexity theory encourages educators to adopt more holistic, relational views of educational phenomena, promoting a nuanced understanding of programme dynamics. This broader perspective enables educators to navigate the complexities inherent in educational settings, facilitating informed decision-making and programme improvement.

- **Kilpatrick Framework**

Kirkpatrick's four-level evaluation framework, introduced in 1996, has been widely embraced for assessing learner outcomes in training programmes. Its key strengths lie in its clear focus on programme outcomes and its delineation of outcomes beyond mere learner satisfaction. Kirkpatrick proposed evaluating four hierarchical 'levels' of programme outcomes: (1) learner satisfaction or reaction, (2) learning outcomes attributed to the programme, (3) changes in learner behaviour within the training

context, and (4) the programme's ultimate impact in a broader context (Kilpatrick,1996).

To gauge learner reaction, evaluators ascertain desired reactions such as satisfaction and directly query learners about their perceptions of the programme's utility and value (Kilpatrick, 2016). The second level entails assessing acquired knowledge and skills attributable to the programme, often through tests and comparisons with control groups. Level three involves observing changes in learner behaviour within their training context, while level four examines long-term outcomes in the larger context, such as effects on patient outcomes or healthcare team performance (Kilpatrick, 1996).

Despite its popularity, Kirkpatrick's framework has been critiqued for overlooking intervening variables affecting learning and for assuming linear causality between educational programmes and outcomes. Incorporating Kirkpatrick's framework into a broader evaluation framework can offer educators a structured approach to defining programme outcomes (Fyre & Hemmer, 2013).

- **Logic Framework**

The Logic Framework, influenced by systems theory, emphasises relationships between programme components and their context. While primarily used for programme planning, it supports rational evaluation plans and can accommodate feedback loops and complex interactions within educational programmes (Francis et al., 2025). The Logic Framework consists of four basic components: Inputs, Activities, Outputs and Outcomes. *Inputs* encompass all relevant resources available or required for the programme, while *Activities* outline planned changes or innovations. *Outputs* indicate progress or completion of programme activities and *Outcomes* define intended changes resulting from programme activities. The Logic Framework's simplicity makes it accessible to educators, but its effectiveness hinges on understanding the programme as a dynamic system and documenting both intended and unintended outcomes (Fyre & Hemmer, 2013).

In addition to the fundamental elements of the Logic Framework, a comprehensive version incorporates references to the programme's Context and its Impact. *Context*

encompasses the environmental factors shaping the programme, including social, cultural and political aspects. For instance, governmental mandates or accrediting requirements for curriculum changes are relevant political considerations, while learner demographics may be social factors. Identifying contextual features that either facilitate or hinder programme adoption assists planners in documenting essential programme elements. *Impact* encompasses both intended and unintended consequences following a programme or intervention. Broader, long-term outcomes, such as improving health outcomes for a specific population, may be classified as 'impacts' rather than outcomes in the Logic Framework approach (Fyre & Hemmer, 2013).

The Logic Framework approach can facilitate effective evaluation design if educators remain mindful of its assumptions regarding linear relationships. Common evaluation queries within this framework might include:

i. Were all planned programme activities executed as intended? If deviations occurred, what were they and why?
ii. Were the expected personnel available and engaged as anticipated, possessing the requisite skills and experience?
iii. To what extent did the activities address the needs of diverse learner groups?
iv. What obstacles were encountered during programme implementation and how were they addressed?
v. Did faculty engage in associated professional development and to what extent did they apply newly acquired skills or knowledge?
vi. How did participants assess the effectiveness and accessibility of the programme activities?
vii. What were the achievement outcomes among learners?
viii. How frequently and effectively did learners apply acquired knowledge in clinical practice?
ix. What changes were observed in patient outcomes following programme implementation?

Using the Logic Framework approach can be highly beneficial during the planning stages of educational programmes or revisions. By explicitly delineating the connections between programme resources (Inputs), strategies (Activities), immediate outcomes (Outputs), and desired accomplishments (Outcomes), this method ensures

that the implemented programme aligns with intended objectives. It considers the surrounding elements influencing change, the interrelations among these elements, and how the social, cultural, and political context interfaces with the educational programme or innovation (CDC, 2018).

- **CIPP Framework**

The CIPP (Context/Input/Process/Product) framework, developed by Daniel Stufflebeam as an improvement upon the prevailing experimental design framework of its era, was first introduced in 1971 with a focus on enhancing programmes rather than merely demonstrating their efficacy. Its applicability across diverse educational and non-educational evaluation contexts has been extensively documented (Frye & Hemmer, 2013). While sharing terminology with the Logic Framework, the CIPP framework does not suffer from the linear relationship assumptions that constrain the Logic Framework. Thus, evaluators who grasp educational programmes in terms of their complex and dynamic relationships find the CIPP framework particularly potent.

Comprising four complementary sets of evaluation studies, the CIPP approach enables evaluators to examine crucial yet often overlooked programme dimensions. These components collectively accommodate the evolving nature of educational programmes and educators' thirst for programme improvement data. By addressing all stages of an educational programme, from planning to implementation and retrospective assessment if desired, the CIPP framework supports both formative and summative evaluations (Stufflebeam, 1971).

The four elements of the CIPP framework serve distinct purposes:

i. *Context evaluation study:* Primarily conducted during programme planning, a context evaluation study identifies and defines programme goals and priorities by assessing relevant needs, problems, assets and opportunities. It provides a baseline for evaluating later outcomes and strengthens proposals for external funding.
ii. *Input evaluation study:* Useful for assessing resource allocation during programme planning, an input evaluation study examines the feasibility and cost-effectiveness of alternative approaches. It justifies programme design decisions and resource allocation.

iii. *Process evaluation study:* Typically used to assess programme implementation, a process evaluation study focuses on programme elements associated with outcomes and provides formative information for guiding in-process revisions. It also aids in understanding how the programme functions.

iv. *Product evaluation study:* Aligned with traditional summative evaluations, a product evaluation study assesses programme outcomes comprehensively, including intended and unintended, short-term and long-term outcomes, as well as impact, effectiveness and sustainability. It also examines whether targeted educational needs were met and can be conducted while the programme is ongoing to inform decision-making (Frye & Hemmer, 2013).

Each type of evaluation study within the CIPP framework employs various methods tailored to its specific focus, ranging from document review and interviews to surveys and stakeholder judgements.

2.2.3 Systems Theory

Von Bertalanffy introduced the concept of General Systems Theory (GST) in the 1930s, further developing it post-World War II. As a biologist, he aimed to explore the idea of ‘open systems’, focusing on how living systems interact with their environment by exchanging matter. Capra (1996), as referenced in Mele, Pels and Polese (2010), describes systems theory as an interdisciplinary approach applicable to natural systems, societal structures and various scientific fields, offering a holistic framework for investigation. This perspective extends to universities, where it encompasses entire institutions, academic divisions or departments.

In 1966, Katz and Kahn expanded the notion of open systems, applying it to organisations and altering the perception of them as dynamic entities interacting with their surroundings. Kast and Rosenzweig (1972) suggested that managers often adopt a systems approach and contingency views instinctively to address organisational challenges. Vancouver (1996) expanded on this by including organisations and societies as components of living systems, proposing that despite environmental disturbances, systems can maintain stability. Consequently, establishing standards within university education systems can be progressively achieved, even in the face of external pressures.

Systems scientists in both natural and social sciences investigate the interaction among components within a system to comprehend the intricacies of reality (Lalande & Baumeister, 2015). Arnold and Wade (2015) further describe systems as entities formed by interconnected or interdependent elements working together towards a common goal. Thus, a system consists of interconnected parts operating collectively to achieve a shared purpose. For instance, educational institutions encompass various components functioning as a unified entity (Bozkus, 2014a). All organisations are considered open systems as they engage with their surroundings for survival (Daft, 2010).

The fundamental theory of organisational systems comprises five main elements: inputs, a transformation process, outputs, feedback and the environment (Daft, 2010). *Inputs* refer to the resources - material, human, financial, or informational - necessary to produce goods and services of varying quantities and qualities. The *transformation process* involves management utilising production technology to convert inputs into outputs. *Outputs* represent the tangible products and services of the organisation, possessing market value or user utility.

2.2.3.1 Systems theory in education

Systems theory bears resemblance to the education production function. As John (2010) asserts, education plays a crucial role in cultivating human resources, and the production function denotes the relationship between input quantity, intervening factors and the production of a specific good, considering its quality. Thus, an education production function delineates the functional correlation between inputs from schools and students, leading to measurable school outputs. To ensure that production function meets societal needs, policymakers and educational managers must define clear objectives and select inputs and strategies that, through the production process, yield qualified products, comprising competencies such as skills, abilities and knowledge transferable to the economy's productive sector with efficiency and effectiveness (John, 2010). Cory and Betts (2007), in their investigation on the role of teacher quality in education within the education production function, highlighted that variations in teacher quality significantly influence student achievement.

2.2.4 Critical Theory

Critical theory has a rich history of influencing and moulding various qualitative research methodologies. This theoretical framework, valued by researchers across educational and other fields, serves a dual purpose. Firstly, it prompts qualitative researchers to critically examine positivist approaches, which often assume scientific objectivity among observers. Secondly, it encourages researchers to adopt reflexive practices that scrutinise their own biases in perceiving the world. By embracing critical theory, qualitative researchers can advocate for educational reform to benefit humanity as a whole (Bhabha, 1990).

While there is not a single universally accepted critical theory, there exists a shared understanding of it rooted in the legacy of Western theoretical traditions, particularly those stemming from the Frankfurt School (Ryoo & Mclaren, 2010). Critical theory, as a philosophy within the social sciences, encompasses the work of generations of German thinkers associated with Western European and Marxist traditions, notably the Frankfurt School. Departing from conventional theories, philosophers of the Frankfurt School sought to fundamentally redefine human emancipation, aiming to liberate individuals from oppressive circumstances (Woodson, 1990).

Critical theory is fundamentally concerned with historicising, critiquing and revealing power dynamics, contradictions and systems of domination. It seeks to deconstruct the production of knowledge, question whose knowledge holds value and examine how control over knowledge translates into societal power dynamics. This critical examination aims to prevent individuals from being subjugated by the ideologies perpetuated by societal institutions (Woodson, 1990). Consequently, critical theory has spawned diverse critical theories such as critical race theory, critical pedagogy, critical literacy and critical feminist theory, each striving for social liberation and consciousness (Ryoo & Mclaren, 2010).

Viewed as both a critique and a methodology, critical theory serves as a self-aware means of fostering dialog and dialectical approaches to transformative and emancipatory practices. This process encourages theorists to continuously interrogate their perspectives and representations of the world, challenging them to scrutinise the very theories they develop (Horkheimer, 1993). Critical theory contends that uncritical acceptance of philosophies without addressing broader societal issues renders them

mere ideologies in need of critique. The Frankfurt School emphasised the importance of inquiry and critique as tools for articulating praxis, thereby fostering a symbiotic relationship between theory and society.

2.2.4.1 Roots of critical theory

A critical approach to understanding the relationship between knowledge and power in society can be found in the work of the Greek philosophers Socrates (469–399 BCE), Plato (428/427–348/347 BCE) and Aristotle (384–322 BCE). Through Plato's dialogues – most notably *Gorgias* and *The Apology* – one can see how Socrates (Plato's mentor) questioned the way the Sophists (classical Greek philosophers who exercised great power in Athens) used rhetoric to persuade people to manufacture and believe in false truths, rather than use rhetoric to search for ultimate truth for the betterment of humankind (Horkheimer, 1990; Plato, trans. 1997). Similarly, Plato's determination to record Socrates' stories through the written word – despite Socrates' scepticism about the technology of writing – reflects how Plato recognised the importance of language as a meaning-making tool for the development of critical thought (Plato, trans. 1997; Nussbaum, 1997). Following Plato, Aristotle theorised and deconstructed the power of knowledge creation in language manipulation through *The Art of Rhetoric* and *Poetics* (Aristotle, trans. 1991; Kennedy, 1991). Aristotle outlined the process of writing persuasive speeches that appeal to logos (reason), pathos (emotion) and ethos (confidence in the orator's character) (Aristotle, trans. 1991).

Although thousands of years would pass between the lives of these Greek philosophers and the foundations of critical theory, which grew out of the Enlightenment, the examination of linguistic tools in knowledge production explored in Socrates, Plato and Aristotle's work proved invaluable to Western philosophical traditions (Habermas, 1984). Transitioning to the Enlightenment Era, philosophers like Immanuel Kant emphasised critique as essential for discerning true knowledge and combating illusory ideologies (Kant, 1787/1998). Georg Wilhelm Friedrich Hegel built upon Kant's ideas, proposing a historical progression towards a higher consciousness of self and society. Hegel's dialectical reasoning aimed at resolving contradictions towards an ideal synthesis, challenging conventional notions of truth (DuBois, 1982; Hegel, 1807/1977).

The critical theory further evolved through Karl Marx's analysis of capitalism, which highlighted how economic power structures influence societal ideologies (Marx & Engels, 1848/1998). Marx's insights into class struggle and false consciousness laid the groundwork for critical theory's understanding of power dynamics (Horkheimer, 1993; Eagleton, 1991). The Frankfurt School, led by Max Horkheimer, Herbert Marcuse, Theodor Adorno, and Walter Benjamin, critiqued Enlightenment rationality and positivism (Adorno, 1991; Horkheimer, 1993; Marcuse, 1964). They advocated for a more self-conscious approach to human reasoning, challenging the limitations of positivist rationality in fostering critical thought. The Frankfurt School rejected essentialist views of culture and embraced its dynamic role in shaping human relationships (Adorno & Horkheimer, 1944/2002). Figures like Adorno and Marcuse contributed significantly to cultural theory by exposing how major cultural industries perpetuate dominant ideologies (Adorno, 1991; Marcuse, 1964). They advocated for the use of new media literacies to counteract such control. Horkheimer used critical theory as a tool to combat mass ideologies during a period of societal upheaval (Freire & Macedo, 1987; Horkheimer, 1990).

In summary, critical theory emerged as a means for individuals to challenge societal norms and assumptions, promoting free thought and self-determination. As Horkheimer emphasised, true critical theory focuses on empowering individuals as creators of their historical reality (Horkheimer, 1993; Habermas, 1984).

2.2.4.2 Global perspectives of critical theory

While critical theory originated from Western and European philosophical traditions, there exists significant global philosophies that warrant inclusion in the contemporary critical theory canon. Some of these traditions have drawn from Western philosophies, while others have evolved independently. Despite obstacles such as language barriers and power differentials between Western imperialists and scholars from other regions, efforts should be made to integrate these global critical philosophies into mainstream Eurocentric critical thought (Horkheimer, 1993).

In the African American tradition, critical theory has seen notable developments through the work of W.E.B. DuBois (1868–1963) in his seminal text ‘The Souls of Black Folk’ (1903). DuBois delved into the concept of ‘double consciousness’, examining the inner conflict experienced by African Americans living in a racist society. He

highlighted the role of dominant languages in shaping racial ideologies and advocates for critical education as a means of transcending oppressive norms. Following the Harlem Renaissance, Carter Woodson (1875–1950) challenged the incorporation of scientific racism in classical education through his work ‘The Miseducation of the Negro’ (1933). Woodson critiqued how traditional education perpetuates racial hierarchies and calls for a critical approach to education for individual and community empowerment (Marcuse,1964).

In the 1980s, scholars like Edward Said and Homi Bhabha expanded critical theory by exploring colonialism and postcolonialism. Postcolonial theorists examined how Western colonialism perpetuates hegemony through knowledge control (Horkheimer,1972). Despite its association with postmodern theory, postcolonial theory aligns with critical theory in its examination of oppressed societies. Frantz Fanon (1925–61) made significant contributions to critical theory through his analysis of colonial psychology and resistance movements in Africa. His work influenced liberation movements globally, challenging dominant ideologies and advocating for indigenous agency (Horkheimer, 1972).

Latin American and Central American critical theories, exemplified by Liberation Theology and the work of figures like Paulo Freire (1921–97), offer insights into resistance against oppressive structures. Freire's work, ‘The Pedagogy of the Oppressed’ (1970), critiques the dehumanising nature of education in capitalist societies and emphasises the role of praxis and dialogue in fostering critical thought. Despite the influence of critical theory in East Asia, barriers to knowledge sharing persist due to power differentials and lack of translation (Horkheimer, 1993).

Efforts to integrate diverse critical perspectives into mainstream discourse are essential for fostering a more inclusive and comprehensive understanding of critical theory.

2.2.4.3 Critical theory in education

The critical theories of the Frankfurt School and other global critical perspectives are pivotal for reshaping education and have the potential to revolutionise contemporary schooling systems to be more equitable, humanising and democratic. Firstly, critical theory challenges the positivist rationality entrenched in educational settings, which

falsely assumes political neutrality. This critique is essential for educators to uncover the implicit biases and hidden curricula embedded within current standardised educational practices (Ryoo & Mclarren, 2010). Secondly, critical theory emphasises historical consciousness as fundamental for fostering critical thinking and literacy. Understanding the socio-historical context in which knowledge is produced and pedagogical methods are employed, is crucial for deconstructing both the content and process of education. Thirdly, adopting critical theory in education prompts a revaluation of how race, class, gender, language, sexuality and culture are perceived and mediated within educational institutions. It advocates for respecting students' diverse backgrounds and experiences without reducing them to stereotypes (Ryoo & Mclaren, 2010).

Furthermore, critical theory advocates for dialectical thought and praxis, encouraging educators and students to actively interrogate oppressive societal structures while striving for transformative action. Additionally, critical theory underscores the role of schooling in advancing social justice by engaging with students' communities and experiences (Ryoo & Mclaren, 2010). By using education as a tool for meaning making and fostering connections among diverse learners, critical theory can cultivate a community of empowered individuals capable of effecting positive change. Freire and Macedo (1987) emphasise the importance of critical praxis in education, which involves critically analysing the world alongside textual analysis and empowering students with critical literacy skills.

In line with this critical tradition, proponents of critical pedagogy, such as Paulo Freire, Peter McLaren, and bell hooks, advocate for applying critical theory to educational structures to challenge existing norms and practices. Critical pedagogy challenges traditional banking education methods tied to standardised testing and curricula, advocating for student and educator agency within an oppressive schooling system. Additionally, critical revolutionary pedagogy offers a more radical approach, opposing sanitised versions of critical pedagogy and aligning with Marxist theory to contest neoliberal capitalism.

Critical theory compels educators and researchers to reconsider power dynamics within educational systems, echoing the insights of Antonio Gramsci, who viewed education as an ideological apparatus that perpetuates hegemony. By embracing

critical theory, educational researchers can engage in transformative social inquiry to reform schooling practices, empower teachers, honour student diversity and contribute to broader societal improvement.

2.3 CONCEPTUAL FRAMEWORK

The proposed conceptual framework merges Programme Evaluation Theory, Environmental Education (EE) Theory, Systems Theory and Critical Theory to create a comprehensive perspective for analysing municipal monitoring and evaluation of EE initiatives. Programme Evaluation Theory offers the methodological tools necessary to evaluate the effectiveness and impact of interventions within these systems (Stufflebeam, 1971; Patton, 2011). Environmental Education (EE) Theory anchors the framework in considerations of ecology and sustainability, emphasizing the connection between human activities and environmental outcomes (Jickling, 2005a; UNESCO, 1977). Systems Theory enhances this view by framing municipalities, schools, teachers, students, and communities as interconnected elements of broader social and educational systems (Daft, 2010; Von Bertalanffy, 1968). Critical Theory underlies the framework by drawing attention to the influence of power structures on knowledge, decision-making, and societal norms (Freire & Macedo, 1987; Horkheimer, 1990).

Collectively, these theories create an integrated conceptual framework that facilitates a holistic, critical, and practical examination of intricate socio-ecological challenges. The framework takes into account both social dynamics and ecological consequences, enabling researchers to assess not only programme results but also the systemic and power-related factors that influence these results. By combining these four theoretical viewpoints, the framework aids in developing effective, equitable, and sustainable municipal monitoring and evaluation strategies for environmental education.

The study integrated theoretical frameworks such as EE Theory, Programme Evaluation Theory, Systems Theory and Critical Theory in Education to inform the research design, data collection methods, and analysis procedures. These theoretical perspectives provided a conceptual framework for interpreting findings and proposing recommendations.

2.3.1 Key Concepts and Constructs of the Research

The aim of the study was to delve into the state of municipal monitoring and evaluation of EE within the Vhembe District Municipality, with a broader goal of proposing a framework that fosters sustainable living practices. To achieve this aim, specific objectives and research questions were outlined, which are underpinned by key concepts and constructs crucial for understanding the complexities of EE initiatives and their assessment.

At the core of the research lies the concept of environmental education, which serves as the guiding principle for the investigation. Environmental education encompasses the process of imparting knowledge, fostering awareness and promoting actions aimed at addressing environmental challenges and embracing sustainable practices. In this study, theory acts as the lens through which the effectiveness of municipal monitoring and evaluation efforts is evaluated, with a focus on their impact on schools and communities within the Vhembe District Municipality.

Central to the study's objectives was the examination of municipal monitoring and evaluation processes concerning EE. This conceptual framework emphasises the role of municipal authorities in assessing and overseeing EE initiatives within their jurisdiction. By evaluating the current state of monitoring and evaluation practices, identifying challenges faced by municipal officials and assessing their effectiveness, the study aimed to shed light on the strengths and weaknesses of existing approaches.

Another key construct is sustainable living, which underscores the broader objective of the study: proposing a framework for promoting sustainable practices within the Vhembe District Municipality. Sustainable living entails adopting behaviours and practices that minimise environmental impact, conserve natural resources and promote ecological balance. Through the evaluation of EE initiatives, the study sought to identify strategies for fostering sustainable behaviours among learners and community members, thereby contributing to the long-term well-being of the region.

The study draws theoretical guidance from programme evaluation theory and EE theory. Programme evaluation theory provides a systematic framework for assessing the value and effectiveness of educational programmes, aligning with the study's objective of evaluating municipal monitoring and evaluation efforts. Environmental

education theory, on the other hand, informs the broader goals and principles of EE initiatives, guiding the research towards promoting environmental literacy, awareness, and action.

In conclusion, the key concepts and constructs underscore the complexity and significance of the study on municipal monitoring and evaluation of EE within the Vhembe District Municipality. By addressing these concepts comprehensively, the research aimed to contribute to the advancement of effective EE initiatives and sustainable living practices, ultimately fostering a healthier and more resilient community.

2.3.2 Anticipated Relationships

In the exploration of EE within the Vhembe District Municipality, understanding municipal monitoring and evaluation is crucial. This section examines anticipated relationships among key variables shaping the effectiveness of EE initiatives. The state of monitoring and evaluation practices, challenges faced by officials, effectiveness of efforts and framework development are interrelated factors. By critically assessing these dynamics, the study aimed to provide actionable insights for fostering sustainable practices and environmental stewardship within the municipality.

Based on the preceding sections, the study expected several relationships among variables:

1. **State of Municipal Monitoring and Evaluation of EE (Variable A):**

This variable was expected to have a significant relationship with the effectiveness of EE initiatives (Variable B) in schools and communities within the Vhembe District Municipality. The study anticipated that a thorough assessment of the current state of municipal monitoring and evaluation practices would provide insights into the strengths and weaknesses of existing EE programmes.

2. **Challenges Faced by Municipal Officials (Variable C):**

The challenges identified by municipal officials in monitoring and evaluating EE were expected to influence the effectiveness of these initiatives (Variable B). The study hypothesised that addressing these challenges, such as resource constraints or lack of community engagement, would lead to improved outcomes in EE.

3. **Effectiveness of Municipal Monitoring and Evaluation (Variable B):**

The effectiveness of municipal monitoring and evaluation efforts was expected to be influenced by various factors, including the state of monitoring practices (Variable A) and the challenges faced by municipal officials (Variable C). The study aimed to uncover the relationship between these variables and the overall effectiveness of EE initiatives.

4. **Suitable Framework for Municipal Monitoring and Evaluation (Variable D):**

The study expected that identifying a suitable framework for municipal monitoring and evaluation of EE (Variable D) would be influenced by the current state of monitoring practices (Variable A), challenges faced by municipal officials (Variable C), and the perceived effectiveness of existing efforts (Variable B). By exploring these relationships, the study aimed to propose a framework that addresses the identified challenges and enhances the effectiveness of EE initiatives.

The rationale for the chosen variables stems from the need to comprehensively assess various aspects of municipal monitoring and evaluation of EE initiatives. This selection was driven by the recognition that understanding the state of monitoring practices, identifying challenges faced by municipal officials, evaluating the effectiveness of monitoring and evaluation efforts and proposing suitable frameworks were integral to advancing EE and promoting sustainable living practices.

1. **State of Municipal Monitoring and Evaluation of EE (Variable A):**

The effectiveness of EE programmes depends on the quality of monitoring and evaluation practices implemented by municipal authorities. As Freire and Macedo (1987) suggest, critical praxis in education involves critically analysing the world to empower individuals with critical literacy skills. Similarly, the assessment of the current state of municipal monitoring and evaluation practices was essential for identifying areas for improvement and enhancing the overall effectiveness of EE initiatives.

2. **Challenges Faced by Municipal Officials (Variable C):**

Municipal officials may encounter various challenges in monitoring and evaluating EE programmes, including resource constraints, lack of community engagement and bureaucratic hurdles. These challenges can significantly impact the effectiveness of

EE initiatives. According to Systems Theory, organisations like municipalities operate within complex systems and may face obstacles that hinder their ability to achieve their goals. Therefore, addressing these challenges was crucial for enhancing the effectiveness of monitoring and evaluation efforts (Morgan, 2006).

3. **Effectiveness of Municipal Monitoring and Evaluation (Variable B):**

The effectiveness of municipal monitoring and evaluation efforts directly influences the success of EE programmes. This relationship is supported by Programme Evaluation theory, which emphasises the systematic gathering and analysis of data to assess the value and effectiveness of educational initiatives (Patton, 2014). By evaluating the effectiveness of monitoring and evaluation practices, the study aimed to identify strategies that contribute to improved outcomes in environmental education.

4. **Suitable Framework for Municipal Monitoring and Evaluation (Variable D):**

The identification of a suitable framework for municipal monitoring and evaluation of EE is contingent upon various factors, including the current state of monitoring practices, challenges faced by municipal officials, and the perceived effectiveness of existing efforts. This relationship underscores the importance of adopting a holistic approach to framework development, as advocated by Systems Theory (Morgan, 2006). By examining these relationships, the study aimed to propose a framework that addresses the identified challenges and enhances the overall effectiveness of EE initiatives.

In summary, the study expected that the state of municipal monitoring and evaluation practices, the challenges faced by municipal officials, the effectiveness of monitoring and evaluation efforts, and the development of a suitable framework for municipal monitoring and evaluation were interrelated variables that collectively influence the success of EE initiatives within the Vhembe District Municipality. Through a comprehensive analysis of these relationships, the study sought to provide valuable insights and recommendations for promoting sustainable living practices and environmental stewardship in schools and communities.

2.3.2.1 Application in study

The alignment of Systems Theory with the study on municipal monitoring and evaluation of EE in the Vhembe District Municipality offered a robust framework for

understanding the intricate dynamics at play within educational systems. Firstly, Systems Theory emphasises the interconnectedness of components within a system, viewing organisations as entities comprising various interdependent parts working towards a common goal (Arnold & Wade, 2015; Bozkus, 2014b). In the context of the study, this perspective acknowledges the complex relationships between the municipality, educational institutions, teachers, learners and the community. By recognising these interdependencies, the study aimed to explore how these entities collaborate to promote EE and sustainable living practices (Daft, 2010).

Moreover, Systems Theory characterises organisations, including educational institutions and municipalities, as open systems that interact with their environment (Katz & Kahn, 1966; Vancouver, 1996). Similarly, the study recognised the municipality's engagement with schools and communities as part of a broader ecosystem. This perspective underscores the importance of understanding how external factors influence the effectiveness of municipal monitoring and evaluation efforts in EE (Mele et al., 2010).

Furthermore, Systems Theory delineates the components of organisational systems, including inputs, a transformation process, and outputs (Daft, 2010). In the study, these components correspond to the resources invested by the municipality, the monitoring and evaluation processes employed, and the outcomes achieved in environmental education. By evaluating these components, the study sought to assess the effectiveness of municipal efforts in promoting environmental awareness and sustainable practices (Bozkus, 2014b).

Additionally, the concept of the education production function, as outlined in Systems Theory, aligns closely with the study's objective of evaluating the impact of municipal monitoring and evaluation on educational outcomes. Just as the education production function relates inputs to measurable outputs, the study aimed to understand how municipal efforts translate into tangible outcomes in EE within schools and communities (Cory & Betts, 2007; John, 2010).

Finally, Systems Theory emphasises efficiency and effectiveness in achieving organisational goals, mirroring the study's focus on proposing a viable framework for promoting sustainable living. By assessing the efficiency of municipal monitoring and evaluation efforts, the study sought to identify strategies that contribute effectively to

sustainable practices and environmental stewardship (Arnold & Wade, 2015; Daft, 2010).

Critical Theory in Education is an extension of the broader Frankfurt School tradition. This includes foundational works by Max Horkheimer (1937) and Theodor Adorno (1944). Both authors argued that both education and social institutions reproduce existing power structures and potentially can be used to challenge those same power structures. Critical Pedagogy was first developed in the field of education by Paulo Freire (1970) who used Critical Theory to develop an approach to education that would enable students to gain critical consciousness, so they could recognize social, political, and environmental injustices and become equipped to take part in transformative actions. Other scholars, such as Henry Giroux (2020) and bell hooks (2021), have continued to extend critical pedagogy, addressing issues related to institutional inequality, curriculum reform, and participatory approaches to learning, and that education can serve as a tool for emancipation and social transformation.

The significance of Critical Theory in this study lies in its ability to provide a conceptual framework for examining the structural conditions and power relationships that impact the implementation and evaluation of Environmental Education (EE) Programs. Traditional methods of monitoring and evaluating EE programs may be primarily concerned with issues of compliance, output, and measurable standards. A critical perspective of EE highlights who defines what success looks like, whose voice is being heard, and what structural constraints limit the development of effective environmental learning. Utilizing Critical Theory as a way of conceptualizing EE will allow this study to examine how municipal governance structures, policy priorities, and resource allocations influence the delivery and assessment of EE initiatives, as well as identify points of systemic marginalization or exclusion.

Freire's pedagogy is also relevant in the context of developing evaluation systems for EE Monitoring and Evaluation. As discussed above, his emphasis on dialogical learning and participatory engagement provide a practical model for developing evaluation systems that move away from simply documenting the activities of EE programs and toward measuring the environmental responsibility and behavioural changes that result from EE programs. Examples include:

Environmental education monitoring practices can incorporate learner and community feedback to determine if EE programs are resulting in increased levels of environmental responsibility versus just awareness of environmental issues.

EE evaluation frameworks can identify structural barriers (e.g., lack of adequate teacher training, lack of clear policy direction, lack of municipal support) that prevent the transfer of awareness into sustained environmental behavioural change.

Critical Theory promotes reflexivity among municipal evaluators and educational leaders to promote adaptive governance practices that encourage innovation in delivering EE programs (Rieckmann, 2023; Sterling, 2021).

Consistent with the research focus of the study, Critical Theory, in addition to providing a framework for understanding the power dynamics, institutional hierarchies, and sociocultural constraints that shape system performance, complements Systems Theory and Programme Evaluation Theory. While Systems Theory accounts for interdependencies and emergent properties, and Programme Evaluation Theory provides tools for assessing the efficiency and effectiveness of programmes, Critical Theory examines the normative and ethical implications of municipal monitoring and evaluation to ensure that EE programmes meet procedural benchmarks and produce meaningful, equitable, and transformative sustainability outcomes.

Therefore, the adoption of Critical Theory provides both analytical rigor and practical guidance for framing EE monitoring and evaluation as a technical exercise embedded within larger governance, power, and social structures. The application of Critical Theory will support the investigation of how municipal governance can lead to greater sustainability outcomes by supporting inclusive, accountable, and critically informed EE practices.

Overall, this Chapter provided an overview of the theoretical bases underlying the study, illustrating how Environmental Education Theory, Programme Evaluation Theory, Systems Theory, and Critical Theory together form the basis for the research design and analytical lens. Together these theoretical bases provide the conceptual framework to interpret empirical data regarding municipal EE programs and their respective monitoring and evaluation processes. The next Chapter will present a comprehensive Literature Review, integrating global and local research literature on Environmental Education, sustainability, and municipal governance structures.

In conclusion, the alignment of Systems Theory with the study on municipal monitoring and evaluation of EE provides a comprehensive framework for understanding the complex interactions within educational systems. By embracing the principles of Systems Theory, the study aimed to shed light on how municipalities can effectively promote EE and foster sustainable living practices within their communities.

2.4 CHAPTER SUMMARY

This chapter delineated the theoretical foundations for an investigation into municipal monitoring and evaluation of Environmental Education (EE) within the Vhembe District Municipality. It introduced Critical Theory as a framework for analysing power dynamics and fostering democratic participation in educational contexts. Systems Theory is critically examined for its perspective on the interrelatedness of municipalities, educational institutions, and communities, thereby underscoring the relationships between educational initiatives and broader socio-ecological systems. Programme Evaluation Theory is emphasised for its utility in assessing the efficacy of educational interventions. EE Theory serves as a normative underpinning, emphasising the importance of ecological literacy and sustainable development. The chapter concluded with an integrated conceptual framework that synthesises these theoretical perspectives, providing a comprehensive lens for analysing municipal EE monitoring and evaluation, thus aligning with the study's objectives to advance environmental sustainability through education. The following chapter delves into the literature review, examining existing research and scholarly contributions that contextualise the study within the broader academic discourse.

CHAPTER 3: REVIEW OF LITERATURE

3.1 INTRODUCTION

The previous chapter presented the theoretical framework and the conceptual framework of the study. This chapter presents the review of literature on ascertaining viable monitoring and evaluation for school and community EE programmes in promoting sustainable living in the Vhembe District of Limpopo. The first section of this chapter presents the role of EE in promoting sustainable living, the monitoring and evaluation of EE in schools and communities, the monitoring and evaluation of EE in schools and communities, followed by the presentation of challenges in monitoring and evaluation of EE in schools and communities. This is followed by reviewing the literature on the importance of monitoring and evaluation of EE in schools and communities and the frameworks in monitoring and evaluation of EE in schools and communities.

3.2 ENVIRONMENTAL EDUCATION

The literature on Environmental Education (EE), sustainability, and Monitoring and Evaluation (M&E) can be described as developing along separate but insufficiently linked lines of inquiry (Ardoin et al., 2020; Lotz-Sisitka et al., 2023). While EE research generally conceptualizes Environmental Education as an educational initiative that is intended to promote environmentally aware individuals, promote curriculum development, and facilitate behavioural changes (UNESCO, 2022; Rieckmann, 2021; Monroe et al., 2022), evaluation research has tended to view M&E as a purely technical and managerial means for assessing program effectiveness and accountability (Rieckmann, 2021; Goldman et al., 2021). The resulting dichotomy has led to a disjointed academic discourse regarding the governance and epistemological aspects of municipal Environmental Education (Sterling, 2021; Scoones, 2023).

Firstly, the majority of EE research views Environmental Education as an educational endeavour focused on promoting environmental awareness and promoting pro-environmental attitudes and behaviours (UNESCO, 2022; Rieckmann, 2021; Monroe et al., 2022). This type of pedagogical paradigm views EE primarily as a curriculum-based and community-focused intervention that is intended to affect the knowledge, values and environmental consciousness of individuals (Ruiz-Mallén et al., 2022; Lotz-

Sisitka et al., 2023). Yet several recent studies have shown that there is little consideration within this body of literature of how EE programs are governed within the framework of governance systems, funded through policy frameworks, or implemented through administrative and evaluative structures (Leal Filho et al., 2021; Shackleton et al., 2021). Thus, Environmental Education is typically viewed as an educational activity and not as a governance practice that is embedded in institutional relationships of power, policy requirements and accountability mechanisms (Biermann et al., 2022; Sterling, 2021).

On the other hand, public administration and program evaluation literature views M&E mainly as a performance management and accountability tool used by government institutions to evaluate the performance of their programs and services (DPME, 2022; Goldman et al., 2021; OECD, 2020; Cloete, Wissink & De Coning, 2023). In this technocratic approach, M&E is seen as a rational and objective process based on indicators, targets and quantifiable outputs, which should help to improve governmental performance and accountability (Kariuki & Reddy, 2019; Cloete, Wissink & De Coning, 2023). Although this approach offers important procedural insights into evaluation systems, current evaluation scholarship asserts that this perspective is theoretically limited since it views evaluation as a neutral technical function and not as a socially constructed and epistemologically embedded institutional practice (Dushkova & Ivlieva, 2024; Ardoin et al., 2020).

