The Success and Value of Non-Formal Education for Sustainable Development: The Case of the Children in the Wilderness Eco-Club Programme in the Zambezi Region, Southern Africa.

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Abstract

Education for sustainable development (ESD) has emerged strongly in recent years to become a key mechanism for moving towards a more sustainable future. The aim of this study is to gauge the success and value of non-formal ESD using a case study approach. Children in the Wilderness (CITW), a subsidiary organisation of ecotourism operator Wilderness Safaris, offers an extracurricular ESD programme for primary school children, and their Zambezi Region operation was selected as the case study site. A qualitative research approach was taken for this study, employing data collection methods such as interviews, focus groups, observation, and the examination of national policy documents and the CITW eco-club curriculum.

The CITW eco-club programme responds to UNESCO's (2005) characteristics for ESD, particularly regarding the establishment of relationships with the wider community, and a multi-method, learner-centred approach to teaching. While the national governments in Zambia and Zimbabwe aim to respond more strongly to UNESCO's characteristics, they are constrained by limited human and financial capital resources. The eco-club programme, however, complements the formal sector by providing teacher training and resources, demonstrating the value of the programme in providing students with a more enriching learning experience.

This study concludes that the non-formal education sector provides significant support to the formal education system, leading to improved vertical integration between international guidelines and implementation at a local level. The eco-club programme enables CITW to achieve its aim and vision by focusing on prevalent issues such as poverty, deforestation, poaching, and pollution. While the scope of the research and the limited time spent in the field did not allow for a detailed examination of the eco-club programme's influence on pro-environmental behaviour, it became clear that some pro-environmental behaviour has occurred as a result of the programme.

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List of Abbreviations

AWF   African Wildlife Foundation

CITW   Children in the Wilderness

DESD   Decade of Education for Sustainable Development

EE   Environmental education

EfS   Education for sustainability

ESD   Education for sustainable development

MUHEC   Massey University Human Ethics Committee

SDGs   Sustainable Development Goals

UNCED   United Nations Conference on Environment and Development

UNESCO   United Nations Educational, Scientific and Cultural Organization

WCED   World Commission on Environment and Development

WWT   Wilderness Wildlife Trust

ZECF   Zambia Education Curriculum Framework

Chapter 1: Introduction

1.1 PROBLEM STATEMENT

In the words of Baba Dioum: "In the end, we will conserve only what we love; we will love only what we understand, and we will understand only what we are taught". This signifies the importance of education in ensuring the management and conservation of natural resources for future generations. While Baba Dioum's statement conveys understanding only through teaching, understanding can also arise from learning by doing and direct experience through problem-based learning (Blumenfeld et al., 1991). Education for sustainable development (ESD) has emerged strongly in recent years as a key mechanism for moving towards a more sustainable future, as it is "fundamentally about values, with respect at the centre: respect for others, including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit" (UNESCO, 2005, p. 5).

While there has been a growing body of research on ESD in recent years, gaps have been identified in three areas. These include education that "occurs outside the formal system, but through other organized learning settings" (the non-formal sector) (Buckler & Creech, 2014, p. 20), developing contexts, and the involvement of primary school children. Research into non-formal education programmes has shown the potential contribution that the non-formal sector can make to the formal education system (Brennan, 1997; Mahruf, Shohel, & Howes, 2011). While the existing literature is dominated by studies that focus on the formal education sector despite encouragement of further research into non-formal education (Buckler & Creech, 2014), much of the existing ESD research focuses on case studies in developed countries. However, UNESCO (2005) aims to further ESD in developed and developing contexts, raising the question as to how ESD is unfolding in developing countries, particularly those in Africa where the uptake of ESD in the formal sector has been slow (Buckler & Creech, 2014). While ESD literature regarding primary school children is growing, there are few studies that include children in a developing context, where day to day challenges differ substantially from the developed world. As children are the future custodians of the planet, ensuring that they are active participants in the sustainable development movement is critical (UNCED, 1992, Chapter 25, para. 12). This thesis intends to contribute to the existing literature on non-formal ESD and address these gaps by selecting a case study of a non-formal primary school ESD programme in a developing context.

1.2 IMPORTANCE OF RESEARCH

The prevalence of education in international conventions highlights the relevance of education research, particularly with regard to sustainable development. The Belgrade Charter, Tbilisi Declaration, Brundtland Report, and Agenda 21 all highlight the importance of environmental education (EE). For example, the Brundtland Report states that NGOs and educational institutions have a vital role "in putting the world onto sustainable development paths" (WCED, 1987, p. xiv). A common theme running throughout the reports is the emphasis on implementing EE at all levels of government, for all ages, in the formal and non-formal sector, and in developed and developing countries (UNCED, 1992; UNESCO, 1975; 1977; WCED, 1987). By implementing EE in this way, the widest range of society can be reached, providing people with the knowledge, values and skills needed to make better decisions regarding the environment. Environmental Education created a link between education and sustainable development, leading to the ESD movement. The *United Nations Decade of Education for Sustainable Development* (DESD) emphasised the importance of education for achieving sustainable development above all else, describing it as the "best chance of promoting and rooting the values and behaviours which sustainable development implies" (UNESCO, 2005, p. 16).