A closer examination of evaluation theory indicates that M&E functions not only as a mechanism of accountability, but also as a form of knowledge construction through which institutions establish what counts as evidence, legitimate programs and create authoritative narratives concerning effectiveness and impact (DPME, 2022; Goldman et al., 2021; Patton, 2021). In this light, municipal M&E systems do not merely measure the outcomes of Environmental Education programs; they actively define how EE outcomes are conceptualized, interpreted and institutionalized in the governance frameworks (Lotz-Sisitka et al., 2023; Ardoin et al., 2020). Therefore, evaluation is inherently epistemological, as it acts as a mediator of the generation, validation and utilization of knowledge about educational and sustainability initiatives in the context of public sector governance systems (Patton, 2021; Sterling, 2021).

The disconnect between Environmental Education and Evaluation Literature has resulted in an apparent conceptual void. Research in EE has primarily focused on behavioural transformation and increased awareness of sustainability issues as the most important outcomes from the study of EE (Rieckmann, 2021; Monroe et al., 2022); however, the way in which the institutional evaluative mechanisms (that provide legitimacy for) such changes occur in governance systems have received relatively little attention (Dushkova & Ivlieva, 2024; Ardoin et al., 2020). Conversely, the focus of research in Monitoring and Evaluation (M&E) has been on process-oriented items such as efficiency, performance measurement, and accountability, yet very little of this body of research has engaged in the pedagogic, socio-environmental, and governance aspects of Environmental Education programs in schools and communities (Goldman et al., 2021; OECD, 2020). Therefore, a lack of integration between the two literatures has resulted in an incomplete understanding of how municipal monitoring and evaluation systems affect the delivery, effectiveness, and sustainability outcomes of EE initiatives (Shackleton et al., 2021; Lotz-Sisitka et al., 2023).

Further, literature related to governance and institutional theory provides evidence that public sector programs, including Environmental Education, are influenced by organizational logic, policy priorities, funding structures, and institutional mandate(s) as much as by pedagogical considerations (Peters, 2022; Biermann et al., 2022; Scott, 2021). In the context of municipal governments, Environmental Education Programs exist as part of larger governance systems that include performance management regimes, regulatory frameworks, and evaluative accountability systems (DPME, 2022; OECD, 2020). This implies that Environmental Education should not only be understood as an educational intervention, but also as a tool of governance through which municipalities can pursue their sustainability agendas and environmental policy objectives (Sterling, 2021; Lotz-Sisitka et al., 2023).

Additionally, recent scholarship on sustainability demonstrates that concepts such as "sustainable living" are not simply behavioural outcomes, but rather social constructs and institutionalized policy discourses that are shaped by governance priorities, socio-economic conditions, and political decision-making processes (Kopnina, 2020; Meadowcroft, 2022; Scoones, 2023). When municipalities deliver and evaluate EE programs, they are de facto implementing and validating the institutionalized

interpretations of sustainability, thus supporting the governance definition of environmental responsibility and sustainable practice (Biermann et al., 2022; Shackleton et al., 2021).

Despite these advances in theoretical thinking, there exists relatively little integrated research that conceptualizes municipal monitoring and evaluation of Environmental Education as a systemic evaluative governance structure that functions within interconnected municipal, school, and community systems (Ardoin et al., 2020; Lotz-Sisitka et al., 2023). Most of the current research studies EE pedagogy, sustainability education, or evaluation frameworks individually, without integrating them into a coherent analytical framework that illustrates how evaluative governance influences the relationship between environmental education and sustainable living outcomes (Rieckmann, 2021; Sterling, 2021).

Thus, the literature has left unaddressed a significant conceptual question: How do municipal monitoring and evaluation systems, as epistemologically embedded governance mechanisms, shape the institutionalization, interpretation, and perceived effectiveness of Environmental Education programs in creating sustainable living (Goldman et al., 2021; DPME, 2022)? By failing to consider M&E as a knowledge producing/authority legitimized practice, the existing literature is at risk of perpetuating a technocratic view of evaluation, one that conceals its deeper function in shaping institutional realities, policy legitimacy, and governance decisions (Patton, 2021; Dushkova & Ivlieva, 2024).

The conceptual void created by this failure is particularly evident in Local Government/Rural Municipal settings, where Environmental Education Programs in schools and communities are affected by complex governance arrangements that include policy directives, institutional capacity, resource limitations, and evaluative accountability systems (Lotz-Sisitka et al., 2023; Shackleton et al., 2021; OECD, 2020). Thus, a doctoral level analysis will require advancing past the description of EE significance and M&E processes to create a theoretically grounded synthesis that situates municipal monitoring and evaluation as a systemic, epistemic, and governance-based concept within the broader environmental education, sustainability, and public governance discourse (Sterling, 2021; Scoones, 2023).

3.3 SUSTAINABLE DEVELOPMENT AND SUSTAINABLE LIVING

The discussion about sustainable living and sustainable development has changed over time as a result of increasing environmental degradation and the socio-ecological impacts of industrialization and population increase and urbanization (UNEP, 2021; IPCC, 2023). While the earlier literature on sustainability focused on environmental decline as primarily caused by unsustainable consumption and technology expansion (Sterling, 2003), contemporary literature views sustainable development as a multidimensional governance construct based on institutional priorities, policy frameworks, and socio-economic contexts rather than simply as an ecological or moral obligation (Sharma & Pathak, 2024; Kopnina, 2020; Leal Filho et al., 2021).

Furthermore, current literature suggests that sustainable development is not a fixed or universally accepted concept, but rather a policy-based discourse that is interpreted and operationalized differently depending on the institutional and governance environments in which it is practiced (Meadowcroft, 2022; Sterling, 2021). As such, this literature supports the idea that sustainability agendas can be influenced by political priorities, financial constraints, and governance rules, so that sustainable development is a socially constructed and institutionally negotiated phenomenon, rather than solely an ecological goal (Scoones, 2023; Biermann et al., 2022).

In the context of these larger conceptualizations, sustainable living is most often referred to as the micro-level manifestation of sustainable development and includes environmentally conscious lifestyle choices, behaviours that conserve resources, and community practices that align with ecological sustainability (Li & Wu, 2019; Kopnina, 2020). More recently, however, literature has highlighted that sustainable living cannot simply be viewed as individual behavioural change but should be viewed as an emergent product of governance systems, institutional capacity, educational programs, and social cultural contexts (Lotz-Sisitka et al., 2023; Rieckmann, 2021; UNESCO, 2022). Thus, this conceptualization challenges the commonly held assumption that simply raising environmental awareness leads directly to sustainable behaviour and emphasizes the role of institutional and governance systems in shaping sustainability outcomes (Monroe et al., 2022; Ardoin et al., 2020).

Both international policy frameworks, especially the Global Sustainability Agenda and Education for Sustainable Development (ESD), and their reinforcement of the central

role of education in advancing sustainable development have emphasized the importance of education systems as vehicles for fostering environmental awareness, critical thinking, and sustainability-oriented citizenship (UNESCO, 2022; UNESCO, 2020). These frameworks view education both as a pedagogical intervention and as a governance mechanism for institutionalizing sustainability agendas within formal and informal systems of learning (Rieckmann, 2021; Leicht, Heiss & Byun, 2021). Consequently, Environmental Education (EE) has been linked to the sustainability movement and functions as a policy-driven program to create environmentally aware communities and promote sustainable living (Lotz-Sisitka et al., 2023; Ruiz-Mallén et al., 2022).

Although there is a clear alignment between EE and the sustainability discourse, literature continues to identify a consistent conceptual tension between the normative framing of sustainability and the practical implementation of sustainability within governance systems (Sterling, 2021; Meadowcroft, 2022). On the one hand, sustainability is generally portrayed as a universal ecological and ethical imperative required to preserve the environment and ensure human survival (IPCC, 2023; UNEP, 2021). On the other hand, governance and public administration literature identifies how institutional mandates, funding mechanisms, administrative capabilities, and performance measurement systems shape how sustainability policies are interpreted, implemented, and evaluated at the municipal and local government level (OECD, 2020; Peters, 2022; Biermann et al., 2022).

The distinction between these two concepts assumes greater significance in the area of Environmental Education (EE), where EE is typically viewed in the literature as a transformational pedagogy that promotes sustainable living via knowledge acquisition, value creation, and pro-environmental behaviour (Monroe et al., 2022; Rieckmann, 2021; Teane, 2021). However, the emphasis on the pedagogical aspects of EE as a transformative means of promoting sustainable living typically ignores the ways in which EE programs are governed at the institutional level and evaluated (Ardoin et al., 2020; Dushkova & Ivlieva, 2024; Sterling, 2021; Scoones, 2023). As a result, sustainable living may not be adequately addressed as simply an educational outcome, but rather as a governance-mediated construct that is shaped by institutional logic, policy frameworks, and evaluation mechanisms (Scoones, 2023; Sterling, 2021).

Recent critical sustainability literature also critiques the technological and de-political nature of sustainability discourses and argues that sustainability agendas are commonly presented as technical solutions, while the structural inequalities and institutional power dynamics that underlie them are obscured (Biermann et al., 2022; Scoones, 2023). Therefore, in many developing contexts, sustainability initiatives are negotiated with other governance priorities such as poverty alleviation, service delivery, and economic development, which have significant implications for the effective implementation and effectiveness of both Environmental Education and sustainability programs (Shackleton et al., 2021; Nhemachena et al., 2020). Consequently, it is evident that sustainability is not only an ecological goal, but a politically and institutionally contested agenda that is shaped by governance realities.

In South Africa, the incorporation of sustainable development principles into education and policy has been impacted by the country's history of inequality, ongoing governance reform and national sustainability-oriented frameworks (Lotz-Sisitka et al., 2023; Shackleton et al., 2021). Although Environmental Education has been integrated into the curriculum and policy discourse of South Africa, there remains unevenness in the institutional implementation and coordination of EE, especially in rural municipalities characterized by resource limitations, fragmented governance, and constrained capacity (Teane, 2021; Lotz-Sisitka et al., 2023). As a result, the promotion of sustainable living through EE is not just a pedagogical issue, but a governance challenge that requires coordinated monitoring, evaluation, and institutional accountability systems (DPME, 2022; OECD, 2020).

In addition, sustainability as a policy objective is operationalized through institutional processes and practices such as program design, implementation, monitoring, and evaluation, all of which define how sustainability outcomes are conceptualized, quantified, and legitimized in governance systems (Dushkova & Ivlieva, 2024; Goldman et al., 2021). Municipal governments function as intermediate governance agents that translate national sustainability and environmental education policies into locally-based school and community interventions (Kariuki & Reddy, 2019; Shackleton et al., 2021). Nevertheless, the literature reflects limited scholarly attention toward how municipal evaluative systems impact the interpretations of, operationalization of, and perceived effectiveness of EE programs in promoting sustainable living (Lotz-Sisitka et al., 2023; Ardoin et al., 2020).

Therefore, a critical analysis of the literature reveals that although sustainable development and sustainable living are regularly examined as normative objectives in environmental and educational scholarship, the institutional, political and evaluative governance elements of these concepts have not received adequate theoretical treatment (Sterling, 2021; Scoones, 2023). The majority of literature emphasizes the urgent need for sustainability, and the pedagogical role of Environmental Education, but does not sufficiently investigate how governance structures, institutional logics, and monitoring and evaluation frameworks mediate the relationship between EE interventions and sustainable living outcomes (Goldman et al., 2021; Ardoin et al., 2020).

As such, in this research project, sustainable living is conceptualized not only as an individual behavioural outcome, but as a governance mediated and institutionally constructed phenomenon that arises out of the interactions among Environmental Education programs, municipal monitoring and evaluation systems, and community environmental practices (Rieckmann, 2021; Sterling, 2021; Lotz-Sisitka et al., 2023). This new conceptualization will serve as a basis for a critical analysis of the ways in which municipal evaluative governance structures affect the efficacy of EE programs in fostering sustainable living within school and community settings in the Vhembe District Municipality.

3.4 THE IMPORTANCE OF MONITORING AND EVALUATION OF EE IN SCHOOLS AND COMMUNITIES

Before the implementation of EE in schools and within the community, plans and goals are established to develop EE activities. Reddy (2021) emphasised that the goal of EE is to enhance awareness and concern of the environment and its crises, fostering the development of knowledge, skills, attitudes and commitment within the community towards addressing the existing environmental problems and the prevention of the new ones.

The process of monitoring and evaluating EE should begin in the planning phase to enhance the teaching and learning process and analysis and evaluation should be an ongoing activity. Through the monitoring and evaluation process, the outcomes attained from the work of the educators and learners should be compared with the

objectives proposed in the planning phase, in order to verify progress and challenges and redirect the work to the necessary corrections (Kershaw, Turra & Galgani, 2019).

Monitoring and evaluation are the significant tools available for the government to measure the quality of EE in schools and within the community and devise alternatives for the improvement of the programme (Dushkova & Ivlieva, 2024). The process of monitoring and evaluating the implementation of EE ensures that the underlying guiding principles are achieved which informs the direction facilitators should follow re replanning environmental solutions, after a careful consideration of the prevalent crises or problem-areas.

The monitoring and evaluation of EE encourages the creation of a synergistic space where research findings are interpreted and applied on the ground (Ardoin et al., 2020). The monitoring and evaluation of EE is a conservation strategy that creates synergistic space for facilitating opportunities for community members and students to converge in enhancing environmental sustainability. In supporting the above, Ardoin et al. (2020) indicate that the evaluation of EE creates a conducive environment to foreground the local knowledge, experiences, values and practices.

The monitoring and evolution of EE in schools and communities ensures that the intended programmes have positive outcomes and this further leads to environmentally literate citizens (Franzen, 2017). The significance of evaluating the implementation of EE programmes and programmes is not only to communicate the evidence on EE learners, but also to provide an analysis and to evaluate the strengths and weaknesses of the programmes and programmes (Ardoin et al., 2020; Otto & Pensini, 2017). This objective has been described as problematic and challenging as it involves the review and analysis of programmes comprised of various methodologies (Ardoin et al., 2020). Otto and Pensini (2017) argued that in the evaluation of EE programmes, it is important to distinguish evidence as some seems to be more reliable or conclusive, as opposed to evidence that appears more questionable or preliminary.

The significance of monitoring and evaluating EE programmes and programmes is found in the direct, tangible benefits that will be seen in the surrounding environment. The monitoring and evaluation of EE by the municipality will ensure that the municipality is more environmentally efficient, and all this is done to improve the surrounding environment. According to White, Eberstein and Scott (2018), the benefits

and the significance of evaluating EE programmes can best be viewed through the interrelated components of EE which are programme improvement, the growth in student learning, programme support and a better environment.

The evaluation of EE programmes in schools and within the community by the municipality can result in the improvement of the effectiveness and efficiency of the teaching methods and learning activities (Saribas, Kucuk & Ertepinar, 2017). This can further enhance the effectiveness and efficiency of the learning environment which includes the classroom, the surrounding physical environment, and the social climate of the school setting and the community. The evaluation of EE programmes has been identified as the best way to enhance the growth in learning, and it improves the acquisition of knowledge. In addition, it further ensures the clarification of values, the development of moral reasoning and the improvement of independent critical thinking and action skills (White et al., 2018). From the above point of view, the evaluation of these dimensions can significantly assist in diagnosing the learning needs of the students so that they are more efficient and effective. This can further assist in addressing deficiencies and encouraging growth and important as it may be, assist in measuring achievement so that the effectiveness and efficiency of the programme can be assessed.

The definitive goal of EE is a healthful and healing environment and the system of learning by doing is the best way of implementing EE (Krasny, 2020). In that context, the monitoring and evaluation of EE programmes can lead to a better environment. In these programmes, students become involved in the programmes in which they act indirectly to improve their environment such as communicating with the responsible municipal official regarding any challenges arising from the implementation of the EE programmes. Further to the above, the evaluation of the environmental effects of these activities can help municipalities judge not only the growth of the students and members of the community but can significantly assist in judging the worth of the instructional programme.

The evaluation of the EE programmes by the municipality is an act of care towards students and the members of the community, who are custodians as well as the beneficiaries of the environment (Dushkova & Ivlieva, 2024). A municipality has a legitimation duty and gains the respect and support of the school and the public in

general through methodically reviewing results from EE programmes regarding the strength and weakness of its EE programmes, (Sukma, Ramadhan & Indriyani, 2020). This means that monitoring and evaluation can lead to much-required government support for the EE programmes.

3.4.1 Development of Monitoring and Evaluation South Africa

To understand the development of monitoring and evaluation in South Africa it is important to acknowledge that the public sector has been moulded by the apartheid background. McDowel and Ramphela held that:

> Apartheid policies since 1948, added a new and profoundly destructive element to the deterioration of the country's resources of soil and vegetation, particularly in Bantustans which are the cornerstones of apartheid (McDowel & Ramphela, 1993, p17).

Essentially, urban and rural areas did not receive equal services and infrastructure under the apartheid regime. Knutsson (2020) posits that the extreme inequality in South Africa has had an understated effect on the relationship between educational inequality and the provision of environmental education. The South African government responded slowly in its implementation of EE curricular changes required after the apartheid regime (Pieterse, 2019). Whereas the unsustainable development wrought necessitated a rapid and significant change in the government's approach towards its natural resource management. Towards that end, there was an immediate legislative shift for an effective and developmentally oriented state that could provide swift interventions to address many irregularities and inequities caused by the apartheid system.

The promulgation of the 1996 Constitution provided, in section 24, for the right to:

> (a) an environment which is not harmful to one's health or wellbeing; and
> (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
>
> (ii) promote conservation; and

> (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The provision and sustenance of such an environment - as well as the tools to preserve it – are subject to the availability of education promoting environmental education. The sheer volume of legislation and policy measures which have been developed since indicate that the legal framework has been sufficiently developed and exhausted in the pursuit of creating environmental conscientiousness envisaged by the South African Constitution.

South Africa was late in its reception of EE due to the apartheid regime's negation of the international trends and developments such as the Belgrade Charter, Tbilisi Principles and the Rio Conference all of which promoted recommendations or strategies aimed at integrating EE in ways which could be standardised and monitored (Kumar, Kumar & Sharma, 2018).

During the apartheid era, the 1989 White Paper on EE was one of first policy documents which attempted to incorporate the EE guidelines established in the abovementioned conferences but was not implemented in formal education due to its lack of inclusivity. The subsequent Environmental Educational Policy Initiative of 1992, which was comparatively more inclusive and open to ideas around developing EE in formal education, led to the White Paper on Education and Training (DoE, 1995) which was one of the key policies aimed at the promotion of sustainable development (Le Grange & Reddy, 1997). Principle 17 of the White Paper provided:

> [It] must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources (DoE, 1995).

Article 7 of the 1995 White Paper also recognised the need for establishing performance criteria which could enable the monitoring and valuation of educational policy, which naturally extended to EE. Unfortunately, the barriers of access to education which were inherited along with unequal distribution of resources wrought by apartheid policies has meant that the state of rural schools, their environmental

curricula and policy formulation can be characterised as rudimentary and under-researched (Nsubuga, 2011).

The interventions post-apartheid, aimed at sustainable development education, have resulted in the mass-production of policies in lieu of praxis. Such an example is the introduction of the 2000 Outcome-Based Education (OBE) policy which led to the dilution of the evaluative objectives espoused in the international EE literature informing the development of EE for sustainable living, mainly due to the stagnation of the curricula on the topic. This can be attributed to the National Curriculum Statement (NCS) and Revised National Curriculum State (RNCS) which incorporated the principles espoused by the international framework for EE into the RNCS Critical Outcomes in a limited fashion (Le Roux, 2001), resulting in a broad inclusion in the education framework which is difficult to progress into praxis.

The National Qualifications Framework (NQF) which articulates the requisite knowledge outcomes assessed in education (both formal and non-formal) provided for the translation of EE policy into actual practice in its critical cross-field outcomes; namely, Critical Outcomes (CO) 2, 6 and 7. Abrahams (2015) indicated that the OBE policy was primarily focused on monitoring rather than evaluation. Monitoring and evaluation have been identified as a tool that has enhanced the quality-of-service provision by the South African government (Abrahams, 2015).

Damoah and Omodan (2022) stipulated that the issue of EE policy in South Africa is due to the lack of structure and coordination in policy design improving its execution in schools. The issue is exacerbated by the lack of cohesion amongst the authorities established to monitor and evaluate EE outcomes in the education system – the number of schools in which EE and awareness programmes have been implemented was unknown per the report from the Department of Forestry, Fisheries and the Environment (DAFF, 2020)

The Municipal Systems Act requires the municipalities to develop a performance management system as a way of improving the municipality's effectiveness and efficiency and to enhance accountability (Kariuki & Reddy, 2019). Kariuki and Reddy, (2019) suggest that the measurement of performance in municipalities provides the base for monitoring and evaluation as all municipal programmes are assessed in terms of outputs, inputs and the results for every measure. Aikens et al. (2018) indicate that

the literature shows that the (dis)integration of EE is linked to the evaluation mechanisms by which we measure its progress and shortfalls.

Monitoring and evaluation are essential aspects to ensure high levels of accountability over various levels of government and to ensure the achievement of management of the transition to a democratic state further ensures that there is a need to measure the performance of the public sector. To enhance and improve the performance of the public sector, the South African government established the Department of Planning, Monitoring and Evaluation in 2009 (Abrahams, 2015). The South African public sector is the main role player in the delivery of services to the community and due to this, there is a need for a system in place to assess and measure performance as a way of enhancing performance and accountability (Shava & Chamisa, 2018).

3.4.2 Monitoring and Evaluation of EE Programmes at Schools

It is reasonable to assume that the environmental problems that the world is currently experiencing arise from human lifestyle. Due to human lifestyle, the environment has been endangered, and this has caused a loss of ecological balance. It is significant to learn to respect nature and understand how to coexist with and care for the environment, an important part of lifelong learning (Sukma et al., 2020). One of the significant aspects of the lifelong learning process is EE in schools and communities. Television and other mass media are the primary sources of information about the environment today (Padrão, 2012). Sukma et al. (2020) argue that student knowledge of the environment is limited and incomplete as they are more concerned about the global environment than they are with the environmental situations experienced in daily life. Boca and Saraçlı (2019) note that school students and community members tend to engage in environmental behaviours infrequently in their daily lives, which contributes to the observed low levels of environmental practice. It essential to evaluate the EE programmes to determine their effect on both the students and the community.

The examination of school students and the members of the community enhance the municipality's opportunities to consider what aspects of cognitive or affective EE need to be addressed in schools and within the community. In agreeing with the above, Jose, Patrick and Moseley (2017) indicated that the assessment of EE provides an

opportunity to learn which educational approaches are most effective and which ones require improvement. Jorgenson, Stephens and White (2019) indicated that there is a significant increase in environmental knowledge due to the implementation of different EE programmes in schools in Taiwan. They further stipulated that the implementation of EE programmes in schools has a significant shift in students' environmental attitudes and students become more environmentally sensitive (Jorgenson et al., 2019). Franzen (2017) postulates that teachers and environmental educators in general must have the knowledge, abilities and commitment to make assessment and evaluation fundamental to instruction and programmes. From this point of view, it is important for schools to create an environment conducive for the assessment and evaluation of the EE programmes as this will ensure the intended objectives.

Environmental education programme implementation in schools and within the communities can be assessed and evaluated in six concentrations which are

- environmental knowledge of the students and community,
- environmental attitudes and behaviours of the students and community,
- the environmental learning outcomes,
- perceptions of nature,
- experiences of learning and
- the influences that the students and the members of the community have on others (Alam, 2017; Saribas et al., 2017).

The above point of view shows that the process of monitoring and evaluation of EE should include the assessment of the strengths and weaknesses of the evidence base.

3.5 THE PROCESS OF MONITORING AND EVALUATION OF EE IN SCHOOLS AND COMMUNITIES

The process of monitoring and evaluation is a continuous cycle comprising interrelated events such as the assessment of student needs (Mubangizi, 2019). This process takes into consideration the intended goals and objectives, the development of the instructional activities and learning environment and the growth in student learning (Kariuki & Reddy, 2017). If any of the aforementioned aspects is not observed, the execution of a sustainable EE programme could end up being misaligned with its objectives.

The municipality is a significant role player in ensuring that the responsibility for building and keeping the instructional EE programme in good repair and rolling smoothly in the programme's direction (Gebrekidan, 2024). EE can best be evaluated using formative evaluation as a way of checking and assessing progress. Monitoring and evaluating the effectiveness and performance of the EE programme can be described as summative evaluation as it looks at the overall efforts of the programme (Granit-Dgani, Kaplan & Flum, 2017). The purpose of a framework for monitoring is primarily to provide [the monitors] and main stakeholders of an ongoing intervention with early indications of progress, or lack thereof, in the achievement of results (Malik, 2002).

Granit-Dgani et al. (2017) indicated that to ensure that the process of monitoring and evaluation of programmes achieve the intended objectives, students and the members of the community must be actively involved in the evaluation process. Evaluation is not an event but a process which requires that the objectives and outcomes of an EE programme be assessed periodically. Ardoin et al. (2020) in conducting a systematic review of EE outcomes, found the following four themes emerging for designing EE programmes which document and report direct outcomes more accessibly:

i. focusing on topics with a local focus;
ii. forming partnerships for programme implementation with scientists, natural resource managers, and local organisations;
iii. integrating action programmes into the educational programme itself; and
iv. being intentional, creative, and thorough in measuring and reporting programme outcomes.

Klostermann et al. (2018) found the following steps which form the frame for monitoring and evaluation of the programme:

i. The first step is to decide on what is important to monitor and evaluate.

ii. The second step is to plan the process of monitoring and evaluation of EE programmes.

iii. The third step is to conduct the monitoring and evaluation of the programme.

iv. The fourth and final step is to make use of the results from the monitoring and evaluation process of EE programmes.

3.6 CHALLENGES IN MONITORING AND EVALUATION OF EE IN SCHOOLS AND COMMUNITIES

Any EE programme carried out in South Africa would need to first take cognisance of the effects of apartheid policy and their direct effect on the disconnectedness from the environment that the majority of black people exhibit, due to the dispossession of land from apartheid policies (Schudel & Lotz-Sisitka, 2021). The paradigmatic outlook of the majority of rural communities is important for understanding the underlying, unsolved issues which still play a role in the successful implementation of EE programmes in communities, aside from the issues of a weak framework for reporting, analysing, monitoring and evaluating EE policy outcomes.

Ardoin et al. (2020) pointed out that in past EE evaluations, there was a problem with the programme design, materials as well as the method for evaluation, which has greatly limited the relevance of the results. Several researchers such as Carleton-Hug and Hug (2010) and Ardoin et al. (2020) have indicated that there are several challenges in the process of monitoring and evaluation of EE in schools and within the community which includes time, finances, subjectivity and the complexity of the monitoring and evaluation.

Monroe et al. (2019) stipulated that time is the greatest obstacle to the evaluation and monitoring process. The best plan to overcome time constraint in monitoring and evaluation is to include the process in the programme from the beginning (Nkoana, 2020). This means that the time needs to be budgeted for during the programme preparation by the municipality and the evaluation will be done at each stage of the programme. The hiring of a monitoring and evaluation consultant by the municipality has been identified as a major expense in this process (Nkoana, 2020). To reduce the expenses of the monitoring and evaluation process, municipalities need to utilise internal officials in the evaluation process.

Subjectivity has been identified as one of the challenges in monitoring and evaluation (Guyadeen, Thistlethwaite & Henstra, 2019). Supplementary to the above, most evaluators of the programmes tend to be subjective on the implementation of the programme. An evaluator needs to be honest and not be biased in the analysis and conclusion about the progress of the programme. Publication bias often means the failure of certain (outcome-based) evaluation frameworks is often undocumented, an

issue which may explain the insufficient research on frameworks for reporting, monitoring and evaluating EE programmes, particularly within South Africa's governance framework (Polanin, Tanner-Smith & Hennessy, 2015).

The existing framework for monitoring and evaluation is woefully insufficient despite the strength of the policies informing them. Catalano et al. (2017) posit that the failure of certain conservation programmes (such as EE and its monitoring frameworks) is the inability to recognise the failure of an approach or process. This is something which is particularly prevalent in the current approach to implementing and monitoring EE programmes for sustainable living due to the paradoxical need for such programmes to be implemented – which is that living is already unsustainable.

Aristigueta, Maserumule and Vil-Nkomo (2017) indicated that the complexity of the process of monitoring and evaluation is a challenge in this process. In the process of monitoring and evaluating EE programmes, it is important to clearly define what the process wants to accomplish. To ensure that the process is not complex, it is significant to define the steps of the process.

3.7 CONCEPTUAL, THEORETICAL AND EPISTEMIC GAP IN THE LITERATURE

In contrast to the large amount of research conducted in the area of Environmental Education (EE), sustainability, and Monitoring and Evaluation (M&E) the three areas of research are conceptually fragmented and lack a unified analytical framework (Ardoin et al., 2020; Lotz-Sisitka et al., 2023). Research has primarily focused on Environmental Education as a method of teaching, sustainability as a means of achieving long-term growth, and M&E as a process to assess program success (Goldman et al., 2021; Sterling, 2021). There has been little research to date examining the role of M&E in evaluating Environmental Education programs as a whole system governance structure (Sterling, 2021).

Firstly, most of the Environmental Education research has been pedagogically and normatively oriented (Rieckmann, 2021; UNESCO, 2022) with its emphasis being on creating awareness among students and staff regarding environmental issues, integrating the environment into curricula, changing student behaviour, and increasing environmental literacy (Sterling, 2021). While this body of research contributes to our knowledge of Environmental Education, it conceptualizes EE as a form of educational

activity as opposed to as an institutionalized governance practice embedded in policy frameworks, administrative systems and evaluative accountability structures (Lotz-Sisitka et al., 2023; Ruiz-Mallén et al., 2022). The institutional and governance aspects of how EE programs are implemented and evaluated within municipal systems are not well represented in current research.

Secondly, the sustainability literature emphasizes sustainable development and sustainable living as social, ecological and policy imperatives to ensure the conservation of the natural world and equitable distribution of resources over time (IPCC, 2023; UNEP, 2021). More recently, some studies have acknowledged the governance aspect of sustainability but generally view sustainable living as an individual behavioural response to education and awareness rather than as an institutionalized construct shaped by the governance priorities and policies of local governments (Kopnina, 2020; Scoones, 2023). This perspective ignores the political, institutional and ideological processes of how sustainability agendas are operationalized, constrained and interpreted within local government systems (Meadowcroft, 2022; Biermann et al., 2022).

Thirdly, the M&E literature in the field of public administration and program evaluation has primarily viewed M&E as a technical and management tool to measure performance, provide accountability and improve service delivery (DPME, 2022; OECD, 2020). While this technical perspective provides procedural guidelines for evaluation systems, indicators and performance assessments, it does not sufficiently address the epistemological nature of M&E as a process through which institutions establish what constitutes valid evidence, create knowledge and legitimize policy and program decisions (Patton, 2021; Goldman et al., 2021). Therefore, municipal M&E systems are primarily assessed based upon efficiency and effectiveness as opposed to their function as evaluative governance mechanisms influencing institutional perceptions of Environmental Education outcomes and sustainable living.

Further, the literature reviewed typically examines Environmental Education, sustainability, and M&E as distinct thematic areas as opposed to interconnected elements of a larger governance-education-evaluation nexus (Ardoin et al., 2020; Sterling, 2021). This disconnects in conceptualization reduces the body of research's ability to understand how municipal institutions, as intermediate level governance

actors, translate sustainability policies into Environmental Education programs and then evaluate the results of those programs within school and community contexts (Shackleton et al., 2021; Lotz-Sisitka et al., 2023). Thus, the manner in which municipal governance structures influence the design, implementation and evaluation of EE programs remains under-researched, especially in rural municipalities.

More importantly, there is a significant absence of integrated research that views municipal monitoring and evaluation of Environmental Education as a systemic governance structure that generates institutional knowledge about sustainability, validates the effectiveness of programs, and influences environmentally and behaviourally relevant outcomes (Dushkova & Ivlieva, 2024; Goldman et al., 2021). Current studies typically concentrate on EE pedagogy, sustainability education, and/or evaluation methodologies independently of one another, and do not explore how evaluative governance systems impact the relationship between EE interventions and sustainable living outcomes. This is an important epistemic gap in the literature because it leaves unexamined the institutional logics, evaluative presuppositions, and governance structures that frame municipal Environmental Education activities.

Additionally, the literature exhibits several theoretical contradictions that highlight the need for a greater degree of conceptual study. Specifically, EE research posits a causal link between education and sustainable behaviour while sustainability and governance literature indicates that institutional capacity, policy coherence and evaluative accountability play a substantial role in mediating program outcomes (Scoones, 2023; Sterling, 2021). Additionally, while M&E literature posits that evaluations should be objective measures of performance, critical evaluation literature indicates that evaluations are always value-based and impacted by the institutional priorities, power dynamics, and knowledge systems of the organizations involved in the evaluation (Patton, 2021; Goldman et al., 2021). These contradictions suggest that the effectiveness of EE programs can only be studied through examining the evaluative governance structures within which they operate.

3.8 CHAPTER SUMMARY

This chapter offered an extensive examination of scholarly literature related to Environmental Education (EE) and its monitoring and evaluation (M&E) in both educational settings and community frameworks, with a specific emphasis on the Vhembe District of Limpopo. The chapter explored the developmental history of EE, tracing its origins from traditional African oral narratives to modern international frameworks established by entities such as UNESCO and the International Union for Conservation of Nature (IUCN). Significant conferences, including those in Stockholm (1972), Belgrade (1975), and Tbilisi (1978), are acknowledged for their contributions to situating EE within the overarching paradigm of sustainable development and living. Additionally, the chapter investigated the reasons behind South Africa's delayed adoption of these frameworks, linking such delays to the influence of apartheid policies and subsequent reforms following the end of apartheid, such as the White Paper on Education and Training, Outcome-Based Education, and the National Qualifications Framework. It emphasised the vital role of M&E in achieving the goals of EE, enhancing environmental literacy, and improving educational results. Moreover, it identified several obstacles in the field, such as limited resources, time constraints, subjective interpretations, and the complexities surrounding evaluation processes. In conclusion, the review argued that the successful implementation of EE aimed at fostering sustainable living, requires a methodical approach to planning, execution and evaluation, capable of addressing both social and ecological aspects effectively.

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 INTRODUCTION

The previous chapter reviewed the literature relevant to this study. This chapter presents the research design employed and how it relates to the study on ascertaining viable monitoring and evaluation (M&E) for school and community environmental education (EE) programmes aimed at promoting sustainable living in the Vhembe District of Limpopo. The chapter first outlines the research design and paradigm, followed by the target population, study sample and sampling procedures. It then describes the data collection instruments and procedures, methods of data analysis and interpretation, and measures taken to ensure trustworthiness. Finally, ethical considerations relating to the study are addressed.

4.2 RESEARCH METHODOLOGY

The research methodology broadly refers to both the research design and the methods used in a study. Tan (2018) conceptualises research methodology as a systematic set of well-considered steps undertaken by a researcher, beginning with problem identification, followed by investigation and leading to logical conclusions. It establishes a link between research theory and empirical evidence while ensuring that scientific rigour is maintained through clearly defined procedures. Research methodology combines various approaches to guide the research process (Collis & Hussey, 2020). Kivunja and Kuyini (2017) further define it as the procedures and tools used to acquire, analyse, and interpret data on a given research problem.

In the context of this study, the research methodology encompasses the research design, paradigm, sampling methods, data collection techniques and procedures, as well as the tools for data analysis and interpretation. These methodological components collectively guided the researcher in answering the central research question: *What constitutes effective monitoring and evaluation of EE programmes for sustainable living in the Vhembe District of Limpopo?*

4.3 RESEARCH DESIGN

The research design is essentially the process of conducting a study using either qualitative, quantitative, or mixed approaches. According to McMillan and

Schumacher (2017), a research design provides a structured plan that guides the entire research process, including data collection, analysis, and interpretation. Similarly, Creswell and Creswell (2018) emphasise that a research design functions as a framework that connects research questions to data-gathering strategies. In this study, the research design refers to the various procedures that guided the collection of data, the analysis, and the interpretation of results in a scientifically sound manner. Each of the three fundamental categories of research designs qualitative, quantitative and mixed methods is discussed below.

4.3.1 Qualitative Designs

Research designs related to qualitative research, or different methods that might be employed to carry out a qualitative inquiry, are referred to as qualitative designs (Silverman, 2020; Sutton & Austin, 2017). These are designs where a particular phenomenon is studied solely using a qualitative technique, with the primary goal being the gathering of in-depth, descriptive data. The foundation of qualitative methods lies in the understanding that people's behaviour and experiences are closely connected to the context in which they occur (Creswell & Poth, 2018). Accordingly, a qualitative study is typically conducted in a natural or non-manipulated setting (Sauro, 2021a).

In this context, the researcher actively engages a group of participants who have relevant knowledge and experience with the topic being studied, in order to gather rich narratives, detailed perspectives, and lived experiences related to the phenomenon under inquiry (Castleberry & Nolen, 2018). Narrative inquiry, case study, phenomenology, ethnography, and grounded theory are common qualitative designs employed to explore subjective realities (Flick, 2018; Leavy, 2017).

4.3.1.1 Narrative design

According to Creswell and Poth (2018), narrative design is the process of exploring and documenting the lived experiences of individuals by collecting their personal stories and presenting them in a coherent narrative form. This approach emphasises understanding how people make sense of their experiences over time. The strategy involves presenting the research findings alongside participants' detailed life accounts in a way that captures the context and meaning of their experiences (Riessman, 2017).

The core aim of narrative inquiry is to allow individuals to express their subjective interpretations of life events, enabling the researcher to interpret and represent these stories meaningfully (Leavy, 2017).

4.3.3.2 Case study

According to Yin (2018), a case study is a type of qualitative research design used to gain an in-depth understanding of a phenomenon by collecting detailed information from one (single case) or multiple (collective case) individuals. Typically, the data is gathered from small groups of people who have relevant expertise and direct experience with the issue being studied. The phenomenon under investigation may be an event, process, action, programme, or activity (Creswell & Poth, 2018). Data in case study research is often collected using multiple sources, with interviews being one of the most common tools for generating rich, contextual information (Hyett, Kenny & Dickson-Swift, 2017; Leavy, 2017).

4.3.3.3 Phenomenology

According to Neubauer, Witkop and Varpio (2019), phenomenological research seeks to understand how individuals perceive and make sense of their lived experiences related to a particular phenomenon. This design places emphasis on exploring the subjective meanings that people attach to their personal experiences. A clear and in-depth understanding of the phenomenon being studied is crucial in order to accurately capture and describe the essence of these experiences (Creswell & Poth, 2018). Unstructured or semi-structured interviews are typically the main methods used to collect these detailed personal narratives (Sundler, Lindberg, Nilsson & Palmér, 2019).

4.3.3.4 Ethnography

The study of social and cultural groups and the individuals within them and within their natural, undisturbed environments is the focus of this qualitative research design known as ethnography. This approach is characterised by extended, often longitudinal, observations and rich descriptions of the behaviours, interactions, and routines of the group under study (Reeves, Peller, Goldman & Kitto, 2018). The aim of these observations is to assign meaning to the everyday practices and lived experiences of participants. Ethnography seeks to provide a comprehensive and

interpretive account of a group's culture, values and practices as understood from an insider's perspective (Creswell & Poth, 2018; Fusch, Fusch & Ness, 2017b).

4.3.3.5 Grounded theory

Using a qualitative approach, grounded theory enables researchers to develop a substantive theory that emerges directly from systematically collected and analysed data (Charmaz, 2017). Unlike other designs, grounded theory does not begin with a predefined theoretical framework; instead, the theory is constructed inductively through engagement with the data. Researchers focus on understanding social processes, actions, or interactions as they occur naturally, and use iterative methods to gather, code, and analyse data in multiple phases (Creswell & Poth, 2018). The ultimate goal is to generate a theory that explains a particular phenomenon by identifying patterns, relationships, and emerging concepts grounded in the lived realities of participants (Tie, Birks & Francis, 2019).

4.3.2 Quantitative Designs

The use of quantitative research methodologies and approaches to gather numerical data is central to quantitative research design, distinguishing it from qualitative approaches. Quantitative research focuses on measuring variables, testing hypotheses, and identifying relationships through objective, statistical means (Apuke, 2017). As noted by Creswell and Creswell (2018), quantitative designs aim to define, measure and predict social phenomena by examining large samples, often in controlled or structured settings. This allows researchers to assess cause-and-effect relationships between independent and dependent variables. The goal is to produce findings that can be generalised to broader populations. Quantitative research designs are typically categorised into two types: experimental and non-experimental (Neuman, 2020; Sauro, 2021b).

4.3.2.1 Experimental research designs

According to Creswell and Creswell (2018), experimental research designs in quantitative studies are typically divided into three main types: pre-experimental, quasi-experimental, and true experimental designs. In this approach, two groups commonly referred to as the experimental group and the control group are compared to determine whether a specific intervention or manipulation applied to the

experimental group produces measurable changes in outcomes (Sauro, 2021b). While experimental designs are widely used in the natural sciences, they are increasingly applied in social science research, including education, to evaluate the effectiveness of interventions aimed at improving learning outcomes (Almalki, 2020; Neuman, 2020). These designs allow for the establishment of causal relationships through controlled experimentation.

4.3.2.2 Non-experimental designs

In descriptive research, non-experimental designs are typically used when no manipulation of an experimental group occurs to assess its effect on a control group. A randomised cross-sectional survey design exemplifies a quantitative non-experimental approach. This design is commonly applied in exploratory and descriptive research to analyse different groups of people at a specific point in time (Creswell & Creswell, 2018; Gray, 2018). For instance, a cross-sectional study can investigate a particular issue within a population to determine the extent of its impact (Bryman, 2017; Saunders, Lewis & Thornhill, 2019).

4.3.3 Mixed Methods Designs

A mixed methods design was chosen for this study out of the three primary types of research designs that are accessible. In order to address a single research problem in a single study, a mixed methods design combines qualitative and quantitative approaches (Creswell & Plano Clark, 2018; Santos et al., 2017). Thus, the systematic integration or use of qualitative and quantitative research methods and data is made possible by a mixed methods study design (McBride, MacMillan, George & Steiner, 2018). This is supported by the fact that qualitative research methods focus on using non-numerical data that may be analysed and interpreted to understand events and shifts in a particular social phenomenon, while quantitative research methods focus on describing, predicting, explaining, and identifying social patterns of a certain event using numerical values to measure variables and explain findings (Bazeley, 2018; Johnson, Onwuegbuzie & Turner, 2017). The use of a mixed methods design has grown in popularity to enable the simultaneous use of qualitative and quantitative methods in a single study, compensating for the shortcomings of using either qualitative or quantitative approaches alone (Fetters, Curry & Creswell, 2019).

According to McBride et al. (2018), a mixed methods study is considered more comprehensive if both qualitative and quantitative data are employed synergistically, either concurrently or sequentially. When addressing the different research questions of a particular study, researchers can employ both qualitative and quantitative research methods, methodologies and techniques according to the mixed methods research design (McKim, 2017). These designs are thought to be highly successful in raising the level of scientific rigor in a particular study.

A study may use one of several kinds of mixed methods research designs. These designs are categorized and named according to various standards, such as the emphasis placed on qualitative or quantitative data and the order in which the data are collected, examined and evaluated (McBride et al., 2018).

4.3.3.1 Rationale for the adoption of mixed methods

Several factors are taken into consideration in choosing a mixed methods research design. The adoption of mixed methods is due to the need to answer different research questions and the equal significance given to both qualitative and quantitative data in this study (Creswell & Creswell, 2018; Plano Clark & Ivankova, 2017). In addressing the research questions, this research collected both qualitative and quantitative data. This means that the combination of both qualitative and quantitative data offers the opportunity for an all-inclusive interpretation of the findings and draws a well-informed conclusion (Fetters et al., 2019; Tashakkori & Teddlie, 2017).

To explore how viable municipal monitoring and evaluation of environmental education in promoting sustainable living in schools and communities is conducted in the Vhembe District Municipality, both qualitative and quantitative data were collected. Quantitative data through the use of questionnaires was collected to elicit the views of teachers and learners to assess the effectiveness of municipal monitoring and evaluation of environmental education in schools and communities, while qualitative data were collected via semi-structured interviews with municipal officials regarding how viable municipal monitoring and evaluation of environmental education in promoting sustainability in schools and communities is conducted in the Vhembe District Municipality (Creswell, 2018; Bryman, 2018).

The qualitative approach to collect and analyse the data for the study was through interviews, and the quantitative approach to measure the objective aspects of the study was through the questionnaire. This means that the data for the study were collected through self-administered questionnaires (quantitative) and interviews (qualitative) (Creswell & Plano Clark, 2018; Johnson et al., 2017).

4.3.3.2 Methodical approach

Environmental education plays a crucial role in fostering awareness, knowledge and attitudes towards sustainable living practices within communities. Municipalities, as key stakeholders, are tasked with monitoring and evaluating EE initiatives in schools and communities to ensure their effectiveness and impact. In this thesis, a comprehensive methodological approach for investigating the state of municipal monitoring and evaluation of EE in the Vhembe District Municipality was proposed. This approach integrates qualitative and quantitative research methods within a mixed-methods framework, drawing on theoretical perspectives such as EE Theory, Programme Evaluation Theory, Systems Theory and Critical Theory in Education.

This methodological approach is grounded in the need for a thorough understanding of the complexities surrounding municipal monitoring and evaluation of environmental education. By adopting a multi-method approach, the study aimed to capture both the qualitative nuances and quantitative measures of effectiveness, thereby providing a holistic assessment. Integrating diverse theoretical frameworks offered a conceptual lens through which to interpret findings, identify underlying dynamics and propose actionable recommendations for promoting sustainable living practices.

The study's population includes municipal officials, teachers, and learners within the Vhembe District Municipality, reflecting the stakeholders involved in EE initiatives. A purposive sample of 130 participants was selected to represent key stakeholders, ensuring adequate representation and diversity within the study population.

Qualitative methods, such as semi-structured interviews were employed to explore the current state and challenges of municipal monitoring and evaluation of EE. By engaging with municipal officials, qualitative data offered rich, detailed insights into their perspectives, experiences, and practices. Thematic analysis was used to identify

patterns, themes, and recurring issues within the qualitative data, enhancing understanding of the complexities involved.

Complementing qualitative data, quantitative methods such as questionnaires provided statistical insights into the effectiveness of municipal monitoring and evaluation efforts. Teachers and High school learners were surveyed to assess their awareness, knowledge, and attitudes towards environmental issues. Descriptive statistics were used to analyse quantitative survey data, offering quantitative measures of effectiveness and impact.

The integration of qualitative and quantitative data within a mixed-methods framework allowed for triangulation of findings, enhancing the validity and reliability of the study. By examining converging themes and patterns from different data sources, the study aims to provide a comprehensive understanding of municipal monitoring and evaluation practices. Triangulation of findings enable researchers to develop nuanced interpretations and actionable recommendations.

The use of a mixed-methods methodology is adopted in this study as a means of providing an overall analysis of the environmental education (EE) program implementation, monitoring and evaluation processes in the Vhembe District Municipality. Although "mixed methods" does refer to an overall methodology, it also describes a type of methodology design that has the potential to provide triangulated data that combines numerical trends with contextual information that can increase the explanatory strength and validity of results (Johnson et al., 2021; Creswell & Creswell, 2023).

This study utilizes a Convergent Parallel Mixed Methods Design (Plano-Clark & Ivankova, 2020), where both qualitative and quantitative data are collected simultaneously, analysed separately, and then integrated for interpretation purposes. Since this design can be used to combine quantitative survey-based data from teachers and municipal official with in-depth qualitative interview and focus group data, it will enable the identification of statistical trends, the underlying institutional barriers, the mechanisms and the stakeholders' perceptions that influence the effectiveness of EE programs.

The pragmatic paradigm provides the theoretical base for this study, as it recognizes the value of the practical applications of research and utilizes multiple methods to

investigate complex issues of the real world (Tashakkori & Teddlie, 2021; Morgan, 2020). The pragmatic paradigm affords methodological flexibility and therefore enables the researcher to explore "what works" to understand the phenomenon, as opposed to limiting the researcher to either a positivist or an interpretivist paradigm. The pragmatic paradigm also forms the foundation for the integrated analysis of the quantifiable indicators of EE outcomes with the qualitative insights of the governance processes, resulting in actionable and theoretically-informed conclusions.

In general terms, the convergent parallel mixed-methods design provided a unified structure for answering the primary research questions: How do municipal governance systems evaluate and monitor EE programs? What impact have EE programs had on students and their communities? And what are the system-wide mechanisms that create barriers to success or promote the success of EE programs? As the data was collected concurrently and then integrated into one cohesive document, the study produced findings that were both empirically strong and contextualized in the same manner expected at the doctoral level regarding methodological rigor.

In conclusion, the methodological approach offered a comprehensive and rigorous framework for investigating municipal monitoring and evaluation of environmental education. By integrating qualitative and quantitative methods within a mixed methods framework and drawing on diverse theoretical perspectives, the study aimed to generate nuanced insights and actionable recommendations for promoting sustainable living practices in the Vhembe District Municipality.

4.3.3.3 Integration of Quantitative and Qualitative Strands (Analytical Logic of the Mixed-Methods Design)

While the study utilizes a mixed-methods research design, it does so with a methodology that is integrated in terms of how the qualitative and quantitative methods are used within a unified analytical framework. Mixed-methods studies conducted at the doctoral level require researchers to clearly demonstrate how the various strands of data are linked to form meta-inferences instead of merely being two separate datasets (Creswell & Plano Clark, 2018; Fetters et al., 2019). The current study uses integration of the methodologies through methodological triangulation, complementary explanations and theoretical integration.

Firstly, the quantitative strand is utilized as a means for establishing patterns within the data. A questionnaire was administered to both students and teachers, and the data collected were analysed statistically to provide an understanding of the distribution of awareness of Environmental Education (EE) programs, perceptions of program effectiveness and attitudes toward sustainable lifestyles. The quantitative data established the scope of the research in terms of the measurement of EE outcomes and the range of schools and communities participating in the study in the Vhembe District Municipality. In this sense, the quantitative data provided the structural patterns and measured dimensions of municipal monitoring and evaluation effectiveness.

Secondly, the qualitative strand served as a means for providing explanations and interpretations for the quantitative data. Semi-structured interviews were completed with municipal officials to obtain contextually embedded understandings of institutional practices, monitoring frameworks, governance constraints and the dynamics of implementing EE programs. Where the quantitative data identified "what" types of patterns existed, the qualitative data provided "how" and "why" those patterns emerged in the municipal governance system. Therefore, there exists an epistemological complementarity in which the qualitative data deepened and contextualized the quantitative trends.

Therefore, the integration of the methodologies occurred on three analytical levels. On the first level of methodological triangulation, the findings of the questionnaire and interview data were systematically compared to determine whether the findings converged, diverged and expanded the evidence found in the other methodology. For example, if the quantitative results indicated that the learners perceived EE programs as having low effectiveness, the qualitative interview data would be used to investigate the underlying institutional limitations that may have contributed to the perceived ineffectiveness such as lack of monitoring tools, limited resources and poor communication and coordination between departments. This type of triangulation improved the credibility and validity of the conclusions regarding the monitoring and evaluation systems in municipalities.

On the second level of explanatory convergence, the study adopted a joint interpretive strategy that allowed the quantitative results to inform the focus of the qualitative

analysis. The emerging statistical patterns determined the thematic investigation of the interview data and enabled the researcher to provide explanations for the discrepancies between what was intended by policy and what actually occurred during the implementation of the policies. This type of joint interpretative strategy is consistent with the pragmatic mixed-methods logic in which the datasets are interactively interpreted and not separately reported.

Thirdly, theoretical integration is achieved by examining the combined findings through Programme Evaluation Theory, Systems Theory, Environmental Education Theory, and Critical Theory in Education. The quantitative indicators of EE program effectiveness are analysed using Programme Evaluation Theory to evaluate the effectiveness and outcomes of EE programs. Similarly, the qualitative investigations of institutional coordination and the dynamics of governance within the EE monitoring processes are examined using Systems Theory. Furthermore, Critical Theory in Education provides an analytical lens to explore the structural constraints, power relationships, and accountability in institutions related to municipal EE monitoring processes. By using this theoretical synthesis, the study goes beyond descriptive analyses to an interpretive and conceptual explanation of municipal monitoring viability.

Finally, the integration of the methodologies is operationalized through the production of joint displays, comparative matrices and meta-inference generation. The joint displays combine the quantitative statistical results with the qualitative themes to make the integration of the methodologies transparent and analytically traceable. The meta-inferences are generated by combining the convergent and divergent evidence from the multiple datasets and ensures that the conclusions represent an overall interpretation of the combined methodologies rather than individual methodology components.

This analysis is important to ensure that the qualitative findings are based on the quantitative results (i.e., distribution of effectiveness) of the EE, while the qualitative results will provide the underlying reasons or mechanisms (e.g., meanings, institutions) for these results. This kind of research has an epistemological complementarity as opposed to methodological complementarity; it is therefore consistent with the expectation of mixed methods rigor at the doctoral level.

Thus, the study does not have the two sets of data as separate lines of inquiry, but as complementary strands of inquiry that together provide a complete picture of how well the Vhembe District Municipality's environmental education programs can be monitored and evaluated through Municipal Monitoring and Evaluation in order to promote sustainability.

4.3.3.4 Research paradigm

This research utilised a mixed methods approach as previously mentioned. Jackson, and Cheng (2022) identified four research paradigms commonly linked to mixed methods designs. These paradigms are Dialectic, Transformative-Emancipatory, Critical Realism, and Pragmatic perspectives, which are elaborated upon in the following discussion (Jackson & Cheng, 2022).

- **The dialectic perspective**

This mixed methods research approach makes it possible to employ at least two paradigms in a single investigation. A dialectic method is one that takes into account the differences found in the research findings. This viewpoint's proponents advocate for data collecting, analysis and reporting that fosters communication between qualitative and quantitative research methodologies (Creswell & Creswell, 2018). Therefore, a researcher who wants to address the tension, paradoxes and discordances that may result from the findings of a cross-conversation study may find this approach useful. The dialectical paradigm may therefore be the alternate research strategy to utilise when trying to apply paradigms with opposing viewpoints in a study (Jackson & Cheng, 2022).

- **The transformative-emancipatory perspective**

Another paradigm viewpoint that can be applied in mixed methods research on underprivileged and minority groups in society is the transformative-emancipatory approach. As the name implies, the aim of a transformative and emancipatory study is to improve the circumstances of the groups that have been identified. According to Shanon-Baker (2016), the research paradigm can assist the researcher in giving individuals in positions of privilege and power a voice in order to highlight the underrepresented groups in society, such as the disabled and other minority communities. Therefore, the transformational emancipatory paradigm is a more

realistic strategy for improving the lives of people who are thought to be less fortunate in society.

- **The critical realism perspective**

In a mixed methods study, this is an additional research paradigm strategy that can be used. According to Shanon-Baker (2016), this paradigm is based on the idea that qualitative and quantitative research methodologies can be utilised in conjunction to overcome the drawbacks of using each one separately. According to critical realists, reality can exist regardless of one's point of view, despite the idea that people's perspectives and points of view shape reality (Bhaskar, 2017). In contrast to individuals who solely adopt positivism or interpretivism, critical realists acknowledge the existence of various realities that are inaccessible to humans (Maxwell, 2018).

A mixed methods study can employ critical realism as a paradigm to understand the connections between the subjects whether they be individuals, events or concepts. As a result, it is a paradigm that is simple to use in assessment research to determine the causal relationships among the elements of the phenomenon being studied (Fletcher, 2017).

- **The pragmatic philosophical paradigm**

This research was conducted within a pragmatic philosophical framework, a paradigm deemed most suitable. This approach is grounded in the belief that research should focus on identifying practical solutions to real-world problems rather than merely exploring the nature of knowledge (Dube, Nkomo & Apadile-Thokweng, 2024). This philosophical perspective prioritises outcomes and seeks to understand the significance of various elements involved. Its emphasis is on the results or products that emerge from the research. The underlying assumption is that effective communication and collaborative meaning-making are essential for devising practical solutions to societal challenges (Hampson & McKinley, 2023). As such, this paradigm concentrates on developing effective strategies to address the relevant research questions, rather than solely pursuing what may be considered true or real in academic inquiry (Turyahikayo, 2021). Moreover, Dube et al. (2024) assert that pragmatism holds that theories can be both specific to context and generalisable by examining their applicability in different situations.

The philosophical orientation of this study is grounded in the pragmatic philosophical paradigm and is conceived as a coherent philosophy of inquiry regarding the examination of complex, context-bound governance phenomena including municipal monitoring and evaluation (M&E) systems for Environmental Education (EE) rather than solely as a methodological justification for methodological pluralism. The philosophical tradition of pragmatism conceives knowledge as being situational, provisionally accepted and action-based, and situated within the actualities of real-world problem contexts rather than as an abstract or ultimate representation of reality (Biesta, 2020; Morgan, 2020). Therefore, pragmatism presents an epistemological foundation that supports inquiry as both practical and contextually-sensitized in order to produce actionable knowledge relative to addressing societal and institutional issues (Patton, 2021; Creswell & Creswell, 2023).

Pragmatic inquiry philosophically rejects rigid dualisms between positivist and interpretive paradigms by arguing that knowledge is developed through continuous engagement with real world problems and assessed based on their practical consequences and utility (Biesta, 2020; Morgan, 2020). This perspective aligns with Deweyan conceptions of inquiry as adaptive and problem solving, and is embedded within social practice, where truth is considered to be operational and conditional rather than fixed and universal (Biesta, 2020). As such, pragmatism views research not as a means of discovering definitive truths, but rather as a process of developing context-specific knowledge intended to support informed action, decision making, and institutional development (Patton, 2021; Dube et al., 2024).

Pragmatism assumes that knowledge is generated through interaction among empirical evidence, stakeholders' experiences and contextual realities, and thus recognizes that understanding is generated from practice and not from detached observation (Morgan, 2020; Creswell & Creswell, 2023). From an epistemological stance, this position is particularly well-suited to examine municipal M&E systems, which are not fixed technical mechanisms, but rather dynamic and adaptive evaluative practices influenced by institutional logics, policy frameworks and governance priorities (Goldman et al., 2021; OECD, 2020). In this context, M&E does not simply measure program results, it generates operational knowledge that informs governance

decisions, legitimates institutional action and influences perceptions of programs' effectiveness.

As an ontology, pragmatism has a transactional and process-based view of reality, and recognizes that social phenomena such as EE programs, sustainability outcomes and municipal evaluative systems are constructed within governance contexts and are continuously evolving (Biesta, 2020; Sterling, 2021). Municipal M&E systems function as adaptive governance instruments that respond to policy requirements, institutional capacities and community needs, and therefore reinforce the pragmatic premise that reality is not fixed but is instead dynamically created through institutional practice and evaluative engagement (Goldman et al., 2021; Patton, 2021).

Additionally, pragmatism conceptualizes inquiry as situated practice, meaning that knowledge claims must be evaluated within the socio-institutional contexts in which they are developed and implemented (Morgan, 2020; Dube et al., 2024). This is especially pertinent to the current study, which examines municipal monitoring and evaluation within the Vhembe District Municipality, a governance environment characterized by contextual restrictions, policy requirements and institutional complexity. Therefore, a pragmatic epistemology will enable the current study to develop context-specific and practice-related knowledge about how municipal evaluative systems influence the implementation of Environmental Education and the achievement of sustainable living outcomes in schools and communities (Lotz-Sisitka et al., 2023; Shackleton et al., 2021).

Further, pragmatism is founded upon the principle of consequence-oriented inquiry, wherein the validity of knowledge is established by its practical effects and usability in resolving real-world problems (Patton, 2021; Creswell & Creswell, 2023). Given that municipal M&E systems are fundamentally consequence-driven (i.e., they exist to inform policy decisions, optimize program effectiveness and enhance institutional accountability), (Goldman et al., 2021; DPME, 2022) the pragmatic paradigm is epistemologically suitable to evaluate municipal M&E systems due to its alignment with the evaluative and action-oriented nature of governance processes.

Finally, pragmatism acknowledges that knowledge is provisional and can be revised, especially when evaluating complex social systems whose institutional practices,

policy environments and stakeholder interactions are constantly evolving (Biesta, 2020; Morgan, 2020). This reflects the nature of municipal Environmental Education governance, whereby M&E frameworks are continually adapted, reinterpreted and modified to reflect changing environmental, educational and governance challenges (Sterling, 2021; Goldman et al., 2021). Therefore, pragmatism will allow the current study to conceptualize municipal M&E as a dynamic and adaptive knowledge-generating system embedded in governance practice.

The paradigm of pragmatism also supports methodological pluralism, as a methodological necessity, rather than simply as a methodological convenience, due to its philosophical commitment to utilize various types of evidence when addressing difficult research questions (Creswell & Creswell, 2023; Morgan, 2020). As such, in order to study the ways in which municipalities monitor and evaluate environmental education, researchers will need to engage with a variety of data sources including, but not limited to institutional documentation, stakeholders' views, evaluative frameworks, and governance mechanisms at work within specific contexts. Therefore, a pragmatic philosophy of inquiry legitimates the use of multiple data sources and analytical methods to develop an operational and inclusive understanding of evaluative governance systems (Dube et al., 2024; Patton, 2021).

Further, pragmatism is also compatible with the study's multi-theory framework, including Systems Theory, Programme Evaluation Theory, Critical Theory, and Environmental Education Theory. Municipalities are faced with the complexities of developing Environmental Education Governance systems that include systemic relationships, knowledge produced through evaluations, power exercised institutionally, and teaching/learning processes, all of which require a philosophical position that can accommodate these interrelated elements simultaneously (Sterling, 2021; Patton, 2021). Thus, pragmatism provides the philosophical basis for integrating theory and application in describing how municipal evaluative systems operate in relation to governance, education and sustainability.

Therefore, pragmatism was selected as the philosophical base of this study as a matter of principle, rather than merely as a label to identify the methodology used. Pragmatism emphasizes the situated nature of inquiry, the provisionally of knowledge, and the focus on consequences, all of which are uniquely suited to the examination of

municipal monitoring and evaluation systems as dynamic, context-specific, and governance-related practices. Through the conceptualization of knowledge as operational and informed by practice, the pragmatic paradigm allows for a nuanced exploration of how municipal evaluative systems generate institutional knowledge, guide decision-making and contribute to the success of Environmental Education programs in promoting sustainable lifestyles in schools and communities.

- **The rationale for the use of the pragmatic philosophical paradigm**

There are many reasons to justify the use of a pragmatic philosophical paradigm in this study. The first is that the current study is mixed methods research. Therefore, pragmatism as a philosophical orientation in mixed methods research can be used to maintain both the subjectivity of the researcher's reflections and the objectivity in data collection and analysis (Allemang et al., 2022). This perspective helped in thoroughly investigating viable monitoring and evaluation of school and community EE programmes for sustainable living in the Vhembe District, South Africa. Liu (2022a & b) further argued that the pragmatic paradigm in mixed methods research promotes complementarity in the way qualitative and quantitative approaches can be used to overcome the weaknesses and strengths inherent in each. Pragmatism thus allows the use of both quantitative and qualitative approaches within the same study and does not subscribe to the notion of incompatibility in the use of such approaches (Allemang et al., 2022).

From the foregoing, it is worth noting that the use of the pragmatic philosophical paradigm provided leeway for the researcher to employ the convergent parallel mixed methods design. This design allowed for the collection of qualitative and quantitative data concurrently in the research process. Consequently, this study was a rendition of a cross-sectional mixed methods design (Janzen Ulbricht & Kruger, 2023). Semi-structured interviews and a cross-sectional survey employing questionnaires were the methods used in the study to collect both qualitative and quantitative data, as discussed in the subsequent sections of this chapter.

There are numerous compelling justifications for employing a pragmatic philosophical paradigm within the framework of this study. Foremost among them is the study's classification as mixed methods research. This unique approach allows pragmatism to serve as an insightful philosophical orientation, enabling a harmonious balance

between the researcher's subjective reflections and the objective rigour needed in both data collection and analysis (Hampson & McKinley, 2023).

This philosophical perspective empowered the researcher to delve deeply into the viable monitoring and evaluation of schools and communities' EE programmes for sustainable living in the Vhembe District, South Africa. Such alignment is crucial for enhancing the municipal monitoring and evaluation processes and procedures, a topic of significant importance in improving municipal service provision. Allemang et al. (2022) further elucidated that the pragmatic paradigm in mixed methods research encourages a synergistic relationship between qualitative and quantitative approaches. This synthesis not only helps to bridge the gaps inherent in each method but also enriches the overall understanding of the research topic. Pragmatism thus endorses the simultaneous engagement of both quantitative and qualitative methodologies within a singular study, challenging the outdated notion of incompatibility between these diverse approaches (Hampson & McKinley, 2023).

4.4 RESEARCH METHODS

Research methods have been described by Taherdoost (2022a) as techniques used for gathering and analysing data to add to the evidence from theorised knowledge. These are the approaches used for collecting and analysing data and interpreting the research findings. The research methods involve the explanation of sampling and the processes involved in gathering, analysing, interpreting, and validating the findings (Creswell & Poth, 2018; Saunders et al., 2019;).

4.4.1 Population and Target Population

The population of the study is the set of elements on which the study focuses (Bless, Higson-Smith & Sithole, 2013). Leedy and Ormrod (2019) describe the population of the study as the unit of analysis on which the researcher desires to make specific conclusions. For this study, the general population includes Vhembe District municipal officials, teachers, and learners from schools located in the Vhembe District Municipality.

The target population has been described by Welman, Kruger and Mitchell (2017) as the population that meets the particular criterion described for specific investigation. For this study, the target population comprises municipal officials from the Vhembe

District Municipality who are involved in monitoring and evaluation of environmental education (EE) programmes, as well as teachers responsible for educating and implementing EE programmes, and learners from different schools within the Vhembe District Municipality who are involved in EE. The target population is characterised by people with interest, knowledge and the potential to contribute significant information for creating new knowledge on how viable municipal monitoring and evaluation of environmental education in promoting sustainable living in schools and communities is conducted. From this population, a representative sample was selected to participate in this study.

4.4.2 Sampling

Sampling is the process in which the representative sample is selected from the total population of the study (Singh & Masuku, 2014). There are two forms of sampling which are probability and non-probability sampling techniques. Probability sampling has been described as the random sampling techniques in which all the participants from the population have equivalent chances of being chosen for the sample (Neuman, 2020). Non-probability sampling techniques, which include convenience, quota, snowball and purposive sampling, refers to sampling in which the likelihood of an element being chosen to be a part of the sample is known or guaranteed (Muzari, de Villiers & Moolman, 2022).

4.4.2.1 Systematic simple random sampling

According to Creswell and Creswell (2018), systematic sampling is a probability sampling strategy in which every element of the population has an equal chance of being included in the sample at equal intervals, starting with a randomly chosen element from the specified sampling frame. Therefore, learners from participating schools were chosen by systematic simple random sampling.

4.4.2.2 Purposive sampling

Purposive sampling is a non-probability sampling method where a researcher uses their creativity and judgment to specifically choose certain items or individuals to include in the sample (Etikan, Musa & Alkassim, 2016). These components or individuals were chosen with the assumption that they were typical of the pertinent

population, to whom the results might be extrapolated. As explained below, the study's key informants were chosen using the practice of purposive sampling.

4.4.2.3 Sampling procedure

Five schools were selected purposively because they were seen to be knowledgeable about the topic at hand by the researcher (Creswell & Poth, 2018; Palinkas et al., 2015). Furthermore, these schools offered EE programmes, making them the perfect choice for the study (Gentles, Charles, Ploeg & McKibbon, 2015). During the time of the study, the Vhembe District had about 20 public schools that offered EE programmes. Only the government schools were selected to participate in the study. Therefore, only five schools were purposively selected on the premise that they offered EE programmes (Merriam & Tisdell, 2016). The study was limited to five schools due to financial and time constraints, which made it difficult for the researcher to gather data from more than five schools (Etikan et al., 2016).

Apart from selecting schools using non-probability purposive sampling techniques, 10 school teachers were also purposively selected to be part of the study sample. Teachers from government schools within the Vhembe District municipality were purposively selected because they have adequate knowledge regarding EE programmes and conducting EE programmes at their respective schools (Creswell & Creswell, 2018; Given, 2021). Furthermore, in addition to the selection of schools and teachers using non-probability sampling techniques, 10 municipal officials were also purposively selected to be part of the study sample. The municipal officials were selected based on their work at the Vhembe District Municipality under the monitoring and evaluation unit and their adequate knowledge regarding EE programmes (Neuman, 2020; Palinkas et al., 2015).

4.4.2.4 Sampling procedure

Learners were selected through systematic simple random sampling to participate in the study resulting in 110 learners from an estimated total of more than 1000 learners. The larger group of participants was 110 learners from the selected schools in the Vhembe District Municipality, and these participants completed a self-administered questionnaire to offer their views and experiences regarding the implementation of an EE programme.

4.4.2.5 Inclusion criteria

The inclusion and exclusion criteria are the criteria utilised to determine members of the target population to be included or excluded from the sample of the study (Etikan et al., 2016; Palinkas et al., 2015). In this study, reasons for inclusion criteria are participants being fully involved in implementing EE in schools within the Vhembe District Municipality and accessibility. The District Municipality officials were involved because they are responsible for assessing the EE programmes; the teachers from the schools were included as they are responsible for EE programmes and learners were included as they participate in EE programmes (Bryman, 2018; Creswell & Poth, 2018).

4.4.2.6 Study sample

A subset of the total study population that a researcher can examine is known as a study sample (Bryman, 2018). For the sole aim of conducting research, a comparatively smaller group of individuals was chosen from the targeted community (Alvi, 2016). There were 130 participants in the study's overall sample size. The larger group of participants was 110 learners from the selected schools in the Vhembe District Municipality, and these participants completed a self-administered questionnaire to offer their views and experiences regarding the implementation of the EE programme. The justification for arriving at a representative sample of 110 learners is that the Vhembe District has a high number of learners, and it is not possible to have all the learners participate. In addition, due to time and financial factors, it was only possible to include 110 learners as a representation of the Vhembe District schools. The sample comprised 130 participants made up of 10 municipal officials, 10 teachers, and 110 learners. Table 4.1 presents the study sample

Table 4.1: Study sample

	PARTICIPANTS	NUMBER
1	Municipal officials	10
3	Teachers	10
4	High school learners	110
	Total Sample Size	**130**

4.4.3 Data Collection Instruments and Methods

As indicated above, the study adopted a mixed methods approach which meant that data collection resulted in qualitative and quantitative data. The sample for the qualitative part of the study is smaller than the quantitative one with qualitative data gathered through the use of semi-structured interviews and quantitative data collected through a self-administered questionnaire. The following table shows how the data were collected from different participants.

Table 4.2: Data collection instruments

	PARTICIPANTS	DATA COLLECTION INSTRUMENT
1	Municipal officials	Semi-structure interviews
3	Teachers	Self-administered questionnaire
4	High School learners	Self-administered questionnaire

As a result, the study's use of both qualitative and quantitative data was complementary. Semi-structured interviews were used to get qualitative data, and self-administered semi-structured questionnaires were used to gather quantitative data. The researcher was able to extract the opinions and experiences of municipal officials with the use of the qualitative data. Conversely, quantifiable information was gathered from educators and learners.

4.4.3.1 Interviewing as a method of data collection

The interview is the instrument used to gather data through the direct involvement of the researcher with the participant. The researcher asks questions while the participant provides answers regarding the research problem. The interview is a qualitative data collection tool used to collect experiences and views from respondents (Creswell & Poth, 2018; Given, 2021). Bless, Higson-Smith and Sithole (2018) describe the interview as a valuable qualitative data collection instrument that allows for the gathering of verbal and non-verbal expressions from participants. Interviews are classified into three types: unstructured, structured, and semi-structured interviews (Kvale & Brinkmann, 2018; Rubin & Rubin, 2019).

- **Structured interviews**

Structured interviews follow a structured interview guide with pre-coded answers (Bryman, 2016). The purpose of the structured interview guide is to allow the researcher to collect specific information on a given topic. When used as a method of data collection, the structured interview guide is used among participants with low literacy levels. This sort of interview involves the researcher asking questions of the interviewee by strictly following well-prepared questions in a particular order with no deviation (Saunders et al., 2019).

- **Unstructured Interviews**

Unstructured interviews, also referred to as in-depth interviews, are one-on-one question-and-answer sessions between the interviewee and the researcher acting as the interviewer. There is no set sequence or time limit for the questions and answers (Rubin & Rubin, 2019). This interview does not adhere to a set of pre-planned questions. The interviewer always makes sure to ask questions that are relevant to the subject of interest, even if the interviewee is allowed to talk about anything.