The Sustainable Development Goals (SDGs), created by the United Nations after the Millennium Development Goals, were enacted in 2016. Over the next 15 years, the SDGs aim to help countries eradicate poverty, fight inequality, and tackle climate change (United Nations, 2017c). "Quality education" is one of the 17 SDGs, with the goal being to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (United Nations, 2017a, para. 1). This makes education significant, as not only will the provision of quality education help achieve this goal, but ESD could enable progress towards other SDGs such as "no poverty", "reduced inequalities", "responsible consumption and production", "climate action", "life below water", and "life on land" (United Nations, 2017b). As the potential impacts of education are far-reaching and could lead to more sustainable outcomes, it is a highly relevant field of study.

1.3 RESEARCH AIM AND OBJECTIVES

This study aims to gauge the success and value of non-formal ESD using a case study of the Zambezi Region Children in the Wilderness (CITW) eco-club programme in southern Africa.

To achieve this aim, three objectives have been identified:

1. To determine the extent to which the eco-club programme responds to international guidelines for ESD.
2. To determine the extent to which national education policy responds to international guidelines for ESD, and the extent to which the eco-club programme responds to national education policy.
3. To determine whether CITW is achieving its aim and vision through the eco-club programme.

1.4 RESEARCH APPROACH

A case study approach was selected, as this enabled a detailed understanding of a non-formal ESD programme that could be used to achieve the research aim. By keeping the aim broad, this study will be largely replicable and transferable, as UNESCO's (2005) characteristics for ESD guide the research. A component of this study which would need to be adapted for future research is Objective 3. As CITW has its own aim and vision that it is seeking to achieve, future studies could either use the aim of the organisation that facilitates the ESD programme being studied, or omit this objective if it is irrelevant. To gain a comprehensive understanding of respondents' experiences of the CITW eco-club programme, a qualitative approach was taken for this study, and a range of data collection methods was used to achieve the objectives. As CITW Zambezi includes Zambia and Zimbabwe, eight eco-clubs across both countries were included in this study. To enable a range of views from groups directly and indirectly involved with the eco-club programme, interviews were undertaken with the CITW programme coordinators, eco-mentors, and parents, and focus groups were undertaken with eco-club members from each eco-club. Primary data supported the secondary data obtained through national policy documents, CITW reports, and the eco-club curriculum. This multi-method approach enabled a robust study as the data could be triangulated across the eco-clubs and participant groups. The framing of questions for the participants was guided by UNESCO's characteristics for ESD, as well as CITW's aim and vision. To augment the primary research

approach, a photo-diary technique was also adopted to assist with an *ex post* evaluation of the research journey (see Appendix A). In addition to acting as a visual *aide memoire*, the photo-diary offers greater context and visualisation for the reader by providing an overview of the fieldwork process and including more images of the schools and villages where the eco-clubs are facilitated.

1.5 KEY ASSUMPTIONS

Determining the success of an ESD programme is a subjective and relatively ambiguous task, as success can be defined in various ways. UNESCO leads the global movement towards ESD, having published many reports on the concept, particularly since the establishment of the DESD. This research therefore assumes that a nation or organisation's response to UNESCO's (2005) characteristics for ESD will enable a programme to be successful. However, this research uses a case study of a non-formal ESD programme that was not modelled on UNESCO's characteristics. Solely using these characteristics to analyse the programme's success would be neither fair nor robust, as CITW has its own aim and vision that it is seeking to achieve. Therefore, in addition to examining vertical policy integration, this research also examines the extent to which the eco-club programme responds to CITW's aim and vision. To determine the value of the programme, the inclusion of the national education policy for each country is important. This will enable an understanding of whether, and to what extent, non-formal ESD complements or provides support for the formal education system. It is assumed that if the non-formal sector can provide a learning experience and outcomes that the formal sector cannot, the value of non-formal ESD will be demonstrated.

1.6 THESIS STRUCTURE

This thesis comprises seven chapters. Following the introduction, Chapter 2 provides information on the context of the study, including the location of the fieldwork. A brief overview of Wilderness Safaris is provided before outlining the history of CITW and the eco-club programme's establishment.