- **Semi-structured interview**

The semi-structured interview is a one-on-one technique for gathering data in which the interviewer and the interviewee participate in a question-and-answer session that is designed to concentrate on a single topic of special interest while allowing for flexibility in the range of questions to elicit as much information as possible (Kallio, Pietilä, Johnson & Kangasniemi, 2016). The interview offers the flexibility to probe for more thorough responses from the interviewee, even if this sort of interview depends on the usage of an interview guide with a preset order of questions (Gill, Stewart, Treasure & Chadwick, 2008).

This study used semi-structured interviews for the collection of qualitative data. Semi-structured interviews are a face-to-face method of collecting data in which the researcher asks questions and gets answers from the participants (Creswell & Poth, 2018; Newcomer, Hatry & Wholey, 2015). Semi-structured interviews are significant as they collect in-depth information through getting more complete answers, relying on the use of an interview guide. The interview guide (see Appendix F) was developed taking into consideration the research questions of the study. All interviewees were asked the same questions based on the research questions (Given, 2021).

- **Administration of the semi-structured interview guide**

For this study, a semi structured interview guide was prepared with different questions under different themes representing the research questions of the study (see Appendix F). The interviews were scheduled with municipal officials and all interviews were conducted face-to-face at the Vhembe District Municipality offices. Each interview took about 40 to 60 minutes. The researcher ensured that all participants were properly informed of the study's goal, the voluntary nature of their involvement and the confidentiality precautions used before to each interview. Explicit consent was sought to audio-record the sessions and verbal or written consent was obtained. A semi-structured interview schedule served as the basis for the interviews, providing flexibility to follow up on intriguing answers and investigate new subjects. Throughout the interviews, the researcher kept a conversational tone while being courteous and professional to foster an atmosphere that encouraged candid discussion. When required to extract more specific information or elucidate answers, probing inquiries were employed. With the participants' permission, a digital recorder or cell phone was utilised to record the interviews. Key observations and non-verbal clues were captured by taking quick handwritten notes during the interviews.

4.4.3.2 Questionnaire as a method of data collection

A questionnaire is an analytical tool of research designed to collect systematic and standardized information from participants using predetermined and structured questions (DeVellis, 2020). The principal objective of a questionnaire is to collect quantitative data about participants' perceptions, knowledge and experiences regarding the phenomenon being studied (Creswell & Creswell, 2023). Questionnaires allow researchers to analyse and compare trends among large numbers of participants (Saunders et al., 2022). This study employed two separate questionnaires in order to match the requirements of the mixed-methods convergent parallel design in which both quantitative and qualitative data are collected and analysed together to develop a comprehensive understanding of the research question.

Learner Questionnaire: The questionnaire completed by the students consisted almost exclusively of closed-ended questions including Likert scale items and multiple-choice questions. The use of this type of questionnaire allowed the researcher to

obtain quantifiable data regarding the environmental knowledge, awareness and behaviours of the learners as it relates to Environmental Education (EE) programs. The use of a structured questionnaire permitted consistent answers throughout the survey process and is necessary for statistical comparisons between schools.

Teacher Questionnaire: On the other hand, the questionnaire completed by the teachers was semi-structured and open-ended. The respondent's answers provided the opportunity to explain in detail their examples, experiences and ideas regarding the implementation, monitoring and evaluation of the EE programs. The use of an open-ended questionnaire allowed the researcher to collect qualitative information that described the context, obstacles, and institutional barriers that affect program outcomes. The open-ended nature of the questionnaire was intentionally selected to be used in conjunction with the learner questionnaire in order to provide additional contextual depth that can be used to combine with the quantitative data found in the learner questionnaire (Given, 2021; Robson & McCartan, 2021).

The use of a combination of close-ended and open-ended questionnaires matches the requirements of the study's mixed-methods approach in order to integrate the numerical trends and the narrative descriptions of the data. The use of this methodology allows the researcher to not only determine if there are trends in the environmental knowledge and behaviour of the learners, but also to understand why those trends occur in addition to determining how they relate to larger institutional and governing bodies of municipalities that deliver Environmental Education.

- **Administration of the self-administered semi-structured questionnaires**

This study used a self-administered questionnaire; one designed for teachers (see Appendix G) and another for learners (see Appendix H) with a variety of questions. Most of the questions were close-ended although a few were open-ended questions to enhance the collection of broad and balanced views and perceptions to address the identified research topic. Of the two, questionnaires, the learner questionnaire was administered first followed by one for teachers.

4.4.4 Data Analysis

Data analysis is a systematic process of transcribing and analysing the data to make sense of what has been found by the researcher (Creswell & Poth, 2018). As indicated above, the study has adopted a mixed methods research design, which means that the study used qualitative and quantitative analysis methods to analyse that data (Almalki, 2020; Creswell & Creswell, 2018). The responses from the semi-structured interview and self-administered questionnaire were the primary data collected for the study. The core data consisted of the answers to the semi-structured interview guides and the self-administered questionnaires. Following separate yet cross-sectional analyses of the qualitative and quantitative data, data integration occurred during the interpretation phase of this study, as described below.

4.4.4.1 Qualitative data analysis

Flick (2018) describes qualitative data analysis as a process involving the reduction, presentation and validation of data. It entails organising and simplifying large amounts of text-based information to highlight meaningful insights. This approach helps researchers through the process of structuring and interpreting non-numerical data in a way that supports drawing sound conclusions.

For this study, data were analysed using ATLAS.ti Version 8.0, a software tool designed to support the identification and interpretation of themes within qualitative data. As explained by Sutton and Austin (2015), coding is a critical part of qualitative analysis, allowing researchers to identify recurring ideas and contrasts in participant responses. While coding can be done manually, ATLAS.ti facilitated a more systematic analysis by allowing for the creation of concepts and categories that emerged from the interview data (Archer, Janse van Vuuren & van der Walt, 2017).

The software played a key role in helping the researcher categorise and interpret responses from municipal officials and relevant documents. It enabled the examination of relationships between key elements of monitoring and evaluation in EE programmes and their impact on promoting sustainable living practices in Vhembe District. Although the software provided structured support for analysing the data, the researcher's manual work including notetaking and memo writing also contributed significantly to the interpretation of the findings. Following Kiger and Varpio (2020), the analysis

followed three broad stages: preparing and organising the data, reducing it to key components, and visually presenting the findings.

Specific steps included recording and transcribing interviews, importing the transcripts into ATLAS.ti, and writing reflective memos. These memos assisted in generating initial codes, which were then grouped into broader themes. Through this iterative process, repeated patterns, narratives and key insights began to emerge, pointing to participants' perceptions of what constitutes effective monitoring and evaluation for EE initiatives in both schools and communities. In conclusion, this analytical process enabled the conversion of complex qualitative data into clear, meaningful findings. These findings offered valuable insights into how monitoring and evaluation practices could be improved to support sustainable living through environmental education in the Vhembe District.

4.4.4.2 Quantitative data analysis

To better understand the role of monitoring and evaluation (M&E) in school and community environmental education (EE) programmes that aim to promote sustainable living in the Vhembe District, the study also made use of quantitative data. This type of data, which involves numbers and measurable responses, was analysed using a statistical tool called the Statistical Package for the Social Sciences (SPSS). SPSS helped to produce easy-to-understand summaries like pie charts, tables, and graphs that visually showed patterns and trends (Creswell & Creswell, 2018; Pallant, 2020).

Before analysis began, each questionnaire was carefully checked to make sure it was fully completed. The responses were then coded, which means converting the answers into a format that the computer software could read and analyse. Some responses that were originally written in words were also converted into numbers, so they could be included in the analysis (Saunders et al., 2019). This step was important to ensure that all data were clean, organised and ready for accurate analysis.

Once the data were prepared and entered into SPSS, the software was used to run descriptive statistics. These statistics helped the researcher see how often certain responses appeared and how participants' views compared across different questions (Field, 2018; Pallant, 2020). In some cases, correlation tests were used to explore

whether there were any relationships between specific variables for example, whether the way M&E is carried out in schools has a noticeable link to improved sustainability practices in local communities (Neuman, 2020). Overall, this part of the analysis provided a broader, numbers-based perspective to support the study's findings. It helped to highlight common trends and offered a clearer picture of how people involved in EE programmes view the effectiveness of current M&E practices in achieving lasting, sustainable living in the Vhembe District.

4.4.4.3 Qualitative and quantitative data interpretation and integration

Data interpretation is about making sense of the information collected; it involves identifying patterns, themes, explanations, and possible cause-and-effect relationships within the data (Creswell & Poth, 2018). The aim is to go beyond simply presenting numbers or quotes and instead explain what the results actually mean in the context of the study. In this research, both the qualitative and quantitative data were interpreted at the same time. This means that once the data from interviews and questionnaires were analysed, they were brought together and compared side by side. Looking at the two sets of findings together helped to confirm certain insights and provided a more complete understanding of the topic (Kiger & Varpio, 2020). The interpretation process was guided by the main objectives of the study, focusing on what makes monitoring and evaluation effective for school and community EE programmes that aim to promote sustainable living in the Vhembe District. By bringing together different types of data and connecting them with the study's goals, the interpretation helped reveal practical insights into how M&E can be improved and used more effectively in EE initiatives across schools and communities in the region.

4.5 RELIABILITY, VALIDITY AND TRUSTWORTHINESS OF THE STUDY

In qualitative research, it is essential to ensure that the findings are trustworthy, and they accurately reflect the experiences and perspectives of the participants. For this study, which explored viable monitoring and evaluation (M&E) strategies in school and community EE programmes aimed at promoting sustainable living in the Vhembe District, several techniques were used to enhance both the credibility and validity of the research process and findings (Moser & Korstjens, 2018; Nowell, Norris, White & Moules 2017).

4.5.1 Credibility

To build credibility, the study focused on making sure that the participants' views were accurately captured and represented. One key method used was member-checking, where some participants were invited to review the interpreted data and confirm whether their input was correctly understood. This also gave them a chance to clarify or expand on their responses (Birt et al., 2017). The study also applied triangulation by gathering information from different sources such as interviews, document analysis, and questionnaires. This helped to cross-check findings and ensure consistency across various types of data (Fusch et al., 2018a).

To further strengthen the analysis, peer debriefing sessions were held with academic colleagues. These conversations challenged the researcher to look at the data from different perspectives and helped identify any assumptions that might affect interpretation (Morse, 2020). In presenting the findings, a thick description approach was used. This meant offering detailed background about the participants and context so that readers could understand the setting and evaluate whether the findings might apply in other similar environments (Cope, 2019).

4.5.2 Dependability

To ensure that the research process was consistent and reliable, the study carefully documented each step, from designing the research tools to collecting and analysing data. This transparent process made it easier to track how decisions were made and to demonstrate that the findings were not accidental (Korstjens & Moser, 2018).

4.5.3 Confirmability

The study also aimed to ensure that the findings were shaped by the data not by the researcher’s personal beliefs or biases. To do this, reflexivity was maintained throughout the research process. The researcher regularly reflected on their own role, assumptions, and possible influence on the participants (Berger, 2019; Darawsheh, 2020). Additionally, external audits were used. Experienced researchers reviewed aspects of the research, such as the methodology and analysis, to confirm that the process was fair, rigorous, and aligned with good research practice (Guba & Lincoln, 2021).

4.5.4 Transferability

While qualitative research does not aim for broad generalisations, this study aimed for transferability by providing detailed and rich descriptions of the research context. This allows others to judge whether the findings might be relevant in their own settings (Lincoln, Lynham & Guba, 2018; Tracy, 2020).

4.5.5 Data Saturation

Finally, the study ensured data saturation, meaning that data collection continued until no new themes or insights emerged. This helped ensure that the views collected represented a wide and deep understanding of the topic (Hennink, Kaiser & Marconi, 2017; Saunders et al., 2018).

4.5.6 Epistemological Reflexivity and Justification of Knowledge Claims in a Mixed-Methods Paradigm

The following study extends beyond procedural definitions of validity, reliability, and trustworthiness by viewing methodological rigor as an epistemological issue concerning how claims to knowledge are formulated, substantiated and validated using both qualitative and quantitative data, respectively. As such, this study views knowledge as being contextually contingent, tentative and produced by the aggregation of various types of evidence (Biesta, 2020; Creswell & Creswell, 2023). Thus, the credibility of the results of this study will not be determined based upon the use of specific procedural strategies, but through the use of epistemological coherence, reflective analysis and meta-analysis of the integrated data.

- **Establishing Validity Through Multiple Types of Data**

This study establishes the credibility of the results of the research through the systematic aggregation of the results of both quantitative and qualitative data sources. The quantitative data collected through the use of questionnaires represent quantifiable patterns relative to learner awareness of EE programs, learner perceptions of EE programs and the effectiveness of EE programs and thus, provide measurable indicators of the performance of municipal EE programs' monitoring and evaluation functions. However, in a pragmatic epistemology, the establishment of

quantifiable patterns alone is insufficient to support the validation of claims to knowledge without the incorporation of additional contextual information (Tashakkori et al., 2021).

Qualitative data collected through the use of semi-structured interviews with municipal officials provides detailed explanation of the operational practices, governance constraints and actual operations of the municipal monitoring systems for EE programs. Therefore, the warrant for the conclusion of this study exists through the evidence-based triangulation of statistical trends, thematic insights and contextual explanations of the integrated data (Fetters & Molina-Azorin, 2020; Creswell & Plano Clark, 2022).

- **Analysing the Convergence, Complementary and Dissonant Results Across Datasets**

One of the defining characteristics of rigorous doctoral-level mixed-methods research is the intentional examination of convergence, complementarities and dissonances among datasets. In this study, convergence was observed when the quantitative perceptions of EE program effectiveness converged with the qualitative descriptions of formal municipal monitoring activities. Similarly, complementary results were evident when qualitative findings provided contextual information that expanded on statistical trends and illustrated the organizational structures and decision-making processes that influenced program implementation (Guetterman & Fetters, 2020).

Moreover, divergent or contradictory results between datasets were viewed as important analytical insights, rather than methodological failures. For example, although the quantitative findings demonstrated moderate levels of awareness of sustainable living practices among learners, the qualitative data evidenced system-wide deficiencies in municipal evaluation frameworks and resource allocations. These contradictions were interpreted as indicative of the complexities of governance and education systems, rather than inconsistent research designs (Plano Clark & Ivankova, 2021; Creswell & Guetterman, 2021). By acknowledging that different methodologies measure different aspects of social reality, the inclusion of dissonant findings increases the validity of explanations by providing a more complete

understanding of the relationships and dynamics inherent in complex social phenomena.

- **Legitimizing Mixed-Methods Research and Deriving Meta-Inference**

Ultimately, the validity of the findings of this study are predicated on the quality of the meta-inferences that derive from the integration of the qualitative and quantitative findings. Meta-inference refers to the process of interpretively synthesizing findings across multiple datasets to develop comprehensive, theoretically-based conclusions (Teddlie & Tashakkori, 2020; Fetters & Molina-Azorin, 2020).

The integration of the findings of this study involved three distinct approaches: 1) Joint Displays of the findings, 2) Comparative Thematic Statistical Matrices and 3) Iterative Interpretations of the findings across datasets. The quantitative findings described the empirical patterns related to EE awareness, attitudes and effectiveness; whereas the qualitative findings described the institutional contexts, meanings and governance structures that influenced these patterns. The integration of these two types of findings increased the integrative validity of the findings and legitimized the conclusions of the study within the parameters of a mixed-methods research methodology (Creswell & Creswell, 2023).

- **Researcher Positionality and Reflexive Interpretation.**

As researchers we recognize that all knowledge production in research is fundamentally interpretative. Therefore, we have engaged in a way that recognizes our own researcher positionality as an important part of our epistemology. Our own academic orientation, familiarity with environmental education and the fact that we are embedded in the South African municipal governance context will likely shape how we interpret and place emphasis on our data. As such, we have employed a reflexive approach to critically examining our assumptions, values, and potential biases that may be influencing both our methodological and interpretive decisions (Tracy, 2020; Berger, 2020).

During the data collection and analysis phases, we utilized reflexive memos and analytic journaling to document our developing interpretations and provide transparency into our decision-making processes. We further used peer debriefing and

supervisory consultation to allow for external critiques of our subjectivity, thereby reducing the likelihood of subjective bias and increasing the interpretive credibility of our research (Nowell et al., 2022).

- **Pragmatic Epistemological Coherence in Mixed-Methods Research**

This study is based on the pragmatic paradigm which has provided us with the philosophical rationale for integrating different forms of evidence to address a complex governance and educational issue. A pragmatic perspective views the quality of evidence not just by assessing internal consistency, but also in terms of explanatory adequacy, contextual relevance, and the practical utility of the findings (Creswell & Creswell, 2023; Biesta, 2020).

Therefore, we view validity, reliability, and trustworthiness as epistemic warrants that arise from the research process rather than simply as procedural checklists. We achieve credibility through triangulated evidence, reliability through transparent and consistent methodologies, and trustworthiness through reflexively-informed and theory-driven interpretations. This epistemically-grounded methodology represents a high degree of methodological reflexivity and contributes to the legitimacy of knowledge claims about the viability of municipal monitoring and evaluation of environmental education to promote sustainable living in the Vhembe District Municipality.

4.6 ETHICAL CONSIDERATIONS

This study, which examined practical monitoring and evaluation (M&E) techniques in school and community environmental education (EE) programmes targeted at encouraging sustainable living in the Vhembe District of Limpopo, placed a strong emphasis on ethical research practices. The study complied with established ethical standards to guarantee the protection of each participant's rights, welfare, and dignity (Resnik, 2020).

4.6.1 Voluntary Participation

Participants gave their full consent to participate in the study. They were told that participation in the study was voluntary and that they could leave at any moment without facing any repercussions (Wiles, 2017). This strategy protected participants'

individuality and their right to make an educated choice regarding their involvement (BERA, 2018).

4.6.2 Informed Consent

Prior to the start of data collection, each participant gave their informed consent. They received a thorough explanation of the study's objectives, the nature of their involvement and the intended use and storage of the data (Manti & Licari, 2018). According to ethical guidelines, this made sure individuals could provide meaningful and informed consent to participate in the study (Resnik, 2020).

4.6.3 Anonymity

During transcription and data analysis, codes or pseudonyms were used in place of real identities to preserve participant confidentiality (Saunders, Kitzinger & Kitzinger, 2022). In order to ensure that individual responses could not be linked to specific individuals, no identifying information was included in the final data reporting.

4.6.4 Confidentiality

Every piece of information gathered was handled with confidentiality and kept safe in encrypted folders and password-protected devices. The raw data were only available to the researcher and academic supervisors. Throughout the process, confidentiality was emphasised to promote openness and trust in the responses of the participants (Iphofen, 2017; Kaiser, 2020).

4.6.5 Potential for Harm

Despite the study's low risk status, precautions were taken to guarantee that participants would not suffer any social, psychological or emotional harm. Participants were reminded that they could skip any subject that made them uncomfortable and the questions were meant to be courteous and non-intrusive (Tracy, 2020). At every stage of the study, the participants' welfare was a top priority (Gelling, 2018).

4.6.6 Results Communication

A summary of the study's findings will be distributed to participants and other pertinent parties, including local EE programme facilitators and schools, in appreciation of their

participation. By guaranteeing that participants have access to the knowledge produced by their participation in the research, this strategy complies with ethical good practice (BERA, 2018; MacFarlane, 2023).

4.6.7 Ethical Reflexivity, Interpretive Integrity and Epistemic Responsibility

Ethics in the study were conceptualized as an epistemological obligation for accountable knowledge generation across a mixed methodology framework. At the doctoral level, ethical research involves more than protecting participant rights, it also includes representational integrity, organizational accountability and the ethical portrayal of participants as knowledge producing entities (Tracy, 2020; Creswell & Creswell, 2023). As such, the study recognizes that ethical obligations cannot be separated from the ways in which data are interpreted, synthesized and portrayed in the development of scholarly knowledge about Municipal Monitoring and Evaluation (M&E), of environmental education (EE).

- **Participants as Epistemic Contributors**

The study rejected a positivist position that treats participants solely as a source of data. Rather, municipal officials, teachers and students were viewed as epistemological contributors, whose experiential knowledge, institutional insight and contextual understanding constructively influence the interpretation of findings. Their perspectives on EE monitoring and sustainable living were conceptualized as situated forms of knowledge within governance, educational and socio-environmental contexts (Biesta, 2020; Tracy, 2020).

Therefore, the narrative and questionnaire data collected through interviews and questionnaires were not reduced to decontextualised variables but rather were interpreted as rich, meaning-laden accounts of their experiences with, and perspectives on, the implementation of EE at the municipal level. This approach enhanced ethical respect, as it acknowledges the participants' agency in co-construction of knowledge regarding municipal implementation of EE.

- **Interpretative Integrity and the Ethical Representation of the Findings**

The study ensured interpretative integrity by representing the views of the participants in a faithful, contextual, and non-distorted fashion throughout data collection, analysis and reporting. Within the context of a mixed-methodology study, ethical responsibility to the participants includes the careful synthesis of qualitative and quantitative findings in a manner that avoids epistemic misrepresentation. Quantitative trends were not presented as definitive truths, rather they were interpreted in conjunction with qualitative interpretations in order to present a balanced and contextually based representation of the municipal M&E practices (Fetters & Molina-Azorin, 2020; Tashakkori et al., 2021). Further, the researcher did not selectively report, nor privilege findings that supported his/her prior theoretical expectations. Divergent, or contradictory, findings between the qualitative and quantitative data sets were recognized as valid and ethically acknowledged, and were analytically scrutinized, as opposed to being dismissed. Thus, the researcher reinforced transparency and scholarly integrity, consistent with the principles of epistemic justice, which require that all types of evidence receive equally serious treatment.

- **Institutional Responsibility and Governance-Sensitive Ethics**

Because the study examined municipal monitoring and evaluation systems, ethical responsibility to the participants extended to institutional responsibility to the municipalities studied. However, the research engaged in critical assessment of governance practices without placing individual officials, or the municipalities themselves, at risk of reputational harm. Therefore, the findings were aggregated, and anonymously reported, to equate scholarly criticism of the governance practices, with ethical responsibility to public sector stakeholders (MacFarlane, 2023).

It is important to recognize that the study did not frame municipal inequities as the result of individual failure, but rather as the product of institutional and systemic issues that arise from policy constraints, resource limitations, and governance structures. Such an ethical framework prevented the unfair assignment of blame and maintained analytical rigor and accountability.

- **Ethical Reflexivity in the Mixed-Methods Combination and Data Analysis Process**

Ethical obligation in this research includes the combination of qualitative and quantitative data. The generation of meta-inferences was undertaken reflexively to guarantee that neither dataset predominated the interpretive narrative. Quantitative results indicated the distribution of and pattern in the effectiveness of EE, while qualitative results identified the institutional mechanisms and contextual meanings that explain these distributions and patterns. This combined approach to data analysis represents epistemological fairness and prevents hierarchical methodological use of data, which would otherwise have resulted in marginalizing participants lived experiences (Creswell & Plano Clark, 2022; Plano Clark & Ivankova, 2021).

Comparative analysis and triangulation were employed to jointly interpret the findings of the study in a transparent manner. Comparative analysis compared and contrasted the findings from each data set to create a comprehensive understanding of the complex nature of stakeholder's perspectives and the institutional realities of the Vhembe District Municipality. Triangulation involved using three different methods to collect data and then combining those findings into a single conclusion.

- **Positionality of the Researcher and Ethical Obligation in Constructing Knowledge**

As an interpretive agent within the research process, the researcher recognizes their positionality in the research process. Their experience in working within the context of Environmental Education and municipal governance will influence how they analyse the data collected for this study, their interpretation of institutional practices, and the framing of the findings. Continuous critical self-examination through the use of reflexive journaling, peer debriefing and supervisory engagement (Nowell et al., 2022; Berger, 2020) helped the researcher maintain the ethical responsibility to remain reflective of how their positionality influenced their interpretation of the findings.

Continuous critical self-examination of the researcher's positionality allowed the researcher to provide evidence-based findings, based upon the data collected for this study, and not based upon personal assumptions or normative biases. Additionally, it provided ethical transparency to make visible the interpretive processes used to generate knowledge claims from the data collected during this study.

- **Practical Epistemological Obligations under the Pragmatic Paradigm**

Within a pragmatic paradigm, the researcher understands ethics to be an obligation to produce knowledge that is both methodologically sound and socially applicable, context-specific and policy-sensitive (Biesta, 2020; Creswell & Creswell, 2023). Thus, ethical scholarship in this sense entails producing findings that can contribute to the development of sustainable living initiatives, enhance municipal EE monitoring systems, and develop educational and environmental governance.

Therefore, ethics in this study are conceptualized as epistemological responsibility: a commitment to the truthful representation of findings, the respectful representation of participants' knowledge, the accountability of institutional critique, and the reflexive combination of multiple forms of evidence. This more inclusive conception of ethics goes beyond mere adherence to procedures and exemplifies at the doctoral level, scholarly responsibility in the production of knowledge about the municipal monitoring and evaluation of Environmental Education in the Vhembe District Municipality.

4.7 CHAPTER SUMMARY

This chapter explained how the research was carried out, step by step. The aim was to find out what constitutes effective monitoring and evaluation of EE programmes for sustainable living in the Vhembe District of Limpopo.

The study followed a mixed methods approach, which means it used both qualitative (words and experiences) and quantitative (numbers and statistics) data to elicit a well-rounded understanding of the topic. This allowed the researcher to explore not just what people thought and experienced, but also to measure patterns and trends in their responses. Participants were chosen carefully. Purposive sampling was used to select schools, teachers, and municipal officials who had experience with EE programmes. Systematic sampling was used to select learners. This combination helped ensure that the data was collected from people who were informed and directly involved in the topic. To collect data, the researcher used semi-structured interviews and self-administered questionnaires. The interviews gave participants a chance to share their views in depth, while the questionnaires provided quantifiable responses that could be analysed statistically.

For data analysis, the study used ATLAS.ti to make sense of the interview data and SPSS for analysing the questionnaire responses. These tools helped the researcher

identify key themes, patterns, and possible connections between variables such as whether effective M&E in schools contributes to improved sustainability efforts in local communities. To ensure the credibility of the findings, the study used methods like member-checking (where participants reviewed their responses), triangulation (using multiple sources of data), peer debriefing, and providing thick descriptions (detailed background and context). These strategies helped ensure that the findings were accurate, trustworthy, and meaningful. In conclusion, this chapter laid the foundation for how the research was conducted from selecting participants and collecting data to analysing and interpreting it. The careful and transparent approach taken in this chapter aimed to ensure that the results truly reflect the voices and experiences of those involved in environmental education across the Vhembe District. The next chapter discusses the presentation and interpretation of findings.

CHAPTER 5: PRESENTATION AND INTERPRETATION OF FINDINGS

5.1 INTRODUCTION

The previous chapter outlined the methodology and design to answer the research question: *What constitutes effective monitoring and evaluation of EE programmes for sustainable living in the Vhembe District of Limpopo?*

To achieve the study's objectives, the findings are organised according to the sub-questions, beginning with the demographic details of the study participants.

1. How is municipal monitoring and evaluation of Environmental Education programmes institutionally structured and conceptually framed within the Vhembe District Municipality?
2. What governance logics and epistemic assumptions underpin municipal monitoring and evaluation practices for Environmental Education programmes in schools and communities?
3. How do municipal monitoring and evaluation structures influence the effectiveness of Environmental Education programmes in promoting sustainable living?
4. What theoretically grounded and contextually viable municipal monitoring and evaluation framework can be developed for Environmental Education programmes in schools and communities?

The findings presented herein draw upon a rich tapestry of qualitative and quantitative data gathered through in-depth interviews with 10 municipal officials and self-administered questionnaires involving 10 teachers and 110 learners. This chapter is organised into themes and sub-themes that emerged from the comprehensive data collection and analysis process. It opens with an overview of the participants' background characteristics, setting the stage for a nuanced analysis of the empirical findings. These findings are systematically categorised into four key themes: the effectiveness of EE programmes, the crucial role of monitoring and evaluation in enhancing EE, the challenges faced in municipal monitoring efforts, and a proposed framework designed to elevate M&E practices.

5.2 BACKGROUND CHARACTERISTICS OF THE STUDY PARTICIPANTS

Table 5.1 presents the background characteristics of the study participants, highlighting the different groups involved in the research, their respective sample sizes and the specific criteria used for their selection.

Table 5.1: Background characteristics of study participants

PARTICIPANT GROUP	NUMBER OF PARTICIPANTS	SELECTION CRITERIA
Municipal Officials	10	● Involvement in EE programmes ● Years of experience in environmental governance ● Engagement with schools and communities
Teachers	10	●Experience in teaching EE ● Involvement in school EE programmes Diverse subject backgrounds
Learners	110	●Enrolled in schools with EE programmes ● Diverse age groups and grade levels

(Source: Field Data, 2024)

5.2.1 Description of Municipal Official Participants

The study engaged a diverse group of 10 participants, all of whom are municipal officials actively working within the Monitoring and Evaluation Unit of the Vhembe District Municipality. These dedicated officials play a pivotal role in supervising a range of environmental programmes, particularly focusing on the assessment and oversight of EE initiatives. They represent various departments within the municipality, each bringing a unique perspective and expertise to the table. Their responsibilities are multifaceted, encompassing the formulation and implementation of policies designed to promote sustainable practices. They are also tasked with the allocation of resources to ensure that environmental programmes are effectively executed. Moreover, these officials are vigilant guardians of compliance, ensuring that all initiatives align with the rigorous standards set at national and provincial levels for EE.

Above all, they are charged with the critical task of monitoring and evaluating all municipal environmental programmes, striving to uphold the integrity and effectiveness of the municipality's environmental efforts. Their collective work is

instrumental in fostering a culture of sustainability and environmental stewardship within the community.

Table 5.2: Background characteristics of municipal officials

SN	PARTICIPANT (P)	GENDER	AGE RANGE (YEARS)
1	P#01	Male	20-34
2	P#02	Male	50 and above
3	P#03	Male	50 and above
4	P#04	Male	50 and above
5	P#05	Female	50 and above
6	P#06	Female	34-49
7	P#07	Male	34-49
8	P#08	Female	34-49
9	P#09	Male	34-49
10	P#10	Male	50 and above

(Source: Field Data, 2024)

In a study involving 10 municipal officials, it was found that a significant percentage (49.2%) of participants were aged 50 years and older, making this age group the most represented demographic among the officials. In stark contrast, the youngest group of participants, those between the ages of 20 and 34, accounted for a mere 5.3%. The selection criteria for these municipal officials were carefully designed to ensure a comprehensive understanding of their roles in environmental governance. This included evaluating their level of involvement in EE initiatives, the number of years they had dedicated to fostering sustainable practices, and their active engagement with schools and communities in promoting sustainability efforts

5.2.2 Description of Teacher Participants

A total of 10 dedicated teachers from a variety of schools within the Vhembe District Municipality participated in this study, all of whom play a crucial role in teaching and implementing EE programmes. These educators were not only engaged in teaching students on environmental topics but also actively spearheading innovative school-based environmental initiatives. The participants were carefully selected from five schools throughout the Vhembe District Municipality, ensuring a rich representation that reflects the diverse educational landscapes and challenges within the region. This

diversity enhances the study's insights into the effectiveness and impact of environmental education in different settings.

Table 5.3: Background characteristics of teachers

SN	PARTICIPANT (C)	GENDER	AGE RANGE (YEARS)
1	C#01	Male	20-34
2	C#02	Male	20-34
3	C#03	Male	34-49
4	C#04	Male	34-49
5	C#05	Female	34-49
6	C#06	Female	34-49
7	C#07	Male	34-49
8	C#08	Female	34-49
9	C#09	Male	34-49
10	C#10	Male	50 and above

(Source: Field Data, 2024)

A significant percentage of the participants (77.5%) fell within the age bracket of 34 to 49 years. Among the respondents, males were the most prevalent in terms of gender representation. Notably, only 8.2% of the teachers involved in the study were aged 50 years or older, highlighting a relatively small percentage of more experienced educators within the overall group.

The teachers who participated differed in their qualifications, teaching experience and exposure to training in EE. Some had undergone formal training in EE methodologies, while others incorporated environmental topics into subjects such as Natural Sciences, Life Orientation and Geography, driven by personal interest or institutional requirements.

5.2.3 Description of Learner Participants

Learner participants were selected from various grade levels across the chosen schools to evaluate their understanding and involvement in EE initiatives. The sample included 110 learners from diverse socio-economic backgrounds, ensuring the study reflected a wide range of perceptions and experiences. These learners came from several schools within the Vhembe District Municipality. Learner participants engaged in the study by completing a self-administered questionnaire designed to assess their knowledge, attitudes and behaviours regarding environmental conservation and sustainability.

Table 5.4: Background characteristics of learners

CHARACTERISTICS	DISTRIBUTION (%)
Age	
13-15	45.5
15-20	54.5
21 and over	0
Gender	
Male	42.7
Female	57.4
School	
Secondary School	100

(Source: Field Data, 2024)

As illustrated in Table 5.1, a total of 110 learners participated in the study, drawn from the secondary school in the Vhembe District. Among these participants, more than half (54.5%) were aged between 15 and 20 years. This group demonstrated a range of maturities and academic experiences, which may have influenced their perspectives during the study. In contrast, the remaining participants (45.5%), were aged between 13 and 15 years. This younger segment provided insights that reflect a transitional phase in educational development, offering valuable comparisons with the older learners. Overall, the demographic breakdown highlighted the diverse age representation within the secondary school context

5.2.4 Description of the Vhembe District Municipality

The Vhembe District Municipality, situated in the Limpopo province of South Africa, boasts a rich and varied environmental landscape, encompassing mountainous regions, rivers, forests and agricultural areas. However, this district is currently grappling with several significant environmental challenges, including deforestation, pollution, soil erosion and inadequate waste management (Adeniran & Shakantu, 2022). These issues threaten local ecosystems, endanger biodiversity and jeopardise the livelihoods of the community (Verster & Bouwman, 2020).

In response to these challenges, the Vhembe District Municipality has launched a range of EE programmes in partnership with schools, community organisations and NGOs (Setiawan et al., 2018). The primary goals of these initiatives are to raise awareness of environmental concerns, promote sustainable practices and foster active participation in conservation efforts. Among the key initiatives are:

- **School-Based Environmental Programmes:** The municipality supports schools in integrating EE into their curricula through teacher training workshops, provision of learning materials and organisation of environmental awareness campaigns.
- **Community Clean-Up Campaigns:** Regular clean-up initiatives are organised in partnership with local schools, businesses and community groups to address waste management challenges.
- **Afforestation and Reforestation Programmes:** Tree planting campaigns have been launched to combat deforestation and improve air quality within the district.
- **Water Conservation Initiatives:** Given the region's vulnerability to droughts, municipal programmes emphasise water-saving practices through educational workshops and infrastructure improvements.

5.3 PRESENTATION OF EMPIRICAL FINDINGS

This section presents the empirical findings of the study, which were meticulously gathered through semi-structured interviews and self-administered questionnaires. The analysis encompasses both qualitative and quantitative data, revealing a rich tapestry of themes and sub-themes that offer insights into the research questions.

Each theme is explored in detail, highlighting the nuances and patterns that emerged from the participants' responses.

Table 5.5: Themes and sub-theme categories

	THEME	SUB-THEME CATEGORIES
1	Implementing EE Programmes in Schools and Communities	1. Benefits of EE Programmes 2. Challenges of implementing EE Programmes 3. Learner Attitude towards the Natural Environment
2	The Significance of Monitoring and Evaluation of EE Programmes	1. Tracking Progress and Measuring Performance 2. Evidence-Based Decision Making 3. Accountability and Transparency 4. Learning and Continuous Improvement 5. Identifying and Addressing Problems 6. The effectiveness of environmental education in addressing environmental issues.
3	Municipal Monitoring and Evaluation of EE Programmes	1. State of Municipal Monitoring and Evaluation of EE Programmes 2. Lack of Programme Design and Materials 3. Lack of Methods for Evaluation 4. Expense of the Monitoring and Evaluation Process 5. Lack of understanding of EE
4	Framework to Enhance Monitoring and Evaluation of EE Programs	1. Defining Objectives and Indicators 2. Data Collection Methods 3. Monitoring and Evaluation Activities 4. Sharing Information and Incorporating Results 5. Key Considerations

(Source: Field Data, 2024)

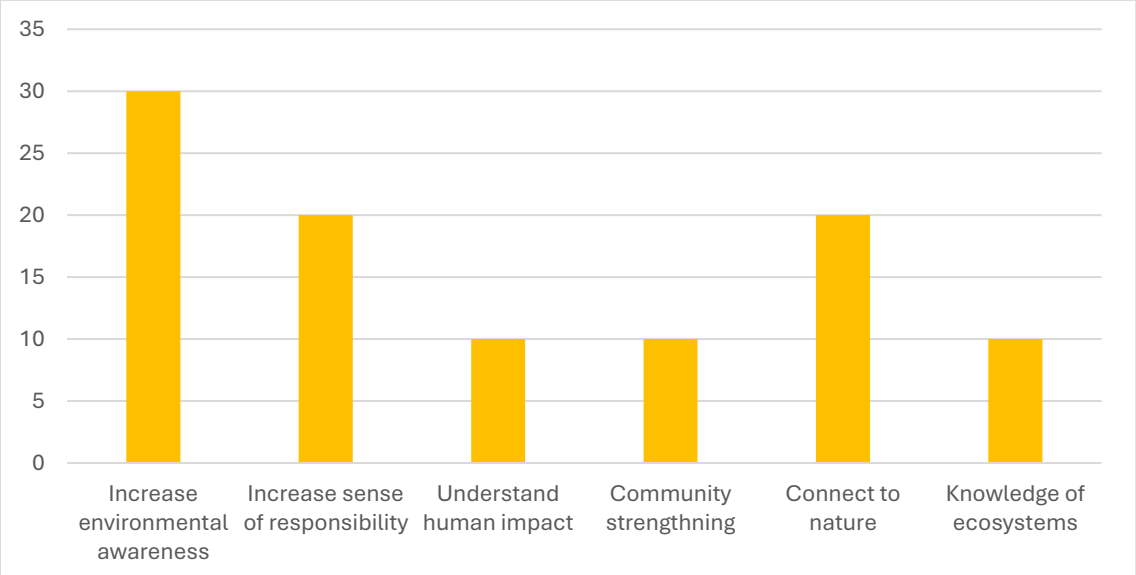
5.3.1 Theme 1: Implementing EE Programmes in Schools and Communities

This theme aimed to assess the implementation of EE programmes in schools and communities. To achieve this, several sub-themes were identified: Benefits of EE Programmes, Challenges of EE Programmes and Learner Attitude to Natural Environment.

5.3.1.1 Sub-theme 1: Benefits of EE programmes

The analysis of the benefits of EE programmes has revealed that it contributes significantly to increasing environmental awareness among learners and community members.

Figure 5.1: Benefits of EE programmes



(Source: Field Data, 2024)

Figure 5.1 reveals that 30% of teachers who participated in the study agree that one of the primary benefits of EE programmes is the increase of environmental awareness. This means that EE programmes raise awareness about critical issues such as pollution, climate change and resource depletion. This awareness has led to a shift in attitudes and behaviours, with many learners adopting eco-friendly habits such as reducing waste, participating in recycling initiatives and conserving water and energy both at school and at home. The study reveals that 20% of teachers believe that EE programmes implemented at schools and within the community foster environmental responsibility and encourage sustainable practices. This means that when EE programmes are implemented in schools, learners tend to feel that it is their responsibility to take care of their surrounding environment.

In addition, 10% of teachers who participated in the study indicated that EE programmes enhance understanding of critical environmental issues such as climate change, pollution, deforestation and water conservation. Figure 5.1 shows that 10% of teachers observed that EE programmes have positively influenced learners in connecting with nature. In terms of the benefits of the implementation of EE programmes in schools and the community, Figure 5.1 reveals that 10% of teachers believe that EE programmes have a ripple effect on the broader community as it strengthens the community's views on environmental issues and further ensures that community members take responsibility for their surrounding environment. The implementation of EE programmes in schools equips learners with proper environmental education knowledge and skills and learners often share their knowledge and experiences with family members, thereby extending the impact of EE beyond school premises.

The findings show that teachers highlighted the role of EE programmes in fostering a sense of responsibility and leadership among students (Pérez-Martín & Esquivel-Martín, 2024). Through participation in environmental programmes, learners develop critical thinking and problem-solving skills, which are essential for addressing real-world environmental challenges.

5.3.1.2 Sub-theme 2: Challenges of implementing EE programmes

This theme also assisted in answering the question of challenges that the municipality faces with regards to monitoring and evaluating programmes related to environmental health in both schools as well as the community. The findings revealed that despite the numerous benefits of EE programmes, several challenges hinder their effective implementation.

When P#05 asked about the challenges of implementing EE programmes, he indicated that in Vhembe District:

> *"One of the significant challenges of environmental education in Vhembe District is the lack of adequate funding. In our municipality the budgetary allocations for environmental education initiatives were often limited, with priority given to other pressing municipal concerns. As a result, many schools struggle to sustain EE activities, particularly those that require financial resources, such as the*

procurement of educational materials, organising field trips, and maintaining environmental programmes like school gardens and recycling stations."

When P#02 was asked about the challenges of implementing EE programmes in the Vhembe District he specified that:

"After visiting several schools within our district municipality, I have learned that there is need for specialised training to effectively integrate EE into the school curriculum. And add to that, I think both municipal officials and the schools who are responsible for implementation of EE programmes lack formal training in EE methodologies. This gap in expertise affects our ability to deliver engaging and impactful programmes. Additionally, schools face a shortage of teaching resources, such as textbooks, digital learning materials, and laboratory equipment for practical environmental science experiments. The absence of these resources limits the effectiveness of EE instruction and reduces learners' opportunities for hands-on learning experiences."

In addition, when the researcher inquired about the challenges facing the implementation of EE programmes within Vhembe District Municipality, P#09 revealed that:

"As the municipal officials, we are aware that schools play a critical role in promoting EE, community participation is essential for ensuring the sustainability of environmental initiatives. And as municipal officials we have noted that community engagement in EE programmes remains relatively low. Many parents and residents view EE as solely a school responsibility rather than a collective effort that requires their active involvement. This perception limits the long-term impact of EE programmes, as students may not receive reinforcement of environmental practices at home and within their communities."

P#01 added by saying that:

"There is a lack of policy-related document to the implementation of EE programmes that affect the implementation of EE programmes. While South Africa has national policies supporting EE, there is often a disconnect between policy development and practical implementation at the municipal level. Inconsistent policy enforcement and the absence of clear directives on

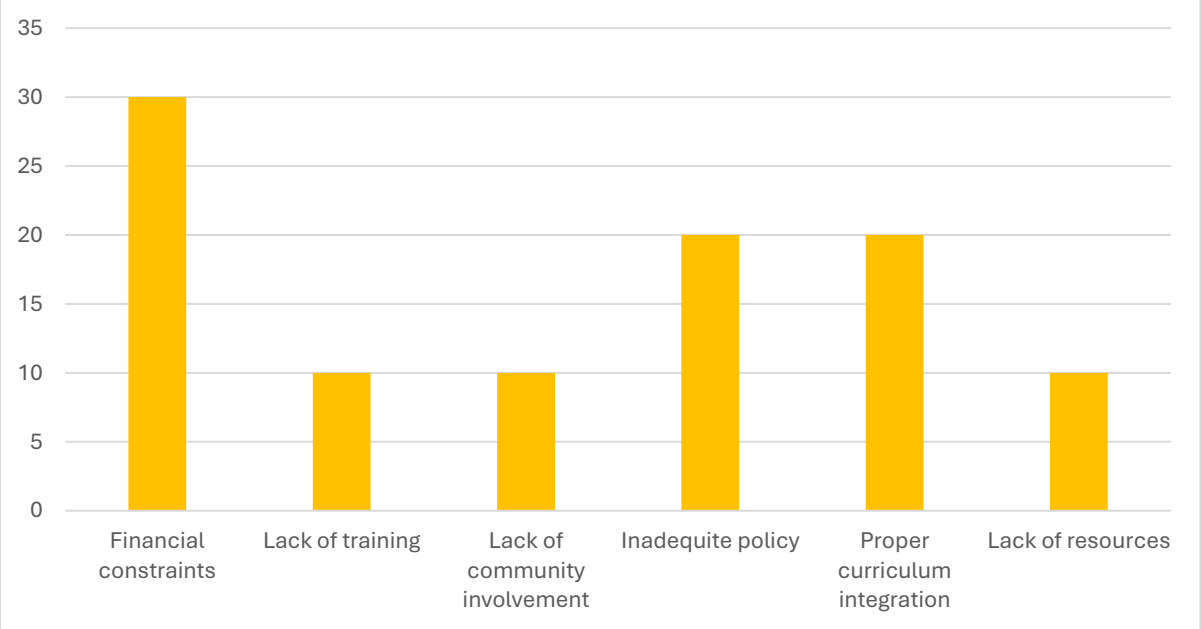
integrating EE into school curricula make it difficult for schools to implement structured programmes effectively."

The qualitative data from the municipal officials revealed that Vhembe District Municipality is faced with unique environmental challenges as when P#07 was asked about EE programmes challenges, she indicated that:

"The geographical and socio-economic conditions of the Vhembe District present additional challenges to EE implementation. Issues such as deforestation, pollution and poor waste management require localised solutions, but schools often lack the resources and expertise to address these challenges effectively. Moreover, some rural areas within the district have limited access to clean water and sanitation, which makes it difficult for schools to implement certain EE programmes, such as water conservation initiatives."

To support of the above responses from municipal officials, Table 5.2 illustrates teacher perspectives on challenges of implementing EE programmes in schools.

Figure 5.2: Teacher perspectives on challenges of implementing EE programmes



(Source: Field Data, 2024)

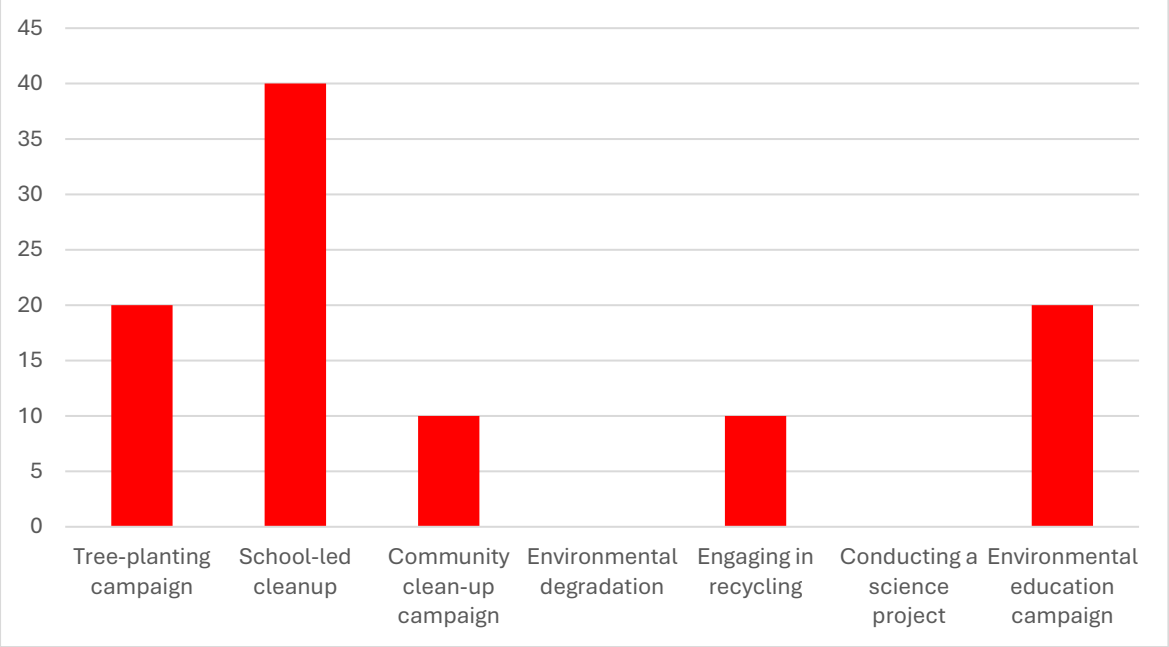
Figure 5.2 shows that the highest percentage, 30% of the teachers who participated in the study believe that financial constraints are one of the challenges affecting the implementation of EE programmes in schools within the communities. Inadequate

policy (20%) and proper curriculum integration (20%) were also highlighted as challenges. It is interesting to note that 10% of teachers who participated in the study believe that there is a significant lack of community involvement in the implementation of EE programmes. In addition, 10% of teachers indicated that lack of proper training is one of the challenges impacting the implementation of EE programmes in schools and within the communities. It seems that viable monitoring and evaluation of EE programmes is significant as it would assist in identifying and solving challenges facing the implementation of EE programmes.

5.3.1.3 Sub-theme 3: Learner attitude towards the natural environment

It was important to assess learner attitudes and sense of environmental responsibility. Attitudes, defined as a collection of values and sentiments regarding the environment, environmental protection, and environmental enhancement, can significantly influence an individual's perception of their environmental responsibility. Consequently, learner behaviours and perceptions concerning responsible environmental actions are shaped by their positive attitudes. Figure 5.3 presents learner attitude towards the natural environment

Figure 5.3: Learner attitude towards the natural environment



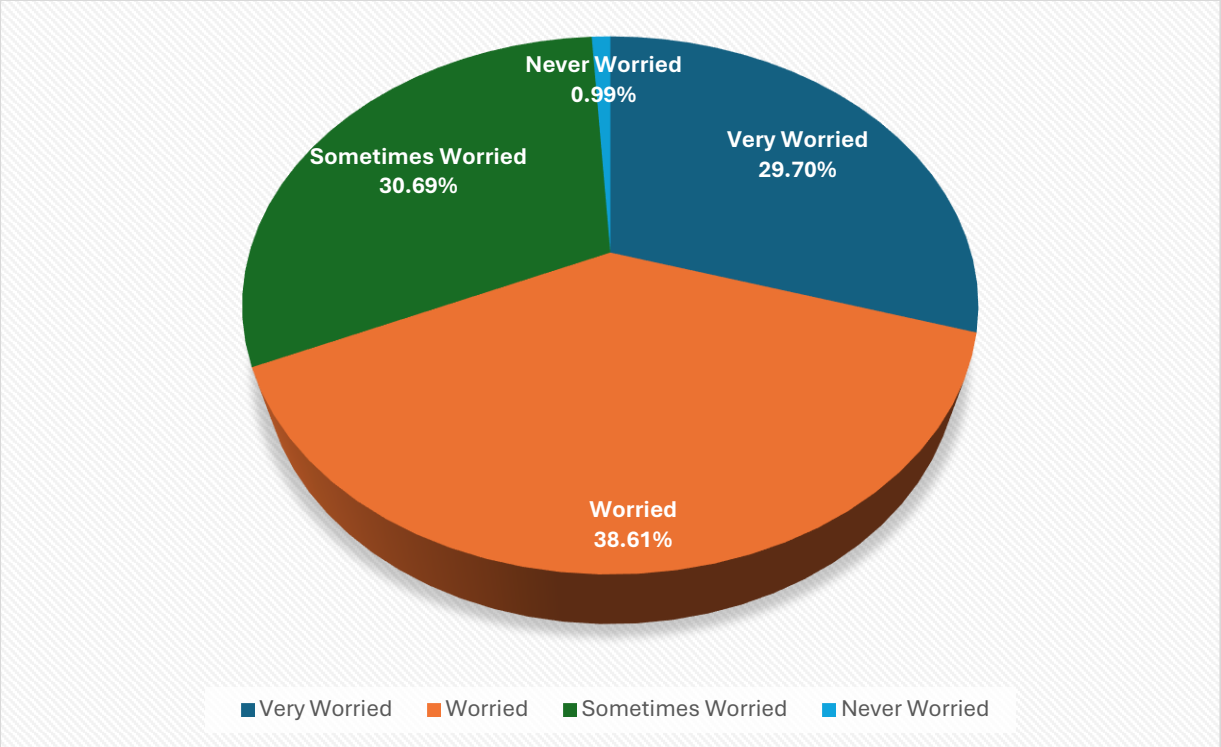
(Source: Field Data, 2024)

Figure 5.3 indicates that learning experiences strongly influenced learner attitude towards the natural environment which was participating in a school-led cleanup (40%)

followed by tree-planting campaign (20%) and EE campaign (20%). It was interesting to note that none of the learners who participated in the study were influenced by environmental degradation. The third learning experience that influenced learner attitude towards the natural environment was the community cleanup campaign (10%) and engaging in recycling (10%). However, it was interesting to learn that conducting a science programme did not have any impact on learner attitude towards the natural environment.

A spectrum of attitude strengths was utilised to gauge concern levels, ranging from those who are extremely worried to those who are occasionally worried, and finally to individuals who never express concern. Figure 5.4 illustrates learner attitudes and concerns regarding environmental issues and problems.

Figure 5.4: Learner attitude towards environmental issues



(Source: Field Data, 2024)

As illustrated in the above figure, a notable 38.61% of learners voiced significant concern regarding the current state of environmental issues in their communities. This statistic underscores a palpable sense of anxiety among the learners; they not only perceive the environmental challenges in their vicinity but also feel a genuine threat posed by these issues.

Furthermore, a substantial percentage between 30 to 69% of learners reported being only occasionally concerned, suggesting a fluctuating awareness and engagement with environmental matters. The small percentage of individuals who exhibit deep-seated anxiety, ranging from 29 to 70%, reflects a complex emotional landscape; the distinction between those who are occasionally anxious and those who are extremely anxious is negligible, with a margin of just 0 to 99%. This indicates that for many learners, environmental issues stir profound feelings that are woven into their daily lives.

Interestingly, the proportion of learners who claim to never worry about these issues is the smallest, falling within the range of 0 to 99%, a statistic that is strikingly minimal. Given that the majority of learner concerns fall into the categories of worried, very worried and occasionally worried, the study reveals a trend: learners have largely cultivated a positive and proactive attitude towards environmental issues. This collective mindset highlights their recognition of the urgency surrounding environmental challenges and their commitment to addressing them.

5.3.2 Theme 2: The Significance of Monitoring and Evaluation of EE Programmes

To ensure effective monitoring and evaluating EE programmes in schools and communities, the findings highlighted several key sub-themes. These include tracking progress and measuring performance, making evidence-based decisions, ensuring accountability and transparency, fostering learning and continuous improvement, and identifying and addressing problems early.

5.3.2.1 Sub-theme 1: Tracking progress and measuring performance

To address the need for effective frameworks for municipal monitoring and evaluation of EE programmes in schools and communities, municipal official P#05 stated:

> *"A structured monitoring and evaluation (M&E) system is essential for assessing the effectiveness of EE initiatives within schools and communities. Currently, the lack of standardised indicators across Vhembe District Municipality presents a significant challenge. Schools and municipal officials struggle to track progress*

due to inconsistent data collection methods and an absence of clear evaluation metrics."

Teachers were also asked to share their thoughts on what is needed to create municipal monitoring and evaluation model for EE programmes. A number of teachers agreed on several aspects needed and some provided additional suggestions for its development. For example, Teacher C#03 responded that:

"In our school, we have an informal assessment method, but it is not comprehensive enough to provide meaningful insights into the long-term impact of EE programmes. The absence of baseline data makes it difficult to measure improvements, and without periodic evaluations, schools effectively gauge whether students are internalising environmental values or applying them in their daily lives."

Teacher C#07 emphasised this point by stating that:

"There is a need for clear performance metrics to ensure that EE programmes align with national education policies and sustainability goals."

Interview and questionnaire participants suggested the need for tracking progress and measuring performance as significant aspects of an effective framework for municipal monitoring and evaluation of EE programmes in schools and the community.

5.3.2.2 Sub-theme 2: Evidence-based decision making

When P#09 from the Vhembe District Municipality was asked about what is needed for municipal monitoring and evaluation, he responded that:

"Evidence-based decision-making is crucial in designing and implementing effective EE programmes. To add to that, the use of data to allocate resources efficiently, identify areas of improvement, and develop policies that foster sustainability. However, most municipal EE programmes lack comprehensive reports or structured data collection frameworks, making it difficult to make informed decisions. Without accurate data, municipalities rely on anecdotal

evidence, which can lead to inefficient policy formulation and resource misallocation."

Teachers were also asked to share their thoughts on what is needed for municipal monitoring and evaluation in the questionnaires. Teacher C#08 expressed similar concerns.

"The lack of proper documentation makes it difficult to secure funding or advocate for additional support. To improve decision-making processes, municipalities need to implement systematic data collection methods, including student assessments, feedback from teachers, and community participation surveys. Such data-driven approaches would enable municipalities to make informed policy adjustments and enhance the overall effectiveness of EE initiatives."

Interview and questionnaire participants viewed evidence-based decision making as a crucial element of what is needed for municipal monitoring and evaluation of EE programmes in schools within the community.

5.3.2.3 Sub-theme 3: Accountability and transparency

When an official (P#09) from the Vhembe District Municipality was asked about what is needed for municipal monitoring and evaluation, he responded that:

"Vhembe District Municipality currently has weak accountability structures or non-existent, leading to inefficiencies in programme execution. A well-established monitoring and evaluation system fosters accountability and transparency among all stakeholders involved in EE programmes. We as municipal officials, school administrators, teachers, and students must have clear roles and responsibilities in the implementation and evaluation process."

In the questionnaires, teachers were asked about their opinions regarding what is needed for municipal monitoring and assessment. Teacher C#05 expressed similar concerns.

"Without clear accountability mechanisms, municipal engagement with schools remains inconsistent. Some schools receive more support than others, creating

disparities in the effectiveness of environmental education programmes across different areas. The lack of standardised reporting further exacerbates this issue, as there is no concrete way to measure municipal contributions to environmental education development."

P#04 responded by adding that:

"To enhance transparency, stakeholders recommended implementing clear reporting frameworks where schools submit periodic progress reports to municipalities. Additionally, establishing independent review committees consisting of educators, environmental experts, and community representatives could help assess programme success objectively. Increased transparency would not only improve municipal-school collaboration but also ensure that resources are equitably distributed to all schools within the district."

Interview and questionnaire participants viewed accountability and transparency as essential elements of an effective municipal monitoring and evaluation strategy for environmental education programmes in local schools.

5.3.2.4 Sub-theme 4: Learning and continuous improvement

When asked about the practical methods for municipal monitoring and assessment, P#01, a Vhembe District municipality official stated:

"Monitoring and evaluation serve as a critical tool for continuous learning and programme refinement. By systematically assessing what works and what does not, schools and municipalities can adopt best practices and improve their EE initiatives over time. However, the loop between municipalities and schools is weak, limiting opportunities for learning and continuous improvement."

Teachers also shared their opinions in the questionnaires, on what is needed for municipal monitoring and assessment. Teacher C#010 expressed similar concerns.

"While some schools have developed informal peer-review mechanisms, these initiatives lack municipal involvement and support. Municipal officials admitted that feedback mechanisms are not well-integrated into their operational

strategies, resulting in slow adjustments to EE programmes. To promote continuous learning, municipalities must actively engage with schools, collect and analyse feedback, and disseminate findings across the district. Hosting periodic evaluation workshops where educators and municipal officials share insights could facilitate knowledge exchange and foster a culture of improvement. Furthermore, municipalities should consider integrating digital platforms where schools can report challenges and receive real-time feedback from environmental experts."

Most interview and questionnaire participants viewed learning and continuous improvement as crucial components of an effective municipal monitoring and evaluation framework for EE initiatives in local educational institutions.

5.3.2.5 Sub-theme 5: Identifying and addressing problems

When questioned about the practical methodology for municipal monitoring and assessment, a Vhembe District municipality official (P#01) said:

"Early detection of challenges within EE programmes allows for timely interventions, preventing minor issues from escalating into significant obstacles. With my experience, the schools with informal M&E mechanisms were better positioned to address challenges proactively compared to those without any evaluation structures."

In the questionnaires, teachers were asked for their opinions on what is needed for municipal monitoring and assessment. Teacher C#06 offered these suggestions:

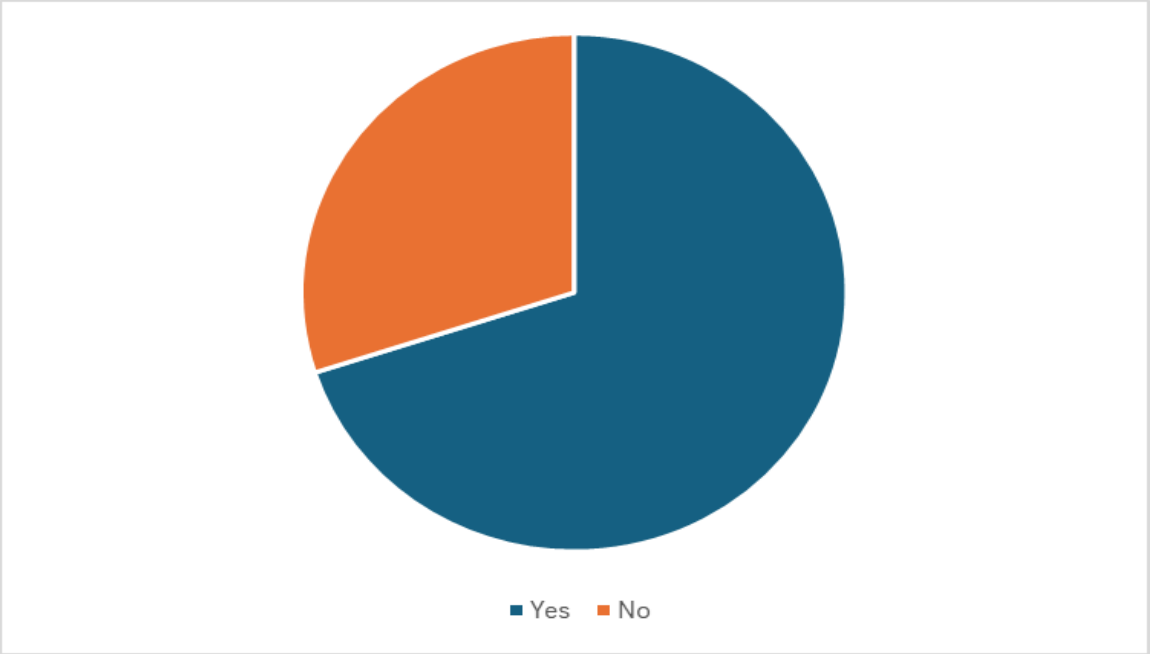
"As a teacher, I have noted that schools conducting regular self-assessments could identify gaps in student understanding, curriculum implementation and resource allocation. In contrast, schools lacking such systems often struggle to detect and correct problems in time. To improve early problem detection, I recommend establishing school-based M&E committees responsible for conducting frequent evaluations and reporting findings to municipal officials. Additionally, training workshops on data collection and analysis should be provided to both educators and municipal staff, ensuring that all parties have the necessary skills to identify and address programme shortcomings promptly."

Both the teachers and municipal officials recognised that an early-warning system could significantly improve their ability to respond to the needs of schools. This system could support policy adjustments, provide additional funding, or facilitate specialised training programmes for teachers. By strengthening monitoring and evaluation systems, the Vhembe District Municipality could ensure that EE programmes are both sustainable and adaptable to the changing needs of schools and communities. Implementing standardised tracking mechanisms, evidence-based decision-making practices, clear accountability frameworks and, as a result, initiative-taking problem-solving strategies would ultimately enhance the effectiveness and longevity of EE initiatives in the district.

5.3.2.6 Sub-theme 6: The effectiveness of EE in addressing environmental issues.

It is important to discover whether EE is effective in addressing environmental issues and respondents' perceptions of this are recorded in Figure 5.5.

Figure 5.5: Environmental education addressing environmental issues



(Source: Field Data, 2024)

According to Figure 5.5 a significant 70% of respondents believe that the implementation of EE in schools enhances the efforts to tackle environmental issues.

In contrast, 30% do not feel that EE contributes to the resolution of environmental problems.

5.3.3 Theme 3: Municipal Monitoring and Evaluation of EE Programmes

The study identified several challenges related to monitoring and evaluation, particularly in the context of municipal energy efficiency programmes. Key issues include responses about the state of municipal monitoring and evaluation, a lack of programme design and materials, insufficient evaluation methods and the high costs associated with the monitoring and evaluation process.

5.3.3.1 Sub-theme 1: State of municipal monitoring and evaluation of EE programmes

This theme provided valuable insights into the current state of monitoring and evaluation of EE programmes within the Vhembe District Municipality, particularly as they pertain to schools and communities. The research specifically sought feedback from municipal officials regarding the effectiveness and thoroughness of the monitoring and evaluation efforts. A significant number of officials recognised that EE programmes are actively implemented across various schools and communities within the Vhembe District Municipality, highlighting a commitment to fostering environmental awareness and education. As an illustration of this engagement, respondent P#08 emphasised the importance of these programmes in promoting sustainable practices among the local population:

> *“There are several schools in the Vhembe District Municipality that are implementing environmental education programmes. However, I have learned that some schools are not even aware that the activities they conduct are part of environmental education, such as encouraging learners to plant and care for trees. We do visit the schools to check on their environmental initiatives, and some even engage in monthly drives to collect paper and waste from their communities."*

Participant P#03 raised concerns about the absence of structured monitoring and evaluation mechanisms needed to assess the effectiveness of these programmes emphasising that such mechanisms are crucial for ensuring effective tracking of EE implementation:

"As a municipality, we truly need to develop structured procedures to ensure the smooth implementation and monitoring of the environmental education programmes. Without standardised structures, we lack proper direction in our work. If there were clear guidelines for what to evaluate and how to assess all environmental programmes, it would be much easier for us as municipal officials to evaluate the progress of EE programme implementation within our district."

Participant P#07 noted that while periodic assessments were conducted, they lacked standardisation and were not consistently applied across the district. This inconsistency in monitoring has created gaps in identifying the progress and challenges of EE initiatives.

“As the section of monitoring and evaluation of the environmental programmes we do assessments of the implementation of environmental education programmes in the schools within our district municipality, just that we normally do these assessments once in while sometimes we spend months and months without doing the assessments, but we do conduct the assessments. The problem we are having in doing these assessments of environmental education programme implementation is that we do not have a specified process to guide us on how to assess or do the monitoring and evaluation of environmental education programmes in our local schools.”

Additionally, Participant P#010, who manages the EE programmes, noted that municipal support is frequently limited due to insufficient resources and competing priorities.

“As the municipality, we go to schools and communities to assess and encourage the learners and the community at large to participate in the environmental education programmes but due to the lack of resources, we hardly go out there to assess or monitor the progress of the implementation such programmes. And another thing hindering us as municipal officials to who are responsible to overseeing the implementation of environmental education programmes to perform our duties is the issue of having load of work to do in the office and end up not being able to go out there to the community to ensure proper monitoring and evaluation of environmental education programmes in schools and within the community.”

Many participants noted that the lack of a centralised framework for monitoring and evaluation leads to different schools using various methods to assess their environmental initiatives. Some schools rely on informal feedback from teachers and students, while others conduct occasional surveys or school-based audits. Participant #01 described these unstructured approaches as obstacles to measuring long-term impact and making data-driven improvements.

Most participants expressed the issue of the absence of a centralised framework for monitoring and evaluation which means that different schools employ varied approaches to assessing the success of their environmental initiatives. With regard to a central framework, some participants indicated that they rely on informal feedback from teachers and students, while others conducted occasional surveys or school-based audits. These unstructured approaches have been described by P#01 as hindering the ability to measure long-term impact and make data-driven improvements:

> *"Environmental education programmes are one of the most important programmes, especially checking the issue of global warming, making sure that our kids are being educated about the environmental issues at a younger age is important. I believe as the municipality, we must have a policy or guiding document on the implementation of environmental education programmes which can also explain in detail the process to be used for monitoring and evaluation of those programmes as a way of ensuring that the implementation is achieving the main aim. Currently as municipal officials, we go to schools as teachers and students ask once in while on the progress of the implementation of those programmes and we take and believe that the information we get from both the teachers and the students is correct because we do not have any other framework for assessing those programmes and programmes."*

When P#01 was asked about the state of monitoring and evaluation of environmental education programmes, he cited bureaucratic delays and a lack of dedicated personnel for monitoring and evaluation as significant barriers and then further indicated that many departments responsible for EE oversight were understaffed, making it challenging to conduct regular evaluations:

"The process of monitoring and evaluation in general has been experiencing administrative delays such as the lack of proper policy or document to serve as the guideline for the complete process and procedures, and another challenge on the current state of monitoring and evaluation of environmental education programmes is the shortage of officials who specifically dedicated to such programmes, this is a serious problem, I wish our municipality can have permanent officials who focus on such programmes only as their daily duties."

From the above, most respondents interviewed perceive the current state of the Vhembe District municipal monitoring and evaluation as a reactive rather than proactive approach to EE monitoring, where issues are often addressed only when they become critical rather than being managed through continuous assessment and improvement strategies.

5.3.3.2 Sub-theme 2: Lack of programme design and materials

When municipal officials were asked about the challenges facing municipal monitoring and evaluation of EE programmes, P#07 responded:

"One of the significant challenges in municipal monitoring and evaluation (M&E) of EE programmes is the absence of well-structured programme designs and learning materials. We acknowledge that the lack of a defined EE programme design makes it challenging to track progress and measure success. Many existing EE initiatives are fragmented, with different schools implementing their versions without alignment with a broader municipal or national strategy. This inconsistency leads to variations in the quality of EE across schools, reducing the overall effectiveness of such initiatives."

Respondent C#09 highlighted the challenges faced by municipal monitoring and evaluation of EE programmes, particularly the lack of a formalised framework, which makes it difficult to effectively integrate these programmes into the school curriculum.

"We have reported that many EE programmes are implemented without a formalised framework, making it difficult to integrate them effectively into school curricula. Without a clear roadmap outlining objectives, expected outcomes, and

assessment criteria, we are struggling as educators to deliver consistent and impactful environmental lessons."

One of the key challenges highlighted in the context of municipal monitoring and evaluation of EE programmes, as noted by participant C#06, is the dearth of supporting resources. This issue is particularly pronounced in the absence of a well-defined and formalised framework that could guide these efforts. Without such a structure, municipalities often struggle to implement effective monitoring and evaluation strategies, which can hinder their ability to assess the impact and success of EE initiatives:

"Moreover, the scarcity of instructional materials, including textbooks, worksheets and activity guides tailored to environmental education, further exacerbates the problem. Teachers often resort to creating their resources, which can be time-consuming and inconsistent in quality. Schools in under-resourced areas particularly struggle with this issue, as they lack access to printed and digital EE materials that could enhance teaching and learning experiences."

To foster a more effective and unified approach, a concerted effort among municipalities and educational authorities is essential in the development of standardised EE materials. Such materials should be crafted with accessibility in mind, ensuring that every school, regardless of its location or resources, can readily obtain and utilise them. Moreover, forging collaborative partnerships with environmental organisations, NGOs and the private sector, could significantly enrich the process. These alliances would not only facilitate the creation of high-quality EE resources but also optimise their distribution, ensuring that impactful educational tools reach a wider audience and inspire the next generation to engage with and protect the planet.

5.3.3.3 Sub-theme 3: Lack of methods for evaluation

One of the prominent challenges faced in the realm of municipal monitoring and evaluation of EE programmes revolves around the absence of standardised evaluation methods. P#01 emphasised that this lack of uniformity poses a significant barrier, making it difficult to accurately assess the effectiveness of various initiatives. Without

a consistent framework for evaluation, it becomes challenging to compare results, draw meaningful conclusions and ultimately improve programme strategies aimed at enhancing EE:

> *“Another critical challenge facing municipal M&E of EE programmes is the absence of standardised evaluation methods. We all know as municipal officials that both schools and municipal departments lack clear metrics and tools for assessing the effectiveness of environmental education initiatives. Without defined assessment criteria, it becomes difficult to determine whether EE programmes are achieving their intended goals.”*

To highlight the significant challenge presented by the absence of structured methodologies, respondent C#05 remarked:

> *“Currently, schools rely on informal evaluation methods such as classroom observations, teacher feedback and student participation in environmental activities. While these methods provide some insights, they lack the rigour needed for comprehensive impact assessments.”*

P#02 voiced notable frustration regarding the municipality's role in overseeing the monitoring and evaluation of EE programmes implemented in schools and the surrounding community. This dissatisfaction stems from a perceived lack of effective oversight and engagement, raising concerns about the impact and quality of these educational initiatives:

> *"As a municipal official, I must acknowledge that there is currently no standardised reporting system in place to collect data on environmental education (EE) programmes across the district. This limitation hinders our efforts to enhance and expand successful initiatives. Additionally, we do not have a system for longitudinal tracking of student progress in environmental literacy. Since EE is often integrated into various subjects rather than being taught as a standalone course, there are no dedicated assessments to gauge students' understanding of key environmental concepts over time. This absence of evaluation tools prevents decision-makers from identifying knowledge gaps or areas that need improvement."*

Drawing from the findings, it is essential for stakeholders to develop a comprehensive and standardised set of indicators aimed at assessing the effectiveness of EE programmes. These indicators could encompass a variety of metrics, such as the retention of knowledge among students, observable shifts in behaviour pertaining to environmental conservation and the extent of community involvement in sustainability initiatives. Furthermore, it is crucial to evaluate the degree of institutional support dedicated to EE, as this significantly influences programme success.