Chapter 3 discusses the relevant literature around ESD. A detailed literature review begins by briefly discussing the evolution of ESD. Previous ESD studies conducted in non-formal contexts are then examined to understand what other authors have found, and how they undertook their research. Policy integration is a major theme within this study. A detailed exploration into this concept in general, and regarding ESD specifically, is undertaken to determine common findings

and identify any gaps in the existing literature that could be addressed through this study. The success of ESD in encouraging pro-environmental behaviour is also briefly examined before a detailed explanation of the criteria used to analyse the CITW eco-club programme is provided.

The research methodology is discussed in Chapter 4. The research design, including data collection methods, the research timeframe, case study approach, and sample selection is explained. The data collection process is also described. This outlines some of the intentions compared with what eventuated during the fieldwork, before explaining the data analysis process that was undertaken. Potential biases and how these were avoided, as well as the limitations and ethical considerations of the study, are also addressed in this chapter.

Chapter 5 presents the research findings. Here, the extent to which national education policy in each country and the eco-club programme responds to UNESCO's (2005) characteristics for ESD is described. The degree to which CITW is achieving its aim and vision is also outlined. A critical discussion of the research findings in relation to those from the literature review is presented in Chapter 6. Chapter 7 draws conclusions from the research and provides recommendations to strengthen the eco-club programme. Recommendations for future research are also suggested.

Chapter 2: Background

2.1 INTRODUCTION

The previous chapter highlighted a need for further research on non-formal ESD in a developing context. Children in the Wilderness is a non-profit organisation supported by Wilderness Safaris and has established an extracurricular ESD programme for upper primary students. The CITW eco-club programme in the Zambezi Region was chosen as a case study as it provides the attributes needed to achieve the research aim: an ESD programme facilitated in a non-formal capacity. Located in a developing context, and focusing on primary level children, the CITW eco-club programme also offers an opportunity to contribute knowledge to gaps in the existing ESD literature (further explained in Chapter 3), making it an ideal case study. This chapter provides context for the research. A brief but critical overview of Wilderness Safaris highlights the need for community development to help with conservation. An overview of CITW, including its establishment and programme structure, is then provided before the case study sites in Zambia and Zimbabwe are described.

2.2 WILDERNESS SAFARIS

Wilderness Safaris is a prominent eco-tourism operator with 40 camps across eight African countries. Highly aware of the importance of the natural environment, the company's vision is "to conserve and restore Africa's wilderness and wildlife by creating life-changing journeys and inspiring positive action" (Wilderness Holdings Limited, 2017, p. 8). To achieve this vision, the company is based on a blueprint called 'The 4Cs'. These include commerce, community, culture, and conservation, which were adopted from the Zeitz Foundation's (2017) Long Run Initiative. The 4Cs enable Wilderness Safaris to contribute and provide meaningful benefits to the local communities and wildlife in the areas in which the company works. This supports Gilbert's (2003) notion that a "sustainable approach to tourist development is one which respects the integrity of environments in all their aspects, promotes human well-being and environmental quality, and upholds values of rights, equity, and conservation" (p. 81). Furthermore, several of the SDGs are reflected in the 4Cs, emphasising the company's commitment to sustainable development through tourism. As 2017 was the International Year of Sustainable Tourism Development (UNWTO, 2016), there were five key areas that the International Year aimed to focus on. Wilderness Safaris explicitly conveys the links between the 4Cs and these areas:

1. Inclusive and sustainable economic growth (Commerce)

2. Social inclusiveness, employment and poverty reduction (Community)

3. Resource efficiency, environmental protection and climate change (Conservation)

4. Cultural values, diversity and heritage (Culture)

5. Mutual understanding, peace and security (Culture, Conservation and Community)

(UNWTO, 2016; Wilderness Holdings Limited, 2017, p. 12).

Wilderness Safaris lodges are often located in remote areas where surrounding communities are affected by poverty, unemployment, and a dependency on natural resources (Snyman, 2012). For communities situated on the periphery of national parks, there are two predominant opportunity costs of tourism and conservation. These include the inability to utilise the land and resources for livelihood purposes such as agriculture, and human-wildlife conflict (issues with wild animals that roam from neighbouring wildlife areas) (Snyman, 2012; Wilderness Holdings Limited, 2017). Allendorf et al. (2006), Mbaiwa and Stronza (2011), and Snyman (2012) find that local communities often have negative views of conservation and tourism, as they consider the opportunity costs of these activities as barriers to economic growth. Consequently, these authors also find that the perceptions of local communities towards conservation and tourism greatly increase if direct benefits are derived from tourism. Wilderness Safaris addresses this through contractual relationships with communities, such as joint business ventures, contracts with local suppliers, employment of local people, and skills training (Poultney & Spenceley, 2001; Wilderness Holdings Limited, 2017). In addition to these formal relationships, informal relationships are also established, and include CITW and community development initiatives among other projects (Wilderness Holdings Limited, 2017). To ensure sustainability of the business, but also safeguard the natural environments and wildlife in these remote areas, Wilderness Safaris establishes and maintains positive relationships with surrounding communities so that benefits arise for all stakeholders. Furthermore, Wearing and Neil (2009) state that ecotourism "is as much about environmental education, the fostering of attitudes and behavior that is conducive to maintaining natural environments and empowerment of host communities as it is about fostering a sustainable industry" (p. 214). In this way, the link between ecotourism and education is highlighted through the establishment of CITW, outlined in the following section.