To enhance the accuracy and reliability of data collection, stakeholders could implement innovative digital tracking tools or conduct periodic standardised assessments. These methods would not only facilitate consistent data gathering but also provide deeper insights into the educational journey and the long-term impact of EE on students and their communities.

5.3.3.4 Sub-theme 4: Expense of the monitoring and evaluation process

A number of participants highlighted that the Vhembe District Municipality encounters a range of obstacles when it comes to effectively implementing monitoring and evaluation of EE within both schools and local communities. P#04 specifically noted that:

> *"In our district municipality, financial constraints emerged as one of the most significant barriers to effective municipal monitoring and evaluation of EE programmes. Further to that, budget limitations are a primary reason for the lack of structured M&E frameworks. EE programmes often compete for funding with other municipal priorities, such as infrastructure development, social services, and public safety. As a result, M&E initiatives receive insufficient financial support, limiting their scope and effectiveness."*

The teacher expressed concern over the pressing challenge of insufficient funding, highlighting how it poses significant obstacles to successfully implementing effective monitoring and evaluation for EE programmes and programmes. C#06 emphasised this need, reiterating that dedicated financial resources are crucial for ensuring the seamless execution of these initiatives and for maximising their impact:

“Schools also face budgetary challenges when it comes to implementing and evaluating EE programmes. Many environmental initiatives, such as tree-planting campaigns, waste management programmes and community clean-up drives, require resources such as tools, transportation and educational materials. Without adequate funding, these programmes struggle to sustain long-term impact. Moreover, conducting thorough M&E activities involve additional costs related to hiring trained personnel, developing data collection tools and analysing results.”

Municipal officials have observed a persistent challenge: the absence of a dedicated budget for the monitoring and evaluation of EE programmes. This shortfall often compels them to rely on *ad hoc* funding or occasional contributions from charitable donors. In some cases, schools are left with no choice but to allocate their already limited financial resources to cover monitoring and evaluation costs, which further exacerbates their budgetary constraints. P#08 underscored the critical importance of securing funding for monitoring and evaluation, by highlighting that:

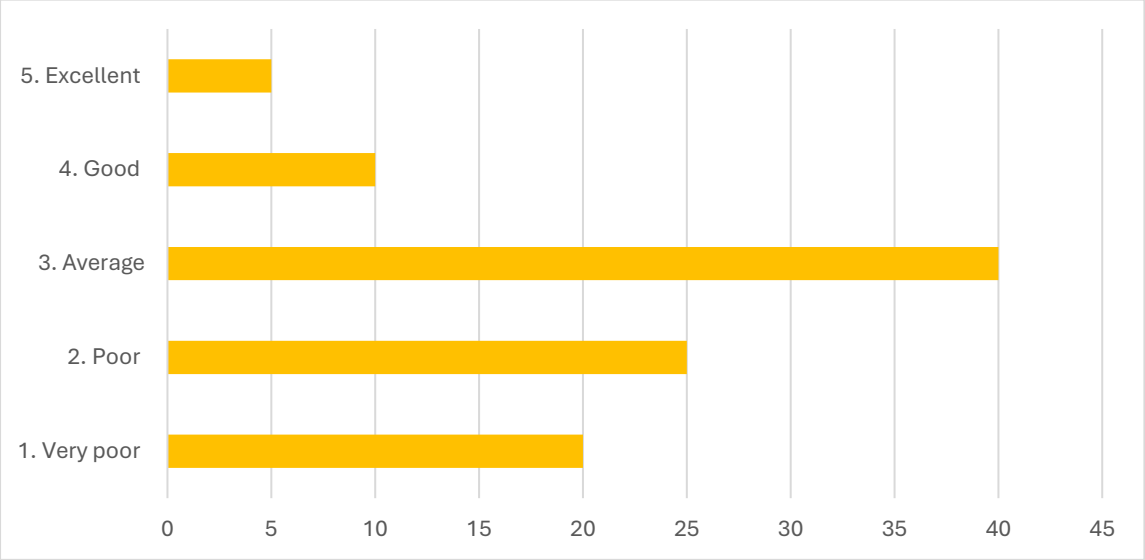
"To overcome financial barriers, municipalities should explore alternative funding mechanisms, such as public-private partnerships, grants from environmental organisations, and government subsidies specifically allocated for EE. Additionally, integrating cost-effective digital tools for data collection and analysis could reduce expenses associated with traditional M&E methods. Establishing a dedicated fund for EE programmes within municipal budgets would also ensure consistent financial support for monitoring and evaluation activities."

Tackling these financial challenges demands a united and harmonious collaboration among government agencies, educational institutions, NGOs and the private sector. By pooling resources and expertise, these entities can work together to secure sustainable funding sources and develop cost-effective monitoring and evaluation strategies. It is essential to prioritise the allocation of adequate resources to EE programmes, as this will not only enhance their long-term viability but also foster a society that is increasingly aware of and committed to environmental stewardship. Such a collective effort would pave the way for a more informed and environmentally conscious community, dedicated to preserving and protecting vital natural resources for future generations.

5.3.3.5 Sub-theme 5: Lack of understanding of EE

As previously indicated, there are many benefits associated with EE and as such EE programmes have been implemented in schools and communities to create environmental awareness, foster sustainable practices and equip citizens, especially the youth, with the knowledge and skills to address critical environmental challenges like climate change and pollution. However, many have little understanding of EE, as illustrated in Figure 5.6 which presents the varying levels of understanding of EE among learners in the Vhembe District Municipality prior to their coursework.

Figure 5.6: Lack of understanding of EE



(Source: Field Data, 2024)

The data reveals a concerning deficit in an understand of EE in the local schools, highlighting a significant educational gap. Specifically, a striking 20% of the students characterised their understanding as extremely poor, suggesting that the instruction they would soon receive had the potential to greatly enhance their knowledge and awareness. Furthermore, 25% of learners admitted to possessing a poor grasp of EE concepts before the classes commenced. The largest segment of the cohort, accounting for 40%, indicated that their understanding was merely average, reflecting a foundational but insufficient knowledge base. Only a modest 10% of the students felt confident in stating that their understanding was good, while a mere 5% rated their grasp of EE as excellent before embarking on this educational journey. This data underscores the pressing need for enhanced EE in the region.

Attending EE-related classes has contributed significantly to improving the learners' understanding of EE. Classes have enhanced and improved learner understanding of EE in the Vhembe District Municipality; but it is important that this knowledge be put into practice.

5.3.4 Theme 4: Framework to Enhance Monitoring and Evaluation of EE Programmes

In exploring the question of the most suitable framework for municipal monitoring and evaluation of EE programmes in schools and communities, qualitative data revealed a range of critical factors to consider. These elements are vital for developing a robust and effective framework for assessing and enhancing EE initiatives. The feedback gathered from municipal officials and teachers indicates notable differences, highlighting the varying perspectives and experiences that shape the landscape of EE. This nuanced understanding is essential for developing a comprehensive approach tailored to the unique needs of different communities and educational settings.

5.3.4.1 Sub-theme 1: Defining objectives and indicators

When asked about a viable framework for municipal monitoring and evaluation of EE programmes, P#05 suggested that an effective framework should include a comprehensive set of indicators tailored to specific programmes goals. The framework should emphasise stakeholder engagement, ensuring that local communities are actively involved in both the monitoring process and the evaluation outcomes. P#05 highlighted the importance of utilising real-time data collection technologies to facilitate timely assessments and adjustments. Regular training sessions for municipal staff on data analysis and reporting were also suggested as a critical component, aimed at enhancing the capacity to interpret findings and make informed decisions. Overall, P#05 advocated for a collaborative approach that integrates feedback loops and encourages continuous improvement in the delivery of energy efficiency initiatives:

> *"A well-structured framework for monitoring and evaluation of EE programmes must begin with a clear definition of objectives and measurable indicators. Establishing explicit goals ensures that all stakeholders including municipal officials, educators, and community members are aligned in their understanding of what the EE programmes aim to achieve. These objectives should be SMART*

(Specific, Measurable, Achievable, Relevant, and Time-bound) to facilitate practical assessment and continuous improvement."

In addition to the above, P#05 indicated that the objectives should include various aspects to ensure that everything is well defined and explained:

“The aim should encompass primary goals such as improving students' understanding of environmental sustainability and conservation methods, promoting changes in behaviour related to waste management, water conservation, and ecosystem safeguarding, enhancing community involvement in environmental programmes, and ensuring that local policies are in harmony with international and national standards for environmental education."

Another participant, P#09, indicated that the standardised indicators should be measurable:

"The number of schools integrating EE into their curricula, student participation rates in EE-related programmes and activities, community engagement levels as measured by involvement in conservation and clean-up campaigns, environmental literacy scores before and after the implementation of EE programmes, and a decrease in environmental degradation indicators, like littering or deforestation, in the municipality are some examples of standardised indicators that should be identified to measure these goals."

The analysis of the gathered data unmistakably highlights that the foundation of a robust framework for monitoring and evaluating EE programmes lies in the establishment of clear, well-defined goals accompanied by measurable indicators. This initial step is crucial, as it sets the stage for a comprehensive evaluation process, ensuring that the effectiveness of the EE initiatives is thoroughly assessed and refined over time.

5.3.4.2 Sub-theme 2: Data collection methods

Many participants expressed the importance of the municipality assessing the impact of EE programmes. This assessment should be carried out by collecting data from individuals with first-hand experience, such as teachers, learners and municipal officials directly involved in the implementation of EE programmes in schools and communities.

P#04 indicated that:

> *"Comprehensive data collection is crucial for evaluating the effectiveness of EE programmes and making improvements for better results. Employing a mixed-methods strategy that combines both qualitative and quantitative data collection methods can provide a more complete understanding and enhance the chances of gathering accurate data. This process should involve structured surveys targeting learners, teachers, municipal officials, and community members to obtain measurable data on programme reach and impact. To ensure the accurate collection of required data, survey questions must assess knowledge levels, attitudes toward environmental conservation, and behavioural changes resulting from environmental education initiatives."*

Another participant, P#06, expressed agreement by stating that:

> *"Speaking with educators, local government representatives, and important community members can provide a more in-depth understanding of the difficulties, achievements and potential areas for development. These conversations aid in comprehending the qualitative effects of EE initiatives. In order to assess practical engagement in EE activities, such as waste management efforts, tree-planting initiatives and energy conservation programmes, evaluators can also supplement this by regularly visiting schools and community programmes. This allows them to observe what is happening on the ground."*

Numerous participants emphasised the significance of thoroughly reviewing the policies and guidelines that govern the effective implementation of EE programmes. They believe that this meticulous examination is crucial for ensuring that the programmes achieve their intended goals and objectives. P#07 particularly underscored this point, stating that:

> *"It is possible to determine how EE programmes conform to national and international environmental education standards by looking into policy documents, curriculum guidelines, and programmes reports."*

Environmental issues are constantly evolving. Regular policy evaluations ensure that educational materials stay up to date and address new environmental challenges.

These reviews allow for the integration of indigenous knowledge, the updating of teaching strategies and the incorporation of multidisciplinary approaches, all of which enhance the effectiveness and relevance of environmental education. Therefore, implementing an appropriate data collection method is essential.

5.3.4.3 Sub-theme 3: Monitoring and evaluation activities

The study examined the perceptions of participants regarding the activities to be included in the monitoring and evaluation process. Most participants who took part in the interviews were asked about the specific activities that should be incorporated into the monitoring and evaluation of EE programmes. This approach aimed at developing a viable framework suitable for municipal monitoring and evaluation of EE programmes.

When P#04 was asked to elaborate on the activities that should be integrated into the monitoring and evaluation process of environmental education programmes, he thoughtfully responded that:

> *"Continuous and methodical assessment must be incorporated into school operations and municipal policy for an M&E framework to be effective. Monitoring EE programme activities on a monthly or quarterly basis should be part of this process in order to spot new difficulties and achievements. Logbooks recording EE events, participation rates, and environmental changes should be kept up to date by schools. Programme efficacy should be measured through annual and mid-term assessments. Pre- and post-programme assessments should be part of these evaluations to track changes in behaviour and knowledge."*

A municipal official (P#10) underscored the critical significance of incorporating essential activities into the monitoring and evaluation framework of the EE programme. This emphasis highlights the necessity of a comprehensive approach, ensuring that each component of the programme is effectively assessed and optimised for maximum impact:

> *"Outlining and recording the procedures and actions to be taken and adhered to in the process of municipal monitoring and assessment of environmental education is crucial. The collection and reporting of data are crucial tasks. Analysing the gathered data is necessary to identify important patterns and*

insights. To help with decision-making, reports produced by these assessments need to be distributed to interested parties, such as legislators, educators and local authorities."

When P#07, a dedicated municipal official involved in the study, was queried about the various activities he had engaged in, he shared his insights with enthusiasm:

"It is necessary to have an appropriate method for gathering information about the execution of environmental education programmes from both teachers and students. Creating avenues for input, like stakeholder meetings and workshops, guarantees that the knowledge gained from assessments is applied to upcoming programme enhancements."

5.3.4.4 Sub-theme 4: Sharing information and incorporating results

When P#09 from the Vhembe District Municipality was approached to share his insights on crucial activities that should be integrated into the municipal monitoring and evaluation framework, he thoughtfully reflected on the matter. His response highlighted the significance of various aspects essential for enhancing the municipality's effectiveness and accountability:

"We must promote information exchange among all stakeholders to ensure that the municipality is properly monitored and evaluated. For EE programmes to be strengthened, stakeholders must collaborate and communicate openly. Regular reports that highlight accomplishments, difficulties and suggestions for improvement should be prepared and distributed to the appropriate authorities and school officials to institutionalise information sharing. Additionally, regular forums where students, teachers, community leaders and municipal authorities discuss the results of M&E initiatives can promote cooperative problem-solving and shared learning."

Several participants highlighted the importance of incorporating advanced technology into municipal monitoring and evaluation efforts. For example, P#04 outlined specific activities that should be integrated into the municipal monitoring and evaluation process, emphasising the potential for enhanced efficiency and accuracy through the use of innovative tools and methods:

"The technology that we presently have, which makes it simple to share information even when you are not in the same location, should be utilised by both municipalities and schools. Online channels including websites and social media should be used by schools and municipalities for sharing research results, success stories and best practices in the implementation of EE. Policy decisions should be immediately influenced by the findings of monitoring and evaluation, which will result in the adaptation of EE methods that fill in recognised gaps and take advantage of improvement opportunities."

5.3.4.5 Sub-theme 5: Key considerations

Several participants stated that municipal monitoring and evaluation should take into account numerous factors, including key contextual, collaborative and ethical elements, to ensure sustainability. P#09 mentioned that:

"A comprehensive M&E framework must incorporate key contextual, collaborative and ethical considerations to ensure its effectiveness and sustainability. Each school and community within the Vhembe District have unique environmental challenges and educational needs. M&E strategies must be adaptable, considering local resources, cultural practices, and existing educational infrastructure."

C#06 reiterated and supplemented by stating that:

"Effective EE requires the active participation of teachers, students, parents, community leaders, and municipal officials. Establishing partnerships between schools and environmental organisations can enhance programme implementation and resource allocation."

The need for ethical considerations was also reported to be one of the key considerations in the process of municipal monitoring and evaluation. Qualitative data revealed that monitoring and evaluation involves people and their feelings, and this means ethical consideration should be prioritised. P#02 indicated that:

"As the officials who are responsible for municipal monitoring and evaluation, we often deal with the process of data collection. Data collection should adhere to ethical research guidelines, ensuring that participant privacy is protected and that informed consent is obtained from students, teachers, and community members.

Additionally, M&E activities should be conducted transparently, avoiding biases and ensuring the credibility of findings."

The need for strengthening municipal monitoring and evaluation through capacity building to ensure the long-term sustainability of the programmes was emphasised and indicated as one of the aspects to enhance the implementation of programmes. P#07 proposed that:

"Teachers, municipal employees, and community volunteers must get continual training to maintain evaluation and monitoring initiatives. Workshops aimed at increasing capacity can give participants the tools they need to carry out evaluations, examine information, and put evidence-based changes into practice. In order to guarantee ongoing financing and support, municipal policy should institutionalise environmental education monitoring and evaluation initiatives. To continue using organised evaluation procedures outside of programmes-based efforts, schools should incorporate monitoring and evaluation into their academic planning."

5.4 DISCUSSION OF EMPIRICAL FINDINGS

The findings from the study on the monitoring and evaluation of EE programmes in the Vhembe District offer a multilayered perspective that both aligns with and, in certain respects, diverges from established literature on effective EE and sustainability initiatives. This section builds upon the foundation laid in the preceding section, presenting a detailed discussion of empirical data collected from a diverse cohort of municipal officials, teachers and learners. By systematically examining the state of monitoring and evaluation practices, the challenges faced and the effectiveness of current approaches, the study addresses the central question: *What constitutes effective monitoring and evaluation of environmental education programmes for sustainable living in the Vhembe District of Limpopo?*. The discussion has been presented into two sections; first section presented the discussion based on the themes that has emerged from the findings of the study and the second section presented the discussion toward a systemic and theory-generative account of municipal environmental education monitoring and evaluation.

5.4.1 DISCUSSION THE FINDINGS BASED ON THE THEMES THAT HAS EMERGED FROM THE FINDINGS OF THE STUDY

5.4.1.1 Implementing EE Programmes in Schools and Communities

A recent study conducted in Vhembe District has shown that environmental education (EE) programs implemented in the school environment and community setting have an important role in promoting environmental awareness, environmentally responsible behaviours and positive attitudes toward the environment among learners. Learners participated in environmental activities such as school-based clean-up initiatives, recycling projects, tree planting programs and community outreach projects demonstrated increased participation in addressing environmental concerns through direct experience. This experiential activity provided learners with the opportunity to take direct actions to resolve local environmental problems, aligning with Mezirow's (2000) theory of transformative learning; critical reflection of lived experiences can transform one's perspective and promote behavioural changes. Thus, EE initiatives serve as "disorienting dilemmas" that prompt learners to question and redefine their environmental responsibilities, and ultimately, develop and implement sustainable environmental practices.

Literature regarding EE identifies it as a transformative pedagogy designed to cultivate environmental citizenship and foster an ecological sense of responsibility (Lotz-Sisitka et al., 2023; Rieckmann, 2021). Consistent with this perspective, the empirical evidence collected in the Vhembe District demonstrated that learners participating in EE activities that involve participation and action demonstrate greater environmental concern and pro-environmental behaviour compared to learners who receive only theoretical education regarding EE. Participation in EE activities extends the learners' understanding of EE beyond the confines of the classroom; this creates the possibility for a ripple effect in the community where they live, which may affect the family and other members of the community. However, the study also documented systemic and operational barriers that prevent EE programs from being effectively implemented.

These barriers include financial constraints, educator training, curriculum integration, community involvement and socio-economic conditions existing in the district.

Findings of this nature are consistent with Governance Theory, which emphasizes that educational interventions are successful or unsuccessful based upon institutional structures, available resources and policy coherence. While the study demonstrates that learners report positive behavioural changes at the individual level, systemic/municipal/school challenges, such as the non-existence of a formalized monitoring and evaluation system, the lack of standardized materials and the lack of support from municipal officials limit the sustainability and scale of EE programs. Therefore, while there is a positive micro-level change in the behaviour of learners, the macro-level governing systems do not reinforce this micro-level impact.

Another significant finding from the study was the importance of monitoring and evaluation (M&E) for the development and enhancement of EE programs. The literature indicates that M&E processes, such as tracking program progress, evidence-based decision making, accountability and identifying problems as soon as possible, are critical to the success of EE programs. The findings of the study indicated that the current municipal M&E practices are primarily reactive; assessments are unstructured and data are collected using a variety of methods that make it difficult to evaluate the full impact of EE programs. The inclusion of a formalized M&E process is consistent with Theory of Change (Weiss, 1995), which postulates that specific, measurable objectives, indicators and feedback loops are required to achieve desired outcomes. The literature confirms this by emphasizing that robust M&E allows for adaptive management, continuous learning and informed policy decisions, all of which are necessary for program sustainability (UNESCO, 2020; Hargreaves et al., 2019).

Finally, the study emphasized that the establishment of a comprehensive framework to facilitate improved municipal M&E of EE programs is essential. Respondents emphasized the necessity for establishing clear objectives and indicators for measuring program performance, collecting data using multiple methods, conducting evaluations regularly, reporting evaluation results openly and ethically, and considering cultural and contextual considerations when designing and implementing M&E systems. An integrated systems approach is consistent with Systems Theory, which emphasizes that EE program outcomes depend upon multiple interrelated components, including stakeholder collaboration, feedback mechanisms, and institutional support. The synthesis of empirical evidence and literature provides

conclusive evidence that EE programs in Vhembe District provide a pedagogical mechanism to positively change the attitudes and behaviours of learners; however, the study's findings suggest that the structural, resource and governance related obstacles must be addressed. A formally designed M&E process, combined with collaborative and experiential learning approaches, will support the sustainability, scalability and long-term impacts of EE programs across schools and communities.

5.4.1.2 The Significance of Monitoring and Evaluation of EE Programmes

Participants in the study repeatedly underlined the importance of monitoring and evaluation (M&E) in improving the effectiveness of environmental education (EE) programs. They identified numerous critical M&E functions, including progress tracking, evidence-based decision-making, accountability promotion, and program continuous improvement assistance. These findings indicate that stakeholders regard M&E as more than just a reporting requirement, but as a critical tool for increasing program effectiveness and ensuring that EE initiatives convert into meaningful learning outcomes and community participation.

The literature views M&E as a managerial and governance process that institutionalizes performance accountability and guides resource allocation (OECD, 2020; Goldman et al., 2021). Effective programmes in the Results-Based Monitoring (RBM) framework rely on a logical sequence of inputs, actions, outputs, results, and impacts. This model highlights the importance of specific indicators at each level, allowing for systematic monitoring of whether program activities accomplish the desired behavioural and environmental results. In the context of EE, RBM offers a structured approach for measuring both cognitive and behavioural alterations among learners.

Empirical findings from the Vhembe District show that schools and local officials confront substantial hurdles in implementing this paradigm. The lack of baseline data, standardized indicators, and regular tracking weakens the RBM logic chain, making it harder to determine if EE interventions result in long-term improvements in environmental attitudes and sustainable behaviours. Municipal officials and teachers

acknowledged relying on informal assessments and anecdotal evidence, which limited their ability to assess program performance or make evidence-based changes. This disparity demonstrates the practical divergence between theoretical M&E frameworks and the realities of programme implementation.

From a theoretical standpoint, Results-Based Management (RBM) highlights the importance of having measurable indicators and tracking performance, while Governance Theory views Monitoring and Evaluation (M&E) as a tool for ensuring institutional legitimacy, transparency, and accountability. Transformative Learning Theory adds that it is crucial to evaluate changes in learners' attitudes and behaviours, not just their knowledge, acknowledging that the ultimate aim of Environmental Education (EE) is to foster behavioural change that supports sustainable environmental practices. Together, these theories explain why effective M&E must combine structured metrics with attention to learner engagement and tangible real-world effects.

Although the significance of M&E is widely acknowledged, the findings show that current systems are still underdeveloped, creating a gap between ideal theoretical approaches and actual practice. The lack of standardized indicators for environmental literacy sidelines EE in municipal performance assessments, limiting opportunities for ongoing funding and institutional backing. This supports the theoretical view that M&E serves not only as a technical instrument but also as a form of epistemic governance, influencing which programs receive recognition, priority, and expansion. Therefore, enhancing M&E frameworks is vital to institutionalize EE, improve accountability, and ensure that initiatives deliver meaningful and measurable results for both learners and the broader community.

5.4.1.3 Municipal Monitoring and Evaluation of EE Programmes

The investigation demonstrated that the monitoring and evaluation (M&E) of environmental education (EE) programs at the municipal level within the Vhembe District is characterized by fragmentation, informality, and a predominantly reactive approach. Significant challenges identified include the lack of a centralized monitoring framework, the absence of standardized tools and environmental literacy indicators, irregular reporting mechanisms, insufficient staffing capacity, and the absence of a dedicated budget for EE evaluation. Municipal officials indicated a reliance on sporadic

site visits and informal feedback from educators and students, underscoring that EE remains a marginal concern within the broader scope of municipal planning. This practical reality suggests that monitoring activities are typically conducted only in response to urgent issues rather than as part of a systematic and continuous process.

Governance Theory offers a valuable framework for interpreting these findings by situating municipal M&E within the wider context of capacity limitations faced by rural municipalities. Local governments contend with multiple competing priorities, such as infrastructure development, socio-economic services, and public safety, which frequently overshadow environmental education. Consequently, institutional structures and resource allocation tend to Favor immediate and visible community needs, thereby marginalizing EE initiatives. This theoretical perspective elucidates the inconsistent municipal attention to EE and the weak or non-existent formal accountability mechanisms for environmental programs.

The investigation on public sector evaluation emphasizes the significance of institutionalization and system integration for effective programme governance (OECD, 2020; Goldman et al., 2021). Standardised methods, systematic reporting, and dedicated resources have been identified as necessary for monitoring to inform policy and guide improvements. However, empirical findings from the Vhembe District demonstrate that EE monitoring has not been fully incorporated into municipal systems. Environmental education projects are executed without institutional monitoring, standardized assessments, or systematic feedback loops, which reduces openness and the ability to make evidence-based decisions.

In the context of Results-Based Management (RBM), the lack of clear indicators and systematic evaluation interrupts the logical chain from inputs to impacts. Without quantitative targets and periodic assessments, it is impossible to demonstrate whether EE activities result in changes in learner behaviour, community environmental practices, or overall sustainability outcomes. Empirical observations of schools and towns lacking baseline data and relying on anecdotal feedback highlight the practical ramifications of this theoretical gap.

Finally, an epistemological examination emphasizes how "what is not measured becomes invisible." The absence of EE-specific indicators significantly marginalizes

environmental education in municipal performance management systems, influencing not just program evaluation but also institutional priorities and visibility. In this way, inadequate monitoring does more than only limit accountability; it also limits the perceived value of EE, influencing policy attention, resource allocation, and long-term program viability. As a result, strengthening municipal M&E frameworks is crucial for elevating EE from a peripheral activity to a fundamental component of local governance and environmental management.

5.4.1.4 Framework to Enhance Monitoring and Evaluation of EE Programmes

The empirical results obtained from the Vhembe District Municipality underscore the critical necessity for a well-defined framework to direct the monitoring and evaluation of environmental education (EE) programs within schools and communities. Participants consistently highlighted the importance of establishing clearly articulated objectives that align with both national and international sustainability targets to facilitate effective evaluation processes. The integration of SMART (Specific, Measurable, Achievable, Relevant, Time-bound) indicators enables municipalities and educational institutions to systematically assess progress, monitor outcomes, and uphold accountability. Furthermore, baseline and subsequent follow-up assessments were identified as essential instruments for measuring advancements in learners' knowledge, attitudes, and community involvement, thereby emphasizing the significance of structured planning in the implementation of EE initiatives.

A mixed-methods approach to data collection has been identified as a key recommendation, integrating quantitative indicators such as participation rates and environmental literacy assessments with qualitative analyses of behavioural and attitudinal shifts. This approach is consistent with Transformative Learning Theory, which emphasizes that environmental education (EE) should promote critical thinking, reflection, and behavioural change rather than solely generating quantitative data. Evaluations of activities like school clean-ups, tree-planting initiatives, and community recycling programs should extend beyond measuring participation levels to assess their influence on learners' environmental awareness and their ability to engage in sustainable practices.

From a governance standpoint, the findings indicate that the institutionalization of monitoring and evaluation (M&E) extends beyond technical interventions; it requires

the incorporation of relevant policies, allocation of financial resources, establishment of clear accountability mechanisms, and coordination across departments. Participants highlighted the necessity of creating dedicated municipal positions for EE monitoring, supported by digital data management systems that enable real-time reporting and facilitate information exchange. Governance Theory posits that embedding EE evaluation within municipal administrative frameworks enhances the legitimacy of programs, optimizes resource allocation, and promotes long-term sustainability, while mitigating the fragmentation currently evident in existing practices.

Contextual adaptability has been identified as a critical factor in the development of an effective monitoring and evaluation (M&E) framework. The rural socio-economic characteristics of the Vhembe District characterized by limited resources, dispersed populations, and diverse levels of environmental awareness demand a flexible and responsive approach. Stakeholders advocated for the customization of national environmental education (EE) frameworks to align with local conditions, thereby enhancing their relevance and practical utility. The establishment of feedback mechanisms involving key factors such as learners, educators, municipal authorities, and community members was highlighted as essential for ongoing refinement and ensuring sensitivity to the local context.

In summary, the proposed framework integrates empirical evidence, scholarly literature, and theoretical perspectives to formulate a comprehensive strategy for monitoring and evaluating EE programs. By incorporating principles of Results-Based Management (RBM), Transformative Learning outcomes, and Governance Theory, the framework offers a systematic, accountable, and contextually adaptable model. This approach not only enhances municipal oversight and performance evaluation but also ensures that EE initiatives yield substantive learning outcomes, promote behavioural change, and support sustainable environmental stewardship within the Vhembe District.

5.4.2 DISCUSSION OF FINDINGS: TOWARD A SYSTEMIC AND THEORY-GENERATIVE ACCOUNT OF MUNICIPAL ENVIRONMENTAL EDUCATION MONITORING AND EVALUATION

The results indicated heightened learner awareness, nascent behavioural changes, inconsistent implementation, fragmented stakeholder involvement, sporadic monitoring, and significant resource limitations. Although these findings are noteworthy, they do not, in isolation, constitute insights at the doctoral level. The primary objective of this discussion is to elucidate the underlying reasons for these patterns, to examine their connections with Systems Theory, Programme Evaluation Theory, Environmental Education Theory, and Critical Theory, and to identify the conceptual advancements that arise from their synthesis.

The central thesis proposed herein posits that municipal environmental education (EE) monitoring and evaluation within the Vhembe District functions as a structurally marginal subsystem within the broader framework of local governance. This subsystem is characterized by deficient feedback integration, evaluation practices oriented primarily toward compliance, epistemic fragmentation, and institutional marginalization. Such conditions give rise to the observed inconsistencies, capacity deficiencies, and coordination breakdowns. A comprehensive understanding of these dynamics necessitates a shift from mere empirical description toward an explanation grounded in generative mechanisms.

5.4.2.1 A Systems-Theoretical Interpretation: Fragmentation as Structural Design

Systems Theory offers a comprehensive explanatory framework for understanding institutional performance that goes beyond surface-level administrative explanations. Systems Theory is based on the idea that organizations are interdependent subsystems whose stability, adaptability, and coherence are determined by organized feedback loops, boundary regulation, information flows, role clarity, and integration mechanisms. Institutions are more than just collections of activities; they are patterned arrangements of relationships, and their functionality is determined by how well internal processes are synchronized. When viewed through this lens, the study's findings indicate that monitoring and evaluation (M&E) of Environmental Education

(EE) programs in the Vhembe District is failing not due to isolated administrative shortcomings, but because it is not structurally embedded within the municipality's core governance architecture.

The empirical evidence demonstrated irregular assessments, varying standards across schools, poor interdepartmental coordination, infrequent stakeholder engagement, and uneven implementation. On the surface, these appear to be managerial inefficiencies. However, from a systems perspective, they are better understood as symptoms of a loosely coupled governance system in which the EE subsystem is not regulatorily integrated. Loosely connected systems have little interdependence between subunits, poor communication routes, and minimum structural reinforcement. In such systems, subsystems may function concurrently without strong coordinating mechanisms to assure coherence or accountability.

In the Vhembe setting, EE activities appear to coexist with conventional municipal planning and performance management systems rather than being integrated into them. The lack of a centralized and uniform M&E structure is thus more than just an administrative oversight; it indicates structural decoupling. EE monitoring is not intrinsically linked to budget cycles, performance indicators, departmental scorecards, or institutional reporting requirements. As a result, evaluation is episodic and discretionary, rather than mandated and institutionalised.

This decoupling generates several identifiable structural effects.

First, feedback loops are ineffective or disrupted. According to Systems Theory, adaptive institutions use constant feedback to manage performance and fix deviations. Monitoring data is used to make planned adjustments, allocate resources, and refine policies in effective systems. In the Vhembe situation, however, monitoring operations do not always feed into strategic decision-making processes. Data gathered through infrequent assessments does not reliably feed municipal planning frameworks or resource prioritisation. Without feedback integration, institutional learning is episodic rather than iterative. The municipality may detect environmental activities, but it lacks the instruments to translate these data into structured improvement cycles. As a result, adaptation is reactive, rather than systematic.

Second, subsystem autonomy causes fragmentation. Schools, NGOs, and municipal departments function with varied degrees of autonomy, frequently influenced by local

initiative rather than centralized planning. While such liberty can foster innovation, in the lack of integrative control, it results in uneven implementation and inconsistent standards. Some schools have lively EE activities, such as eco-clubs and experiential learning projects, while others have negligible engagement. This variation is not solely due to instructor motivation; it indicates the lack of regulatory coupling mechanisms that would standardize expectations and ensure equitable allocation of support.

Third, boundary uncertainty creates role confusion. Systems require well-defined boundaries to govern roles and maintain functional clarity. The study found that stakeholders are unsure who is responsible for monitoring, reporting, and sustaining EE efforts. Municipal authorities, instructors, and community actors play overlapping but poorly defined roles. This ambiguity leads to duplication of effort in some circumstances and disregard in others. When boundaries are not explicitly entrenched, accountability spreads throughout the system, reducing performance coherence.

These structural dynamics show that what is experimentally referred to as "lack of coordination" can be analytically interpreted as systemic design failure. The municipality exhibits verbal and programmatic commitment to environmental sustainability; yet commitment does not ensure systemic coherence. Without formal incorporation into governance frameworks, EE monitoring remains a peripheral activity. It lacks the structural support required to maintain practices across institutional scales.

This analysis redirects the focus from deficiencies in capacity to the configuration of institutional architecture. Although limitations in resources are undeniably important, Systems Theory posits that institutions facing resource constraints can still attain coherence if effective mechanisms for structural integration are in place. Conversely, augmenting resources alone will not address fragmentation if feedback loops and boundary regulation remain insufficiently developed. Therefore, the fundamental challenge lies not solely in inadequate funding or training, but in the deficient systemic embedding of environmental education (EE) monitoring within the feedback structures of municipal governance.

The case of Vhembe further exemplifies how peripheral subsystems within local government are subject to what may be described as structural drift. Structural drift refers to the phenomenon whereby institutional activities continue in the absence of

stable regulatory anchoring. Over time, this leads to inconsistencies in practice, shifting priorities, and a decline in overall coherence. In the absence of formalized feedback mechanisms, institutional memory deteriorates, and initiatives become overly reliant on individual champions rather than being sustained through structural mandates. This dynamic accounts for the observed variability across schools and departments, where sustainability efforts depend predominantly on the commitment of motivated actors rather than on systemic reinforcement.

Systems Theory provides critical insights into the interplay between hierarchy and integration within organizational structures. In the context of municipal governance, essential service delivery functions such as infrastructure and sanitation are firmly embedded within performance management frameworks due to their alignment with statutory obligations and budgetary accountability. In contrast, environmental education occupies a more ambiguous institutional position; while it is normatively valued, it lacks structural centralization. As a result, environmental education remains weakly connected to decision-making hierarchies, which accounts for the frequent postponement, reprioritisation, or inconsistent implementation of its monitoring without eliciting systemic corrective responses.

This observation carries significant theoretical implications. Sustainability initiatives are unlikely to achieve lasting impact if they are treated as peripheral programs rather than as integrated subsystems within the organizational framework. Systems Theory thus reinterprets the study's findings by suggesting that fragmentation is not incidental but rather a product of organizational architecture. Achieving institutional coherence necessitates formalized feedback mechanisms, cross-boundary coordination, and regulatory embedding.

The case of Vhembe contributes to Systems Theory in two notable ways. First, it illustrates how peripheralization within resource-constrained governance environments engenders systemic vulnerability. Second, it underscores the critical importance of embedding sustainability subsystems within core performance architectures to mitigate structural drift. The key implication derived from this analysis is that environmental education monitoring must be repositioned from the institutional periphery to the structural core of municipal governance to ensure sustained coherence over time.

In conclusion, a systems-theoretical perspective demonstrates that the difficulties encountered in EE monitoring and evaluation are not only operational shortcomings, but rather expressions of deeper structural design characteristics. Fragmentation, irregular monitoring, and uneven standards result from poor subsystem integration, disturbed feedback loops, and boundary ambiguities. Addressing these difficulties necessitates architectural redesign rather than discrete administrative changes. Only systemic embedding can help environmental education move from programming enthusiasm to institutional sustainability.

5.4.2.2 Programme Evaluation Theory: From Compliance to Developmental Evaluation

Programme Evaluation Theory emphasizes objective clarity, theory-driven assessment, standardized indicators, and systematic data collecting. The findings show a significant divergence between theoretical prescriptions and municipal practice. Monitoring is intermittent, indications are variable, and evaluation tools are primarily informal. However, rather than simply concluding that the municipality "does not follow best practice," the conversation should delve into why this misalignment continues.

The empirical evidence reveals that evaluation is mostly used for episodic compliance reporting rather than developmental learning. Assessments are done "once in a while," usually in reaction to external accountability requirements rather than internal learning imperatives. This demonstrates the primacy of bureaucratic rationality: evaluation is done to show activity rather than to investigate impact.

Programme Evaluation Theory differentiates among summative evaluation, which assesses outcomes; formative evaluation, aimed at enhancing implementation processes; and developmental evaluation, designed to support innovation within complex environments. The case study of Vhembe illustrates a nascent evaluative culture that seldom advances beyond informal formative feedback mechanisms. There is scant evidence of evaluations grounded in explicit, theory-driven frameworks such as clearly articulated theories of change. In the absence of a well-defined logic model that connects specific activities (e.g., tree planting, eco-clubs) to long-term sustainability objectives, monitoring efforts remain superficial and lack depth.

The theoretical contribution of this analysis lies in the conceptualization of what may

be termed "evaluation marginality": a condition wherein evaluation is institutionally embedded yet epistemically peripheral. Within such contexts, evaluation lacks the authority necessary to influence policy decisions or the allocation of resources, thereby becoming a procedural formality rather than a catalyst for transformative change.

This finding complicates existing Programme Evaluation Theory by demonstrating how its normative assumptions confront structural resistance within local government environments characterized by limited resources and competing priorities for service delivery. Whereas evaluation theory often presupposes institutional readiness for systematic implementation, the Vhembe case reveals how political and administrative logics mediate and constrain such readiness, thereby limiting the practical application of evaluative frameworks.

5.4.2.3 Environmental Education Theory: Awareness, Action, and Institutional Reinforcement

Environmental Education Theory focuses on the development of environmental literacy, values, behavioural change, and participatory participation. The empirical data demonstrate that the district's EE programs increased learner awareness of climate change, deforestation, water conservation, and pollution. Teachers observed behavioural changes, such as increased recycling and engagement in Eco clubs. Tree planting and school gardens provided hands-on learning opportunities that increased student participation.

These findings support the core assumptions of Environmental Education Theory: information acquisition can catalyse behavioural change, particularly when reinforced through hands-on pedagogies. However, the analysis exposes a significant weakness. While micro-level pedagogical advantages are obvious, macro-level institutional reinforcement is lacking.

Learners may adopt environmentally friendly activities, but municipal frameworks may not regularly institutionalize or scale these practices. Behavioural change remains local rather than systemically rooted. This highlights a structural action gap: advances in environmental literacy are unstable without institutional governance mechanisms. The theoretical refinement arising from this study is that Environmental Education

effectiveness must be viewed as multi-scalar. Pedagogical achievement at the school level does not necessarily translate into systemic sustainability unless it is entrenched in governance feedback systems. Thus, EE must be viewed as both a curriculum intervention and a governance practice.

This reframing advances Environmental Education Theory by combining it with systems governance analysis. It implies that educational change necessitates institutional alignment across several dimensions, including classroom, school, municipality, and policy domain.

5.4.2.4 Critical Theory: Power, Marginalisation, and Epistemic Hierarchies

Critical Theory emphasizes the analysis of power dynamics, institutional hierarchies, and the processes through which knowledge is produced. Utilizing this theoretical framework reveals that monitoring and evaluation (M&E) of environmental education (EE) occupies a peripheral role within municipal power structures. Prioritization of service delivery areas such as infrastructure, sanitation, and housing understandably dominates the allocation of resources. Although environmental education is rhetorically acknowledged as important, it remains in competition with pressing socio-economic needs.

This structural marginalization accounts for the persistent underfunding of evaluation functions. It also elucidates why M&E activities are frequently compliance-oriented, with accountability directed primarily upward toward provincial and national authorities rather than outward toward local communities. Consequently, indicators tend to be shaped by formal reporting mandates rather than by participatory objectives aimed at sustainability.

Moreover, the findings indicate that the criteria for what constitutes valid evidence are narrowly construed. The prevalence of anecdotal accounts and informal feedback reflects a limited institutionalization of rigorous evaluative epistemologies. As a result, evaluation practices tend to reinforce a technocratic governance model that privileges quantifiable outputs over processes of transformative learning.

Critical Theory reveals how environmental education fits into larger political economy dynamics. The issue is not just capacity, but also power: which initiatives are prioritized, what knowledge is valued, and how responsibility is organized. EE

monitoring is still secondary because sustainability is not structurally central to local governance. This interpretation expands on the explanatory account by indicating that evaluation weakness is not incidental, but rather ingrained in governance hierarchies.

5.5 CHAPTER SUMMARY

In conclusion, this chapter presented the findings of the analysis of data gathered from interviews and a questionnaire resulting in a comprehensive examination of the current state of monitoring and evaluation of environmental education programmes in the Vhembe District Municipality. This chapter provided a detailed analysis of the findings related to the monitoring and evaluation (M&E) practices of environmental education (EE) programmes in schools and communities within the Vhembe District Municipality. The findings are organised around key themes, focusing on the effectiveness of EE programmes, the importance of M&E, the challenges encountered during implementation, and a proposed framework to improve M&E practices. Through interviews and surveys, the study offers valuable insights into the current state of M&E and its impact on environmental education efforts.

The findings of this study do not merely reflect the existing literature; they serve to amplify its most pressing recommendations concerning Monitoring and Evaluation (M&E) processes. Without implementing systematic, well-resourced, and participatory M&E frameworks, environmental education programmes in Vhembe District and similarly situated regions will inevitably fall short of their potential impact and effectiveness. While various challenges exist, there are also opportunities to enhance M&E systems and improve the overall impact of EE initiatives.

The next chapter builds on these findings, discussing them concerning broader literature and offering recommendations for strengthening M&E practices in environmental education. By addressing the identified gaps and implementing a robust evaluation framework, municipal authorities, schools and community stakeholders can work together to create a more effective and sustainable environmental education system.

To ensure that these programmes achieve their intended outcomes, it is crucial to establish coordinated M&E processes that are not only adequately funded but also inclusively governed. This entails involving a diverse group of stakeholders such as

educators, local community members, government agencies, and non-profit organisations in the planning and execution of M&E activities. By fostering collaboration among these groups, we can enhance the collection of data, the assessment of programme effectiveness, and the incorporation of feedback into programme design.

Furthermore, the long-term effectiveness and sustainability of environmental education initiatives hinge upon a commitment to continuous improvement driven by robust M&E practices. This need extends beyond theoretical discussions; it becomes a practical imperative for realising sustainable development goals at both the local and regional levels. By prioritising effective M&E, we can ensure that environmental education not only meets immediate needs but also contributes to broader objectives such as ecological preservation, community resilience and social equity.

CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

The previous chapter presented and discussed the findings of the empirical study focused on municipal M&E of EE initiatives in schools and communities aimed at promoting sustainable living within the Vhembe District Municipality, Limpopo. This final chapter offers a summary of those key findings, draws relevant conclusions based on the evidence and puts forward practical recommendations for policy, practice and further research. In addition, the chapter outlines the study's main contribution namely, the development of a contextually grounded M&E framework designed to enhance the effectiveness of EE programmes and support long-term sustainability outcomes in the district.

6.2 SUMMARY OF RESEARCH FINDINGS

The following section provides a structured summary of how the study's findings respond to the key research questions that guided this investigation. Each research question aimed to explore a different dimension of monitoring and evaluation (M&E) practices within environmental education (EE) in the Vhembe District.

6.2.1 Research Sub-Question 1: How is municipal monitoring and evaluation of Environmental Education programmes institutionally structured and conceptually framed within the Vhembe District Municipality?

The empirical evidence from the study paints a picture of a fragmented and inconsistent monitoring and evaluation landscape for EE programmes in the Vhembe District. Despite the existence of broad policy frameworks aimed at promoting EE, the practical mechanisms for monitoring and evaluating these initiatives remain underdeveloped and unevenly applied. As the study notes, *"there is no standardised system for assessing [the] effectiveness"* of EE initiatives; instead, schools and communities rely on a patchwork of informal feedback, ad hoc surveys, and sporadic audits. This lack of structure has significant consequences for the efficacy and scalability of EE programmes.

a. Absence of standardised frameworks

The absence of a centralised, evidence-based monitoring and evaluation framework is the most salient deficiency. Without standardised tools and protocols, data collection is *ad hoc*, and evaluations are conducted inconsistently across the district. This results in several negative outcomes:

- **Incomparability:** Evaluations are not comparable across schools and communities, making it impossible to systematically identify best practices or areas in need of intervention.
- **Reactive approach:** The lack of continuous, structured monitoring means that interventions are often reactive, addressing problems only after they become acute, rather than proactively preventing them.
- **Weakened accountability:** Without clear guidelines and measurable indicators, it is difficult to hold schools, educators or municipal officials accountable for the success or failure of EE initiatives.

The study highlights that this situation *"not only impedes the scaling up of successful interventions but also allows ineffective practices to persist unchallenged."* In effect, the absence of a standardised monitoring and evaluation system undermines both the credibility and the impact of environmental education in the district.

b. Resource constraints: Funding, staffing and bureaucratic delays

Resource constraints constitute a pervasive barrier to effective monitoring and evaluation. The study documents that both municipal officials and teachers cite inadequate funding as a primary impediment. Departments responsible for EE oversight are chronically understaffed, making it nearly impossible to conduct regular, systematic evaluations. The study notes: *"Many departments responsible for EE oversight were understaffed, making it challenging to conduct regular evaluations."*

Bureaucratic delays further exacerbate these challenges, slowing the allocation of resources and the implementation of planned monitoring and evaluation activities. The cumulative effect is a patchwork of programme delivery and oversight, where the level of support a school receives is determined more by resource availability than by strategic need or educational priority.

c. Inconsistent municipal involvement

The inconsistency of municipal involvement in monitoring and evaluation is another critical issue. The study finds that some schools benefit from periodic visits and oversight by municipal representatives, while others receive little to no external support. This uneven engagement creates significant accountability gaps and sends mixed signals about the importance of EE. In contexts where municipal oversight is lacking, there is little incentive for schools to thoroughly implement or improve EE programmes. Conversely, schools with regular municipal engagement are better positioned to access resources, receive feedback and align their activities with broader municipal goals.

This inconsistency also hampers the sharing of best practices and the establishment of district-wide standards, further entrenching disparities in programme quality and impact. As the study observes, *"the lack of a uniform municipal presence also hampers the sharing of best practices and the establishment of district-wide standards."*

6.2.2 Research Sub-Question 2: What governance logics and epistemic assumptions underpin municipal monitoring and evaluation practices for Environmental Education programmes in schools and communities?

The empirical study of EE programmes in Vhembe District Municipality reveals a complex landscape of challenges that fundamentally undermine the effective monitoring and evaluation of EE programmes in both schools and communities. These challenges are deeply structural, spanning issues of policy, resources, governance and implementation.

- **Lack of standardised frameworks: Inconsistent monitoring and evaluation mechanisms**

A primary challenge identified is the pronounced absence of standardised frameworks for monitoring and evaluation. While the municipality has policies to promote EE, the study finds that practical mechanisms for monitoring and evaluating these programmes are fragmented and lack uniformity. As noted, *"there is no standardised system for assessing [the] effectiveness"* of EE initiatives. Instead, schools and communities employ disparate approaches, ranging from informal feedback and occasional surveys to sporadic school-based audits.

This lack of structure has several significant consequences:

- **Inconsistent evaluations:** Without standardised tools, evaluations are not comparable across the district, making it impossible to share best practices or systematically identify areas for improvement.
- ***Ad hoc* data collection:** The absence of a centralised, evidence-based framework means data collection is reactive and sporadic, undermining the potential for data-driven improvements.
- **Weakened accountability:** Without clear guidelines and measurable indicators, it is difficult to ensure that EE programmes are achieving their intended outcomes, which allows ineffective practices to persist and impedes the scaling up of successful interventions.

➢ **Resource constraints: Funding, staffing, and bureaucratic delays**

Resource constraints are a pervasive barrier to effective monitoring and evaluation. Both municipal officials and teachers cited inadequate funding as a primary impediment. The report highlights *"limited financial resources, bureaucratic delays, and insufficient stakeholder coordination" as factors that "hinder the full implementation of EE initiatives."*

- **Understaffing:** Departments responsible for EE oversight are particularly understaffed, making it challenging to conduct regular evaluations. This shortage forces officials to prioritise urgent issues over routine monitoring, further entrenching a reactive approach.
- **Bureaucratic delays:** Administrative bottlenecks slow down the allocation of resources and the implementation of planned monitoring and evaluation activities, affecting the timeliness of evaluations and eroding the morale of educators and officials.

The cumulative effect is a patchwork of EE programme delivery and oversight, with some schools and communities receiving more attention and support than others, often based on resource availability rather than strategic need.

➢ **Inconsistent municipal involvement: Accountability gaps**

The study also highlights the inconsistent involvement of municipal authorities as a major challenge. *"Municipal involvement in monitoring and evaluation was inconsistent,"* with *"some schools receiving periodic visits from municipal representatives to assess the progress of EE programmes, [while] others had little to no external oversight."*

- **Accountability gaps:** In schools and communities where, municipal oversight is minimal or absent, there is little incentive to meticulously implement or improve EE programmes.
- **Inequitable support:** The lack of a uniform municipal presence hampers the sharing of best practices and the establishment of district-wide standards, allowing ineffective or outdated practices to persist unchecked.
- **Reduced legitimacy:** Sporadic municipal engagement signals that EE is a low priority, reducing buy-in from teachers, learners and the broader community.

➢ **Additional barriers: Curriculum, stakeholder coordination and professional development**

Beyond these primary challenges, the study identifies several additional barriers:

- **Curriculum limitations:** The EE curriculum is predominantly theoretical, with insufficient emphasis on experiential and hands-on learning. This restricts learners' ability to translate knowledge into action, undermining the core objectives of EE.
- **Weak stakeholder coordination:** Collaboration among schools, municipal departments, and communities is often weak, hampered by fragmented communication and community resistance rooted in socioeconomic concerns. Without unified approaches and shared accountability, EE initiatives risk duplication and inefficiency.
- **Insufficient professional development:** Teachers lack ongoing training in both environmental content and innovative pedagogical methods, limiting their capacity to deliver effective, action-oriented EE.

The challenges faced by the Vhembe District Municipality in monitoring and evaluating environmental health programmes are deeply structural and multifaceted. The lack of standardised monitoring and evaluation frameworks, persistent resource constraints,

and inconsistent municipal involvement collectively undermine the effectiveness and sustainability of environmental education programmes. Additional barriers, such as curriculum limitations, weak stakeholder coordination and insufficient professional development, further entrench these challenges. Addressing them requires the development of centralised, evidence-based monitoring and evaluation systems, increased investment in human and financial resources, and a commitment to consistent, district-wide municipal engagement. Only through such coordinated efforts can EE programmes achieve their full potential in fostering environmental awareness and sustainable practices across schools and communities.

6.2.3 Research Sub-Question 3: How do municipal monitoring and evaluation structures influence the effectiveness of Environmental Education programmes in promoting sustainable living?

The effectiveness of municipal monitoring and evaluation of EE programmes in the Vhembe District is significantly constrained by a constellation of systemic weaknesses. While there is evidence that EE programmes have achieved some positive outcomes, such as heightened environmental awareness and observable behavioural changes among learners, these successes are unevenly distributed and often unsustainable due to persistent structural barriers. The study's findings make clear that the current monitoring and evaluation framework lacks the sturdiness required to ensure consistent, scalable and lasting impact.

- **Absence of standardised frameworks: Fragmented evaluation and limited accountability**

A central limitation undermining the effectiveness of municipal monitoring and evaluation is the pronounced absence of standardised frameworks. As the study reports, *"there is no standardised system for assessing [the] effectiveness*" of EE initiatives. Instead, schools and communities employ a mélange of informal feedback mechanisms, occasional surveys, and sporadic audits. This fragmented approach results in several critical shortcomings:

- **Inconsistent evaluations:** The lack of uniformity in evaluation tools and processes means that outcomes are not comparable across the district. This inhibits the identification and dissemination of best practices and prevents systematic improvement.

- **Data deficiency:** Without a centralised, evidence-based framework, data collection is *ad hoc* and reactive. This precludes the possibility of data-driven decision-making and limits the municipality's ability to proactively address emerging challenges.
- **Weakened accountability:** The absence of clear guidelines and measurable indicators makes it difficult to hold educators and municipal officials accountable for EE programme outcomes. As a result, ineffective practices may persist, while successful interventions cannot be reliably scaled.

➢ **Resource constraints: Funding, staffing and bureaucratic delays**

Resource shortages further compromise the effectiveness of monitoring and evaluation in the Vhembe District. The study highlights *"limited financial resources, bureaucratic delays, and insufficient stakeholder coordination"* as key impediments to the full implementation of EE initiatives. Specifically:

- **Understaffing:** Departments responsible for EE oversight are particularly understaffed, making it challenging to conduct regular and systematic evaluations. This shortage of human resources forces officials to prioritise immediate crises over routine monitoring, further entrenching a reactive approach.
- **Bureaucratic delays:** Administrative bottlenecks slow the allocation of resources and the implementation of planned monitoring and evaluation activities. These delays erode the morale of educators and officials, diminishing their commitment to sustained improvement.
- **Patchwork support:** The cumulative effect of these resource constraints is a patchwork of EE programme delivery and oversight, with some schools and communities receiving more attention and support than others, often based on resource availability rather than strategic need.

➢ **Inconsistent municipal involvement: Accountability and equity gaps**

The study also highlights the inconsistent involvement of municipal authorities in the oversight of EE programmes. *"Municipal involvement in monitoring and evaluation was inconsistent,"* with some schools receiving periodic visits from municipal

representatives, while others had little to no external oversight. This inconsistency produces several negative outcomes:

- **Accountability gaps:** In schools and communities where, municipal oversight is minimal or absent, there is little incentive to strictly implement or improve EE programmes.
- **Inequitable support:** The lack of a uniform municipal presence means that successful innovations are not communicated or replicated elsewhere, while ineffective or outdated practices may persist unchecked.
- **Undermined legitimacy:** Sporadic municipal engagement signals that EE is a low priority, reducing buy-in from teachers, learners, and the broader community.

➢ **Positive outcomes and their limitations**

Despite these challenges, the study documents some notable successes attributable to EE programmes:

- **Increased environmental awareness:** Students demonstrate a deeper understanding of ecological issues such as climate change, pollution, and water conservation. This heightened awareness is foundational for fostering environmental stewardship.
- **Behavioural changes:** There is evidence of students adopting sustainable practices, such as recycling and water conservation, both at school and at home.
- **Enhanced engagement through experiential learning:** Hands-on activities, such as tree planting and maintaining school gardens, deepen student engagement and consolidate theoretical knowledge.

However, these positive outcomes are not uniformly realised across the district. Their sustainability is threatened by the very systemic weaknesses, lack of standardised frameworks, resource shortages and inconsistent municipal support that limit the overall effectiveness of monitoring and evaluation.

The effectiveness of municipal monitoring and evaluation of EE programmes in the Vhembe District is fundamentally limited by the absence of standardised evaluation

frameworks, chronic resource constraints and inconsistent municipal engagement. While some positive outcomes are evident, they are unevenly distributed and often not sustained due to these systemic weaknesses. The study makes clear that only through the development of centralised, evidence-based M&E systems, increased investment in human and financial resources, and a commitment to consistent, district-wide municipal engagement can the full transformative potential of environmental education be realised. Without such reforms, the impact of EE programmes remains limited, and their contributions to sustainable development in the Vhembe District is compromised.

6.2.4 Research Sub-Question 4: What theoretically grounded and contextually viable municipal monitoring and evaluation framework can be developed for Environmental Education programmes in schools and communities?

The empirical data strongly indicate that any viable municipal monitoring and evaluation framework for Environmental Education in the Vhembe District must do more than prescribe procedural tools; it must respond to the structural, epistemic, and governance realities revealed by the study. The absence of standardisation, inconsistent municipal engagement, resource limitations, and narrow evaluative logics all signal the need for a framework that is theoretically informed, institutionally embedded, and contextually adaptable.

Empirical findings consistently showed that monitoring in the district lacks coherence and comparability. Schools employ disparate evaluation methods, from informal observation to occasional surveys, with no shared indicators or protocols. This fragmentation undermines systemic learning and prevents the municipality from aggregating data, comparing outcomes, or identifying patterns across contexts.

the study finds that a contextually viable municipal monitoring and evaluation framework for Environmental Education must transcend technical fixes and address the structural, epistemic, and institutional conditions that currently marginalise EE within municipal governance. The proposed framework integrates elements of Programme Evaluation Theory (standardised indicators and mixed-method evaluation), Systems Theory (feedback loops and embedded monitoring cycles), Environmental Education Theory (outcome measures that reflect transformative learning), and Critical Theory (expansion of legitimate evidence and restructuring of evaluative epistemologies).

This framework is theoretically grounded anchored in established scholarship on evaluation, learning, governance, and power and contextually viable, addressing the unique structural constraints and opportunities within the Vhembe District Municipality.

6.2.5 Main Research Question: What constitutes effective monitoring and evaluation of EE programmes for sustainable living in the Vhembe District of Limpopo?

The research findings establish that a viable M&E system for EE programmes in Vhembe District must rectify three systemic deficiencies: the absence of standardised frameworks, chronic resource constraints and inconsistent municipal involvement. These gaps collectively undermine the efficacy and sustainability of EE initiatives.

- **Standardised Frameworks as Foundational Infrastructure**

The study reveals a critical lack of uniform M&E mechanisms across the Vhembe District. Municipal officials confirmed that EE policies exist without standardised tools to measure implementation efficacy, resulting in fragmented evaluations using "disparate approaches, ranging from informal feedback and occasional surveys to sporadic school-based audits. This inconsistency prevents comparative analysis, obscures best practices, and impedes data-driven improvements. For instance, the absence of centralised metrics renders evaluations "reactive rather than proactive," allowing environmental issues to escalate before interventions occur. A viable M&E system must therefore prioritise evidence-based frameworks with district-wide protocols for data collection, impact assessment, and accountability.

- **Resource Constraints: Structural Barriers to Implementation**

Resource limitations, financial, human and logistical, emerge as a primary bottleneck. Municipal departments overseeing EE face severe understaffing, rendering "regular evaluations challenging". Bureaucratic delays further obstruct resource allocation, creating a "patchwork of programme delivery" where support depends on *ad hoc* availability rather than strategic need. Teachers corroborate this, citing inadequate materials for hands-on activities and field-based learning essential for behavioural change. These constraints perpetuate inequities: schools in resource-scarce areas receive minimal oversight, while others benefit from municipal engagement. Viable

M&E demands increased investment in staffing, streamlined bureaucracy, and dedicated funding to ensure consistent, district-wide coverage.

- **Inconsistent Municipal Involvement: Accountability Deficit**

Municipal engagement in M&E is markedly irregular, with "some schools receiving periodic visits... while others had little to no external oversight". This inconsistency breeds accountability gaps, as schools without oversight lack incentives to strictly implement EE programmes. Conversely, schools with municipal support demonstrate higher student engagement and better resource access. The study links this disparity to diminished stakeholder buy-in sporadic municipal presence signals EE as a "low priority," reducing community commitment. Effective M&E requires codified municipal obligations, regular assessments, resource coordination, and cross-school knowledge sharing to enforce accountability and align local initiatives with district sustainability goals.

- **Complementary Factors for Holistic Viability**

Beyond the core gaps, the study identifies ancillary barriers that a viable M&E framework must address:

Curriculum Limitations: EE curricula remain overly theoretical, lacking practical components essential for behavioural change. M&E frameworks should track the integration of experiential learning (for example, tree planting, waste management) into pedagogical practices.

Stakeholder Coordination: Weak collaboration among schools, municipalities, and communities, exacerbated by "community resistance" and bureaucratic fragmentation, hinders programme scalability. M&E systems must include stakeholder alignment metrics.

Professional Development: Teachers report insufficient training on evolving environmental issues and pedagogical strategies. Viable M&E requires continuous educator upskilling as a measurable outcome.

Synthesis: Toward an Integrated M&E Framework: The evidence asserts that viability hinges on systemic reform:

Centralised Frameworks: District-wide standards with quantifiable indicators (for example, behavioural changes, resource conservation rates).

Resource Optimisation: Strategic funding for staffing, materials, and bureaucratic efficiency to enable proactive (not reactive) evaluations.

Municipal Accountability Protocols: Mandated oversight schedules and community-municipal liaison roles.

Ancillary Metric Integration: Tracking curriculum practicality, stakeholder synergy, and teacher training efficacy.

Failure to address these dimensions perpetuates the status quo: EE programmes may raise awareness but cannot systematically convert knowledge into sustainable living practices. The proposed framework, rooted in empirical diagnostics, offers a replicable blueprint for M&E viability in resource-constrained contexts.

- **The M&E framework should integrate the following interdependent components:**

The empirical findings from the Vhembe District Municipality highlight the urgent need for a comprehensive, context-sensitive framework for monitoring and evaluating EE programmes. The persistent challenges of fragmented frameworks, resource constraints and inconsistent municipal engagement demand a systemic and holistic response. Drawing on the study's evidence, a viable M&E framework should integrate the following interdependent components:

- **Centralised, Evidence-Based Frameworks**

A foundational pillar of an effective M&E system is the establishment of standardised, evidence-based frameworks. The attached study highlights that the absence of such frameworks has led to "inconsistent evaluations across schools and communities, making it impossible to compare outcomes, share best practices, or systematically identify areas for improvement." A centralised framework would entail:

- **Standardised Tools and Protocols:** Uniform instruments for data collection, assessment, and reporting, ensuring comparability and reliability of M&E outcomes across the district.
- **Clear Indicators:** Measurable, contextually relevant indicators for both knowledge acquisition and behavioural change, allowing for targeted interventions and evidence-based policy adjustments.

- **Continuous Monitoring:** Mechanisms for ongoing data gathering and feedback, shifting the approach from reactive to proactive and enabling the early identification of challenges or opportunities.

Such a framework would not only enhance accountability but also facilitate the scaling of successful interventions and the discontinuation of ineffective practices.

➢ **Increased Investment: Funding and Staffing**

Resource constraints are a pervasive barrier, as evidenced by the study's findings of "limited financial resources, bureaucratic delays, and insufficient stakeholder coordination." A viable framework requires:

- **Dedicated Funding Streams:** Secured and ring-fenced budgets for EE M&E activities, including materials, transportation, and technology.
- **Enhanced Staffing:** Recruitment and training of specialised personnel for M&E, reducing the burden on already overstretched educators and municipal officials.
- **Administrative Efficiency:** Streamlined procedures to minimise bureaucratic delays and ensure timely resource allocation.

Investment in human and financial capital is essential to move beyond ad hoc, crisis-driven interventions towards sustained, systematic programme evaluation.

➢ **Consistent Municipal Engagement**

The study documents that "municipal involvement in M&E was inconsistent", resulting in accountability gaps and uneven programme support. A viable framework must institutionalise:

- **Regular Oversight:** Scheduled, district-wide municipal visits and audits to ensure uniform implementation and support.
- **Feedback Loops:** Structured channels for sharing findings and recommendations with schools and communities, fostering a culture of continuous improvement.
- **Accountability Mechanisms:** Clear roles and responsibilities for municipal actors, with performance benchmarks linked to M&E outcomes.

Consistent engagement not only legitimises EE efforts but also ensures that successful practices are disseminated and institutionalised across the district.

- **Stakeholder Collaboration**

Weak stakeholder coordination is a recurring theme in the study, with “fragmented communication and community resistance” impeding programme effectiveness. The framework must therefore prioritise:

- **Multi-Stakeholder Partnerships:** Formalised collaborations between schools, municipal departments, community organisations, and families.
- **Community Engagement:** Initiatives to raise awareness and align environmental goals with local development priorities, addressing socioeconomic concerns that may otherwise hinder buy-in.
- **Participatory M&E:** Involving stakeholders in the design, implementation, and review of M&E processes to enhance relevance and ownership.

Such collaboration ensures that EE initiatives are contextually grounded, widely supported, and more likely to achieve sustainable impact.

- **Ongoing Professional Development**

The study identifies a “lack of ongoing professional development for educators” as a critical barrier. A viable M&E framework must embed:

- **Continuous Training:** Regular workshops and refresher courses on emerging environmental issues, innovative pedagogies, and assessment techniques.
- **Peer Learning Networks:** Platforms for educators to share experiences, challenges, and best practices.
- **Capacity Building:** Support for educators to design and implement experiential, action-oriented EE activities.

Professional development not only enhances the quality of teaching but also ensures that M&E processes remain dynamic and responsive to evolving environmental challenges.

In sum, the study’s findings advocate for a framework that is centralised yet flexible, adequately resourced, consistently supported by municipal authorities, deeply

collaborative, and committed to ongoing professional development. Only such a holistic approach can overcome the entrenched barriers identified in the Vhembe District and unlock the full transformative potential of environmental education for sustainable living. Policymakers and practitioners should prioritise the institutionalisation of these components to ensure that M&E is not merely a bureaucratic exercise, but a driver of continuous learning, accountability, and community empowerment.

6.3 RESEARCH CONCLUSIONS

In conclusion, this study highlights a crucial reality: without a structured, well-resourced, and contextually grounded monitoring and evaluation (M&E) framework, environmental education in the Vhembe District is unlikely to achieve its full potential. At present, many EE efforts risk being seen as side projects rather than transformative tools for change. The absence of consistent systems for tracking progress, assessing impact and learning from experience, makes it difficult to build momentum or improve programmes over time. As a result, valuable opportunities for promoting environmental awareness and sustainable living may be lost.

However, the research also presents a hopeful path forward. By treating M&E not just as a technical process but as a vital part of educational planning, stakeholders in the Vhembe District can begin to reshape environmental education into something more meaningful and enduring. When standard indicators are in place, when local voices are heard and when educators are supported with the tools and training that they need, M&E can become a driver of continuous improvement - not a bureaucratic burden. It can help identify what works, build trust among partners and ensure that the benefits of environmental education extend beyond the classroom and into the wider community.

If taken seriously and implemented thoughtfully, the framework proposed in this study could become a model for other districts facing similar challenges. It shows that it is possible to connect local education efforts with national and global sustainability goals in a way that is both practical and inspiring. The Vhembe District is at a unique moment in time with the chance to lead by example in using education not just to inform, but to empower communities to live more sustainably. With the right support, environmental

education can move from the margins to the centre of the region's development strategy, helping to build a more resilient and environmentally conscious future for all.

6.4 RECOMMENDATIONS

The study's conclusions support the pressing need for the Vhembe District Municipality to establish and institutionalise an extensive, context-sensitive and evidence-based M&E framework for EE programmes. Fragmentation, informality and a lack of consistency among communities and schools are characteristics of the current condition of M&E practices. This calls into question the legitimacy, effectiveness, and long-term sustainability of EE initiatives. It becomes challenging to quantify impact, guide policy decisions and replicate effective interventions in the absence of a standardised framework to direct data collection, assessment and reporting. In addition to improving programme quality, closing this fundamental gap is essential for bringing local practices into line with larger national and international sustainability goals. In response to these challenges, the following recommendations are proposed.

6.4.1 Recommendations to the Vhembe District Municipality M&E Section (Department)

Clearly defined and standardised indicators that are cognisant of the distinct environmental, socio-economic and educational settings of the Vhembe District must serve as the cornerstone of a strong M&E framework. In addition to evaluating the acquisition of information, these indicators ought to monitor changes in behaviour, community involvement and ecological results throughout time. Crucially, a participatory method should be used to design these indicators, considering the opinions of important stakeholders like educators, local government representatives, students, and community leaders. This will guarantee that the indicators are not only technically solid but also suitable for the given environment and culture. District-wide standardisation will facilitate evidence-based enhancements to programme design and delivery, facilitate uniformity in reporting and allow for comparability of results.

6.4.2 Recommendations to the Vhembe District Municipality

Consistent and organised municipal monitoring is equally important to the success of any M&E system. According to the report, municipal participation in EE programme

monitoring is now irregular and *ad hoc*, with some schools receiving no outside assistance at all and others receiving sporadic inspections. This uneven participation sustains disparities in programme quality and resource access and leads to large accountability discrepancies. Therefore, frequent municipal monitoring must be institutionalised through well-defined roles, duties and schedules in a sustainable M&E framework. This will improve accountability, provide consistent support and make it easier to scale up successful practices across the district. Additionally, this monitoring method should incorporate regular reporting and feedback systems to guarantee prompt problem identification and remedial action.

6.4.3 Recommendations to the Municipality, Schools and teachers

It is impossible to overestimate the importance of stakeholder participation in putting a workable M&E framework into practice. The study emphasises that a significant barrier to the success of EE programmes is inadequate coordination among stakeholders, especially between local communities, municipal departments and schools. To get around this, the framework needs to encourage multi-stakeholder collaborations that encourage shared accountability and ownership for EE programme execution and oversight. This entails setting up organised channels for information exchange, collaborative planning and communication. In order to address local socio-economic issues and encourage congruence between environmental objectives and community development priorities, community engagement initiatives should also be reinforced. The municipality could improve trust, transparency and long-term commitment to environmental sustainability by including participatory approaches into the M&E framework.

6.4.4 Recommendations to the Vhembe District Municipality Human Capital Department

Continuous investment in capacity building is another essential component of a sustainable M&E system. The analysis identifies ongoing human and financial resource shortages as a major obstacle to efficient M&E. In order to overcome these limitations, specific funding sources for M&E operations such as the acquisition of supplies, equipment and logistical assistance must be established. Furthermore, it is necessary to make consistent investments in human capital by hiring qualified M&E staff and giving instructors access to continual professional development

opportunities. In addition to having current environmental knowledge, educators also need to possess the pedagogical abilities required to provide immersive, action-oriented learning. With this funding, EE would become a focal point of school and community development initiatives rather than a supplementary subject.

Finally, this study suggests that only a well-coordinated, sufficiently resourced and institutionally supported M&E framework can fully realise the transformative potential of environmental education in the Vhembe District. In addition to improving the EE programme's quality and impact, such a system would encourage community involvement, responsibility and long-term behavioural change. The study's comprehensive approach offers other towns dealing with comparable resource and execution issues a repeatable blueprint. It is not only advantageous but also necessary to institutionalise efficient M&E techniques at the municipal level as environmental and sustainability concerns continue to escalate on a global scale. The Vhembe District has a unique chance to provide an example for the integration of sustainable development concepts through evidence-based monitoring systems and thorough environmental education at this pivotal moment.

6.5 FURTHER RESEARCH

The present study highlighted critical gaps and systemic challenges in the monitoring and evaluation of EE within the Vhembe District. While offering an empirical and conceptual foundation, the research also reveals several areas where further scholarly review is warranted to deepen understanding and enhance practice.

I. *Development and validation of standardised monitoring and evaluation frameworks.* Given the noticeable absence of standardised, evidence-based monitoring and evaluation frameworks identified in this study, future research should prioritise the design, piloting, and validation of such frameworks within the Vhembe District context.
   Comparative investigations of alternative M&E frameworks, both quantitative and qualitative, would be valuable in assessing their effectiveness in generating reliable data, fostering accountability, and facilitating the scaling of best practices across diverse educational and community settings.
II. *Longitudinal studies on the impact and sustainability of EE initiatives*. The current research highlights that positive outcome of EE, such as increased

environmental awareness and behavioural change, are uneven and often unstained. Accordingly, longitudinal studies are needed to track the long-term impacts of environmental education interventions. Such research should *examine which programmatic elements contribute to durable changes in knowledge, attitudes, and behaviours among both students and broader community members, thereby providing evidence for the sustainability of EE outcomes*.

III. *Resource allocation and efficiency analyses*. Resource constraints, including funding shortages, understaffing, and bureaucratic delays, have emerged as pervasive barriers to effective monitoring and evaluation. Further research *should interrogate optimal resource allocation strategies, exploring how limited financial and human resources can be most efficiently deployed to maximise* monitoring and evaluation *effectiveness*. Cost-benefit analyses and studies of administrative efficiency could inform policy decisions on resource prioritisation and the streamlining of bureaucratic processes.

IV. *Stakeholder engagement and participatory monitoring and evaluation*. The study highlights the significance of weak stakeholder coordination and limited community buy-in as impediments to effective EE. Future research should *explore mechanisms for enhancing stakeholder engagement, such as participatory* monitoring and evaluation *approaches that actively involve educators, learners, parents, and community leaders in the design and implementation of evaluation processes*. Comparative research could further elucidate how different frameworks of stakeholder participation influence programme legitimacy, community ownership, and educational outcomes.

V. *Further research should interrogate the policy and governance dynamics that shape the implementation of EE monitoring and evaluation at the municipal and district levels.* This includes examining the interplay between national guidelines, local adaptation, and the capacity of municipal actors to drive reform. Policy analyses and in-depth case studies could illuminate pathways for overcoming governance-related barriers to effective monitoring and evaluation.

The advancement of research along these lines would not only address the gaps identified in the present study but would also contribute to the development of more equitable and sustainable systems for monitoring and evaluating environmental

education, both within the Vhembe District and in comparable contexts elsewhere. Such scholarly efforts are essential for ensuring that EE fulfils its transformative potential in fostering environmental stewardship and sustainable development.

6.6 LIMITATIONS TO THE STUDY

This study, like other research projects, experienced a number of constraints, many of which were outside the researcher's control. Nevertheless, these limitations affected the findings' breadth, depth and generalisability. It is crucial to recognise these difficulties as part of the realities of performing field-based research in intricate, resource-constrained settings, not as defects.

Previous Research Availability: The study was conducted in a context where limited prior research exists on the monitoring and evaluation (M&E) of environmental education (EE) within the Vhembe District. This scarcity of localised, peer-reviewed literature made it difficult to benchmark findings or build on established frameworks. As a result, the study had to rely heavily on conceptual adaptation and anecdotal evidence, which may limit the academic robustness and replicability of the work.

Sample Size and Representation: Due to logistical and resource constraints, the sample size was relatively small and unevenly distributed across the district. Some schools and communities were more accessible or cooperative than others, leading to an imbalance in data representation. Consequently, the findings may not fully capture the diversity of experiences and practices across the entire district, thereby limiting their generalisability.

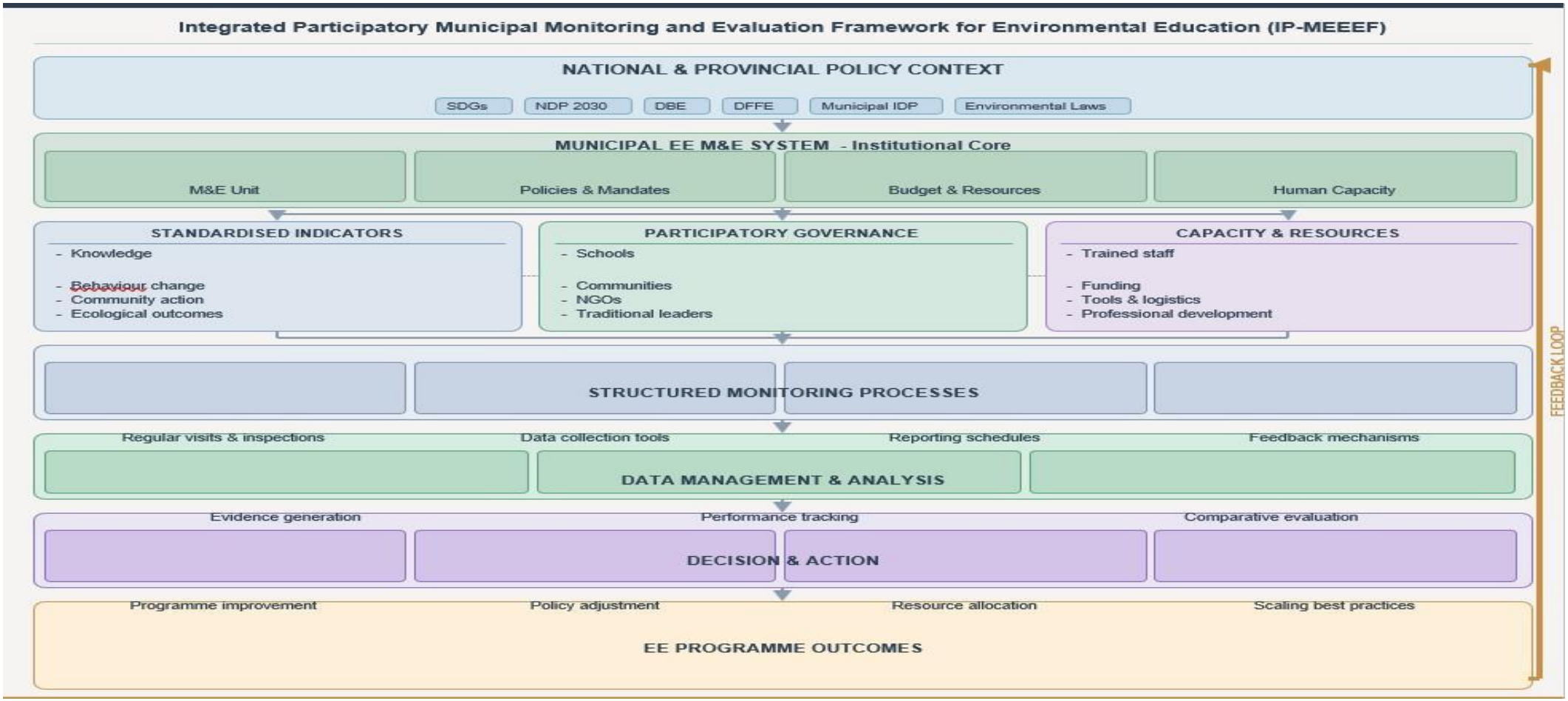
Researcher and Participant Bias: As with most studies relying heavily on self-reported data, there is a possibility of response bias, including social desirability bias and selective memory. Participants may have over-reported positive outcomes or under-reported challenges. Similarly, while every effort was made to maintain objectivity, researcher bias stemming from personal interpretation during qualitative analysis cannot be entirely ruled out.

Time Constraints: The research was conducted within a limited time frame, which placed constraints on the depth and breadth of fieldwork. Time limitations affected the number of schools and stakeholders that could be engaged, the duration of data

collection at each site and the opportunity for follow-up validation. A longer study period would have allowed for more comprehensive engagement and possibly richer data

6.7 PROPOSED VIABLE FRAMEWORK FOR MUNICIPALITY MONITORING AND EVALUATION OF EE PROGRAMMES IN SCHOOLS AND COMMUNITIES

The suggested framework views municipal monitoring and evaluation (M&E) of environmental education (EE) programs as a dynamic, cyclical system with four interconnected characteristics. These elements include planning and goal setting, data collection and assessment techniques, analysis, feedback and reporting, and learning, adaptation, and stakeholder interaction. Each component is interconnected, with feedback loops that allow for continual learning and improvement. The framework takes a systems thinking approach, recognizing that the effectiveness of M&E is dependent not just on individual efforts but also on interactions between many players, such as municipal officials, schools, and community groups. Furthermore, the framework emphasizes the importance of enabling variables including institutional support, proper resources, and human capacity, which all contribute to the efficiency, sustainability, and overall impact of EE programs.



Improved environmental knowledge	Behavioural change	Community participation	Ecological sustainability	Sustainable living practices

Interpretation of the Framework According to Sub-Research Questions

1. Condition of Municipal M&E of EE Programmes

The findings reveal a range of systemic and structural weaknesses that undermine effective implementation and oversight. These include fragmented institutional arrangements and the absence of a formalised monitoring and evaluation (M&E) system supported by standardised indicators. Monitoring practices are inconsistent, reporting structures are weak, and implementation often occurs on an ad hoc basis, with sporadic municipal involvement and unequal support across schools. Evaluation processes tend to be informal, resulting in limited use of evidence for decision-making. Furthermore, stakeholder integration remains insufficient, characterised by poor coordination among the municipality, schools, and communities, weak communication channels, and minimal participatory processes. Collectively, these challenges constrain accountability, coherence, and the overall effectiveness of programme delivery. In conclusion the existing M&E condition is largely reactive, unstructured, and insufficient for measuring sustainability outcomes.

2. Challenges Facing Municipal M&E

The framework identifies a set of interrelated, multi-layered challenges that collectively undermine effective implementation. At the institutional level, the absence of a policy-driven monitoring and evaluation (M&E) framework, unclear delineation of roles and responsibilities, and weak accountability mechanisms impede coherent governance. Resource-related constraints further exacerbate these limitations, including insufficient funding for M&E activities, a shortage of trained personnel, and inadequate equipment and logistical support. Capacity challenges are also evident, reflected in limited technical expertise in evaluation, inadequate teacher preparation for environmental education delivery, and the absence of sustained professional development opportunities. In addition, coordination challenges manifest through weak multi-stakeholder collaboration, limited community participation, and poor interdepartmental communication. Methodologically, the lack of context-sensitive indicators, an overemphasis on activity-based reporting rather than outcome-oriented assessment, and difficulties in measuring behavioural change and ecological impact constrain the generation of meaningful evidence. Taken together, these findings suggest that the challenges are systemic in nature rather than merely operational, requiring comprehensive structural and policy-level interventions.

3. Effectiveness of Municipal M&E

The effectiveness of municipal monitoring and evaluation (M&E) systems is significantly constrained by the aforementioned structural and operational weaknesses. In principle, an effective M&E framework should generate reliable evidence of programme impact, support continuous improvement, promote equity across schools and communities, and ensure alignment with broader sustainability objectives. However, prevailing practices fall short of these expectations. Current approaches are characterised by an inability to quantify environmental outcomes, limited capacity to replicate successful interventions, weak feedback mechanisms to inform policy and planning, and poor long-term sustainability of programmes. Consequently, municipal M&E effectiveness remains low, largely due to the absence of institutionalised systems and robust evidence-based processes capable of guiding informed decision-making and adaptive programme management.

4. Proposed Viable Framework for Municipal M&E

The proposed diagram advances a transformative monitoring and evaluation (M&E) model structured around five interdependent pillars. The first pillar, institutionalisation, emphasises the establishment of formal M&E policies, dedicated environmental education (EE) M&E structures, and clearly defined roles, responsibilities, and implementation schedules. The second pillar, standardisation, focuses on the development of context-sensitive indicators, the promotion of district-wide reporting consistency, and the systematic tracking of knowledge acquisition, behavioural change, participation levels, and ecological impact. The third pillar, participation, underscores the active engagement of schools, communities, non-governmental organisations, and local leadership to foster shared ownership, strengthened communication, and effective feedback mechanisms. The fourth pillar, capacity and resourcing, calls for dedicated funding allocations, targeted training for municipal officials and educators, and the provision of appropriate tools and infrastructure. The fifth pillar, evidence-driven decision-making, advocates for the systematic use of data to inform programme improvement, scale effective interventions, and ensure alignment with national and global sustainability agendas. Collectively, the framework links M&E processes directly to sustainable living outcomes, including behavioural transformation, community empowerment, environmental stewardship, long-term ecological benefits, and the integration of environmental education into broader development planning. In contrast, the current condition in the Vhembe District Municipality is characterised by fragmented institutional arrangements, the absence of a formalised M&E system and standard indicators, inconsistent monitoring practices, weak reporting structures, and ad hoc

implementation with sporadic municipal involvement. Support across schools is uneven, evaluation methods remain largely informal, and decision-making is seldom evidence-based. Furthermore, stakeholder integration is limited, coordination among municipalities, schools, and communities is weak, communication channels are ineffective, and participatory processes are minimal. Consequently, the existing M&E system can be described as reactive, unstructured, and inadequate for accurately measuring sustainability outcomes.

2. Challenges Facing Municipal M&E

The framework identifies a complex set of multi-layered challenges that collectively impede the effective implementation of environmental education monitoring and evaluation (M&E). At the institutional level, the absence of a policy-driven M&E framework, unclear delineation of roles and responsibilities, and weak accountability mechanisms undermine governance and oversight. Resource constraints further compound these difficulties, including insufficient funding for M&E activities, a shortage of trained personnel, and inadequate equipment and logistical support. Capacity-related challenges are also evident, characterised by limited technical expertise in evaluation, inadequate teacher preparation for environmental education delivery, and the absence of sustained professional development opportunities. In addition, coordination challenges manifest through weak collaboration among multiple stakeholders, limited community participation, and poor interdepartmental communication. Methodologically, the lack of context-sensitive indicators, an emphasis on activity-based reporting rather than outcome-oriented assessment, and the inherent difficulty of measuring behavioural change and ecological impact restrict the generation of meaningful evaluative evidence. Taken together, these findings indicate that the challenges are systemic in nature rather than merely operational, necessitating comprehensive structural, policy, and capacity-building interventions.

3. Effectiveness of Municipal M&E

The effectiveness of municipal monitoring and evaluation (M&E) systems is substantially constrained by the structural and operational weaknesses identified above. Ideally, an effective M&E framework should generate reliable evidence of programme impact, facilitate continuous programme improvement, promote equitable benefits across schools and communities, and ensure alignment with broader sustainability objectives. However, prevailing practices fall short of these expectations. Current approaches are characterised by an inability to quantify environmental outcomes, limited capacity to replicate successful

interventions, weak feedback mechanisms to inform policy development and strategic planning, and poor long-term sustainability of programmes. Consequently, municipal M&E effectiveness remains low, primarily due to the absence of institutionalised systems and robust evidence-based processes capable of supporting informed decision-making, accountability, and adaptive programme management.

4. Proposed Viable Framework for Municipal M&E

The diagram proposes a transformative monitoring and evaluation (M&E) model structured around five interrelated pillars designed to strengthen environmental education (EE) governance and impact. The first pillar, institutionalisation, emphasises the establishment of formal M&E policies, the creation of dedicated EE M&E structures, and the clear definition of roles, responsibilities, and implementation schedules. The second pillar, standardisation, focuses on the development of context-sensitive indicators, the promotion of district-wide reporting consistency, and the systematic tracking of knowledge acquisition, behavioural change, participation, and ecological impact. The third pillar, participation, underscores the meaningful engagement of schools, communities, non-governmental organisations, and local leaders to foster shared ownership, as well as strengthened communication and feedback mechanisms. The fourth pillar, capacity and resourcing, highlights the need for dedicated funding, targeted training for municipal officials and educators, and the provision of appropriate tools and infrastructure to support effective implementation. The fifth pillar, evidence-driven decision-making, advocates for the systematic use of data to improve programmes, scale successful interventions, and align initiatives with national and global sustainability goals. Collectively, the framework links M&E processes directly to sustainable living outcomes by promoting behavioural transformation, community empowerment, environmental stewardship, long-term ecological benefits, and the integration of environmental education into broader development planning processes.

6.8 CONCLUDING REMARKS

In conclusion, this study has shed light on the vital role that organised, contextually aware evaluation and monitoring play in raising the efficacy of environmental education for sustainable living. The study provides a localised solution to the problems in the Vhembe District as well as an approach that may be applied in different contexts by identifying systemic inadequacies and putting forth a workable framework. It is not only opportune, but also crucial to include strong M&E systems in education policy and practice as environmental and sustainability issues continue to grow.

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APPENDICES

Appendix A: Ethical Clearance Certificate

UNISA university of south africa

UNISA COLLEGE OF EDUCATION ETHICS REVIEW COMMITTEE

Date: 12 July 2024

Ref: **2024/07/12/00000084/02/RB**
Name: **Mr. Vhulahani Patrick Tshivhase**
Student No.: **7638876**

Decision: Ethics Approval form

Dear **Mr. Vhulahani Patrick Tshivhase**

Researcher(s): Name: **Mr. Vhulahani Patrick Tshivhase**
E-mail address: 7638876@mylife.unisa.ac.za
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Supervisor(s): Name: **Prof. AS Mawela**
E-mail address: mawelas@unisa.ac.za
Telephone: **0124294381/0764132156**

Title of research: Monitoring and Evaluation of Schools and Communities' Environmental Education Projects for Sustainable Living in Vhembe District South Africa

Qualification: PhD Environmental Education Curriculum

Thank you for the application for research ethics clearance by the UNISA College of Education Ethics Review Committee for the above-mentioned research. Ethics approval is granted for the period **2024/07/12** to **2029/07/12**.

*The **write risk level** application was reviewed by the Ethics Review Committee on **12 July 2024** in compliance with the UNISA Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.
2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

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3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the UNISA College of Education Ethics Review Committee.
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
8. No field work activities may continue after the expiry date **2029/07/12.** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number **2024/07/12/0000084/02/RB** *should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Kind regards,

Prof RB Monyai
Acting Head: CEDU Research
monyarb@unisa.ac.za

Prof Mpine Makoe
Executive Dean: CEDU
gakisme@unisa.ac.za

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

Appendix B: Limpopo Provincial Research Ethics Clearance

CONFIDENTIAL

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE PREMIER

Office of the Premier

Research and Development Directorate

Private Bag X9483, Polokwane, 0700, South Africa

Tel: (015) 230 9910, Email: mokobij@premier.limpopo.gov.za

LIMPOPO PROVINCIAL RESEARCH ETHICS

COMMITTEE CLEARANCE CERTIFICATE

REVIEW DATE: 18 SEPTEMBER 2024

PROJECT NUMBER: LPREC/106/2024: PG

SUBJECT: MONITORING AND EVALUATION OF SCHOOLS AND COMMUNITIES' ENVIRONMENTAL EDUCATION PROJECTS FOR SUSTAINABLE LIVING IN VHEMBE DISTRICT SOUTH AFRICA

RESEARCHER: TSHIVHASE VP

Chairperson: Prof I Swarts

Swarts

Chairperson: Limpopo Provincial Research Ethics Committee

The Limpopo Provincial Research Ethics Committee (LPREC) is registered with National Health Research Council (NHREC) Registration Number **REC-111513-038.**

Note:

i. **This study is categorized as a Low Risk Level in accordance with risk level descriptors as enshrined in LPREC Standard Operating Procedures (SOPs)**

ii. **Should there be any amendment to the approved research proposal; the researcher(s) must re-submit the proposal to the ethics committee for review prior data collection.**

iii. **The researcher(s) must provide annual reporting to the committee as well as the relevant department and also provide the department with the final report/thesis.**

iv. **The researchers will be required to make presentations of the study findings and recommendations at the Provincial Research Conference/Departmental Research Day.**

v. **The ethical clearance certificate is valid for 12 months. Should the need to extend the period for data collection arise then the researcher should renew the certificate through LPREC secretariat. PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRIES.**

Appendix C: Request for Permission to Conduct Research

Request for permission to conduct research at Department of Education Mvudi Circuit

Title of the title of your research: Monitoring and evaluation of schools and communities' environmental education programmes for sustainable living in Vhembe District, South Africa.

Date: 29 November 2024

The Circuit Manager
Department of Education Vhembe East District
Mvudi Circuit

I, Tshivhase Vhulahani Patrick, am doing research under supervision of Prof Mawela AS (a professor, in the Department of Curriculum and Instructional Studies) towards a PhD (D Ed) at the University of South Africa. We have no funding for this study.

We are requesting permission to conduct a study entitled: Monitoring and evaluation of schools and communities' environmental education programmes for sustainable living in Vhembe District, South Africa.

Five schools from your circuit will be selected to participate in this study.

The study will entail completion of a questionnaire by learners and teachers from selected schools.

No Potential risks have been identified.

There will be no reimbursement or any incentives for participation in the research.

The feedback procedure will entail a copy of the thesis/research results that will give to the Circuit Office.

Attached please find copies of Ethical Clearence, Proposal approval and permission letter from the province.

Yours sincerely

Tshivhase Vhulahani Patrick (082 785 1350)

Researcher.

P.O Box 2188
Thohoyandou
0950
18 March 2024

The Municipal Manager
Vhembe District Municipality
Thohoyandou
0950

Dear Sir

APPLICATION: REQUEST FOR PERMISSION TO CONDUCT AN EDUCATIONAL RESEARCH

My name is Vhulahani Patrick Tshivhase and I am doing research under the supervision of **Prof. Ailwei Solomon Mawela**, a lecturer in the Department of Curriculum and Instructional Studies towards a PhD at the University of South Africa. We have no funding to sponsor this study. We are inviting you to participate in a study entitled "Monitoring and evaluation of schools and communities' environmental education programmes for sustainable living in Vhembe District Municipality, Limpopo South Africa.".

The purpose of this study is to collect information regarding VDM officials' views on the Monitoring and evaluation of schools and communities' environmental education programmes for sustainable living. From the municipality ten (n=10) officials will be purposefully sampled to participate in this study. Participants are expected to respond to the face-face semi-structured interview questions, which will be followed by non-participatory observation, and end with documents analysis. For the purpose of gathering information, a tape recorder will be used to record the researcher and participant conversation, which will later be transcribed.

Participating in this study is voluntary and participants are under no obligation to consent to participation. Participants will be given the consent form to read and sign before participating. They are at liberty to withdraw at any time and without giving a reason. There are no attached promises or benefits for the participants and participation in the study is voluntary. The researcher does not anticipate any harm or negative consequences for you as a participant in this study. However, if any unforeseen harm or negative consequences may take place, such, will be reported to the relevant stakeholders such as UNISA Ethics Committee and the circuits through a written report.

Participants names will not be recorded anywhere, and no one will be able to connect participants to the answers you give. Answers will be given a code number or a pseudonym, and participants will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings. A report of the study may also be submitted for publication, but individual participants will not be identifiable in such a report.

Hard copies of participants' answers will be stored by the researcher for a period of five years in a locked cupboard/filing cabinet at the supervisor office for future research or academic purposes; electronic information will be stored on a password-protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. If necessary, hard

copies will be shredded and/or electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programmeme.

This study has received written approval from the Research Ethics Review Committee of the CEDU research ethics, Unisa. A copy of the approval letter can be obtained from the researcher if you so wish. If you would like to be informed of the final research findings, please contact Vhulahani Patrick Tshivhase at 082 785 1350 or email vhulahanipatrick@gmail.com. The findings are accessible for three years. Should you have concerns about the way in which the research has been conducted, you may contact Dr. AS Mawela at 0124294381 or email: mawelas@unisa.ac.za

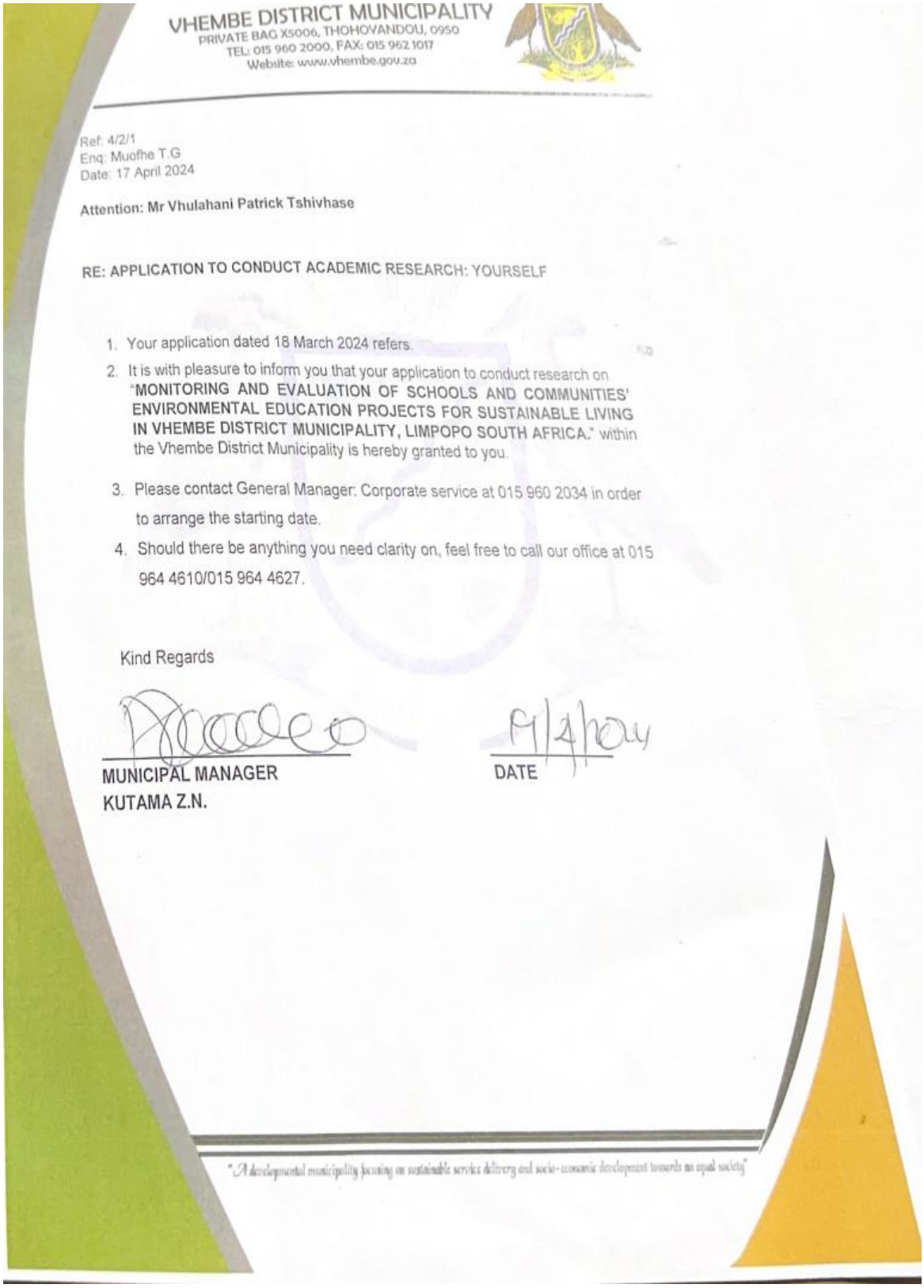
Hoping that you find this in order.

Yours faithfully

Tshivhase V.P

…… ……..
Signature Date

Appendix D: Vhembe District Municipal Permission Letter



VHEMBE DISTRICT MUNICIPALITY
PRIVATE BAG X5006, THOHOYANDOU, 0950
TEL: 015 960 2000, FAX: 015 962 1017
Website: www.vhembe.gov.za

Ref: 4/2/1
Enq: Muofhe T.G
Date: 17 April 2024

Attention: Mr Vhulahani Patrick Tshivhase

RE: APPLICATION TO CONDUCT ACADEMIC RESEARCH: YOURSELF

1. Your application dated 18 March 2024 refers.
2. It is with pleasure to inform you that your application to conduct research on "MONITORING AND EVALUATION OF SCHOOLS AND COMMUNITIES' ENVIRONMENTAL EDUCATION PROJECTS FOR SUSTAINABLE LIVING IN VHEMBE DISTRICT MUNICIPALITY, LIMPOPO SOUTH AFRICA." within the Vhembe District Municipality is hereby granted to you.
3. Please contact General Manager: Corporate service at 015 960 2034 in order to arrange the starting date.
4. Should there be anything you need clarity on, feel free to call our office at 015 964 4610/015 964 4627.

Kind Regards

MUNICIPAL MANAGER
KUTAMA Z.N.

DATE 11/4/2024

"A developmental municipality focusing on sustainable service delivery and socio-economic development towards an equal society"

Appendix E: Consent Form

A LETTER REQUESTING PARENTAL CONSENT FOR MINORS TO PARTICIPATE IN A RESEARCH PROGRAMMES

Dear Parent

Your (son/daughter/child) is invited to participate in a study entitled: Monitoring and evaluation of schools and communities' environmental education programmes for sustainable living in Vhembe District, South Africa.

I am undertaking this study as part of my doctoral research at the University of South Africa. The purpose of the study is an assessment of viable municipal monitoring and evaluation of environmental education programmes in schools and communities in promoting sustainable living in Vhembe District Municipality, Limpopo and the possible benefits of the study are the improvement of a viable framework for municipal monitoring and evaluation of environmental education programmes in schools and communities. I am asking permission to include your child in this study because he/she is involved in environmental education. I expect to have other children participating in the study.

If you allow your child to participate, I shall request him/her to:

- Complete a questionnaire.

Any information that is obtained in connection with this study and can be identified with your child will remain confidential and will only be disclosed with your permission. His/her responses will not be linked to his/her name or your name or the school's name in any written or verbal report based on this study. Such a report will be used for research purposes only.

There are no foreseeable risks to your child by participating in the study. Your child will receive no direct benefit from participating in the study; however, there are possible benefits to education. Neither your child nor you will receive any type of payment for participating in this study.

Your child's participation in this study is voluntary. Your child may decline to participate or withdraw from participation at any time. Withdrawal or refusal to participate will not affect him/her in any way. Similarly, you can agree to allow your child to be in the study now and change your mind later without any penalty.

The study will take place during regular classroom activities with the prior approval of the school and your child's teacher.

In addition to your permission, your child must agree to participate in the study and you and your child will also be asked to sign the assent form which accompanies this letter. If your child does not wish to participate in the study, he or she will not be included and there will be no penalty. The information gathered from the study and your child's participation in the study will be stored securely on a password locked computer in my locked office for five years after the study. Thereafter, records will be erased.

There will be no reimbursement or any incentives for participation in the research.
If you have questions about this study, please ask me or my study supervisor, Prof Mawela A.S Department of Curriculum and Instructional Studies, College of Education, University of South Africa. My contact number is 0827851350 and my e-mail is vhulahanipatrick@gmail.com. The e-mail of my supervisor is mawelaas@unisa.ac.za. Permission for the study has already been given by Department of Education Limpopo and the Ethics Committee of the College of Education, UNISA.

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow him or her to participate in the study. You may keep a copy of this letter.

Name of child:

Sincerely

_____	_____	_____
Parent/guardian's name (print)	Parent/guardian's signature:	Date:
Tshivhase V P		23.09.2024
Researcher's name (print)	Researcher's signature	Date:

Appendix F: Interview Schedule Municipal officials

- **The state of Vhembe district municipal monitoring and evaluation of EE programme in schools and communities.**

1. What is the current status of the Vhembe District municipality monitoring and evaluation of EE programme?.

- **Challenges municipality face with regards to monitoring and evaluating programmes related to environmental health in both schools as well as community.**

2. What are challenges facing Vhembe District Municipality regards to monitoring and evaluating programmes related to environmental health in both schools as well as community?.

- **Effective of municipal monitoring and evaluation of EE programmes in schools and communities.**

3. What are the benefits of municipal monitoring and evaluation of EE programmes in schools and communities?
4. Do you think the monitoring and evaluation provided for school EE programmes is effective?

- **The viable framework suitable for municipal monitoring and evaluation of EE programmes in schools and communities.**

5. What measures do you think the municipality should put in place to ensure viable framework suitable for municipal monitoring and evaluation of EE programmes in schools and communities?
6. In what ways do think the municipality should do monitoring and evaluation of EE programmes in order to ensure the viable framework?

Appendix G: Teacher Questionnaire

TEACHER QUESTIONNAIRE

Instructions: Insert a tick [□] or indicate your responses in the appropriate spaces (…) provided

	Section A: Background Information
1	Indicate your gender 1 [ ] Male 2 [ ] Female
2	Age **1 [ ]** 20 - 24 years **2 [ ]** 25 - 29 years **3 [ ]** 30 - 34 years **4 [ ]** 35- 39 years **5 [ ]** 40 – 44 years **6 [ ]** 45 – 49 years **7 [ ]** 50 and above
3	What is the name of the school you work for ……
	Section B: State of EE programmes
4	Do you have any EE programme in your curriculum? [ ] Yes [ ] No
5	For how long as this programmeme been on offer? 1 [ ] Less than 5 years 2 [ ] Between 5 and 10 years 3 [ ] Between 10 and 15 years 4 [ ] Over 15 years
6	How would you rate the municipal monitoring and evaluation for EE programmes in school 1 [ ] Very Good 2 [ ] Good 3 [ ] Fair 4 [ ] Poor 5 [ ] Very Poor
	Section C: Challenges and Benefits of M&E of EE programme in schools
7	Do you receive any support from Vhembe District municipality regarding the implementation of EE programmes? **1 [ ] YES 2 [ ] NO**
8	Would you say Vhembe District Municipality is doing enough in supporting schools in the implementation of EE programmes? **1 [ ] YES 2 [ ] NO**

9	What can you say are the ways through which your school can benefit from collaborating with the Vhembe District municipality to promote the implementation EE programmes? …… ……
10	What can say have been the challenges for school in partnership with municipality in promoting and implementing the EE programmes? 1 [ ] Financial constraints 2 [ ] Lack of training 3 [ ] Lack of community involvement 4 [ ] Inadequate policy 5 [ ] Proper curriculum integration 6 [ ] Lack of resources
11	Please indicate whether the environmental education programme provided has been effective? **1 [ ] YES 2 [ ] NO**
	Section D: Viable framework suitable for municipal monitoring and evaluation of EE programmes
12	How would you rate municipality municipal monitoring and evaluation of EE programmes? 1 [ ] Very Good 2 [ ] Good 3 [ ] Fair 4 [ ] Poor 5 [ ] Very Poor
12	How best do you think the municipality can support schools in the implementation of EE programmes? …… ……
13	What other mechanisms do you think the municipality should put in place to promote Viable framework suitable for municipal monitoring and evaluation of EE programmes? …… …… ……

END OF QUESTIONNAIRE

THANK YOU FOR YOUR TIME

Appendix H: Learner Questionnaire

LEARNER QUESTIONNAIRE

Instructions: Insert a tick [ ] or indicate your responses in the appropriate spaces (…) provided

	Section A: Background Information
1	Indicate your gender 1 [ ] Male 2 [ ] Female
2	Age 1 [ ] 13 -15 years 2 [ ] 16 -20 years 3 [ ] 21 years and above
3	Name of the university where you are a student?…….....
4	In which grade of study are you? 1 [ ] First Year 2 [ ] Second Year 3 [ ] Third Year 4 [ ] Fourth Year 5 [ ] Fifth Year
	Section B: Relevance of EE programmes
5	Which of the following do you think has influenced your attitude towards the natural environment? 1 [ ] Tree-planting campaign 2 [ ] School-led cleanup 3 [ ] Community clean-up campaign 4 [ ] Environmental degradation 5 [ ] Engaging in recycling 6 [ ] Conducting a science programmes 7 [ ] Environment education campaign
6	How worried are you with the environmental issues and problems? 1 [ ] Never worried 2 [ ] Sometimes worried 3 [ ] Worried 4 [ ] Very worried
7	Please indicate the extent to which attending EE related classes has contributed on your understanding of the EE? 1 [ ] Very poor 2 [ ] Poor

	3 [ ] Average 4 [ ] Good 5 [ ] Excellent
	Section C: Benefits of Environmental Education Programmes
7	What can you say are the benefits of implementing the EE programmes in your school? 1 [ ] Increase environmental awareness 2 [ ] Increase sense of responsibility 3 [ ] Understand human impact 4 [ ] Community strengthening 5 [ ] Connect nature 6 [ ] Knowledge of ecosystems
8	Do you believe that Environmental Education Augmenting the addressing of environmental issues? **1 [ ] YES 2 [ ] NO**
9	Do you think attending EE related classes has contributed significantly to improving the learners' understanding of the EE

END OF QUESTIONNAIRE

THANK YOU FOR YOUR TIME

Appendix I: Proof of Editing

Cilla Dowse Editing

Dr Cilla Dowse
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Cell: +27 84 900 7837
(on WhatsApp)

For editing of Master's Dissertations
and
Doctoral Theses

This letter serves to confirm that editing and proofreading were done for:

VHULAHANI PATRICK TSHIVHASE

DOCTOR EDUCATIONIS
Environmental Education Curriculum
College of Education
University of South Africa

ASSESSMENT OF VIABLE MUNICIPAL MONITORING AND EVALUATION OF ENVIRONMENTAL EDUCATION IN SCHOOLS AND COMMUNITIES IN PROMOTING SUSTAINABLE LIVING IN VHEMBE DISTRICT MUNICIPALITY, LIMPOPO, SOUTH AFRICA

Cilla Dowse
14 October 2025

Cilla Dowse
PhD in Assessment and Quality Assurance in Education and Training: University of Pretoria 2014
Basic Editing and Proofreading: McGillivray Linnegar Associates 2008
Programme on Editing Principles and Practices: University of Pretoria 2009
Editing and Proofreading for Academic Purposes: McGillivray Linnegar Associates 2021
Professional Editors' Guild Associate Member,
DOW003

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Appendix J: Turnitin Report

Similarity Report

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Thesis Final.docx

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VHULAHANI PATRICK TSHIVHASE

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353000 Characters

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