2.3 CHILDREN IN THE WILDERNESS

Children in the Wilderness is a non-profit organisation, supported by Wilderness Safaris, that focuses on ESD and life skills (Wilderness Holdings Limited, 2017).   The organisation was conceptualised by the late actor Paul Newman, who visited Botswana in 2001.   Drawing inspiration from his own organisation, The Hole in the Wall Gang Camps, which facilitates camps for children with life-threatening illnesses, CITW was established in December 2001 (CITW, 2017a).   Since its establishment, CITW has expanded into a further five southern African countries: Malawi (2003), Namibia (2002), South Africa (2003), Zambia (2007), and Zimbabwe (2008) (WWT & CITW, 2016) as shown in Figure 2.1.
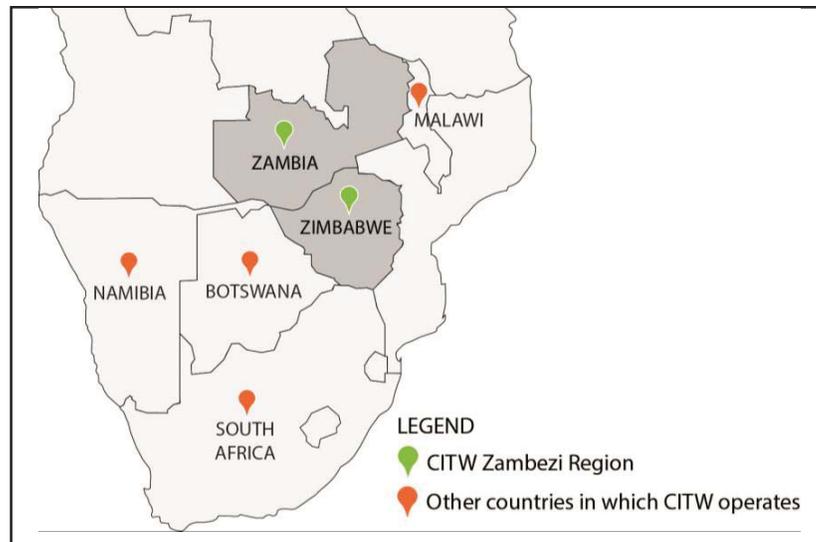
Figure 2.1 – Map of southern Africa showing the Zambezi Region, and the other countries in which CITW operates. Base map adapted from Google (2017b).

Having expanded into other countries in which Wilderness Safaris operates, each region has an independent Board responsible for the management of the CITW programme in that region. However, the South African CITW Board is an "over-arching" body that makes decisions for the organisation as a whole (CITW, 2017b, para. 2).   As a subsidiary of Wilderness Safaris, much of CITW's administrative and operational costs are covered by Wilderness Safaris and guests of the company.   The organisation has also partnered with various other global foundations such as Empowers Africa, Pack for a Purpose, and The Rosemary Pencil Foundation (CITW, 2017c), and has an extensive list of annual sponsors (WWT & CITW, 2018).   The organisation's annual fundraising event is the Nedbank Tour de Tuli, a 250-kilometre mountain bike challenge where

cyclists cross "specially arranged informal borders" between Botswana, South Africa, and Zimbabwe (WWT & CITW, 2018, p. 121).

Children in the Wilderness aims to "facilitate sustainable conservation through leadership development and education of rural children in Africa" (WWT & CITW, 2016, p. 51). In line with this aim, the vision of the organisation is "to inspire the children to care for the environment so that they can become the custodians of these areas in the future" (WWT & CITW, 2016, p. 52). UNESCO (2017) highlights a link between ESD and pro-environmental behaviour. As pro-environmental behaviour is well encapsulated within CITW's aim and vision (see Figure 2.2), the appropriateness and relevance of the organisation is emphasised.

AIM
To facilitate sustainable conservation through leadership development and education of rural children.

VISION
To inspire the children to care for the environment so that they can become the custodians of these areas in the future.
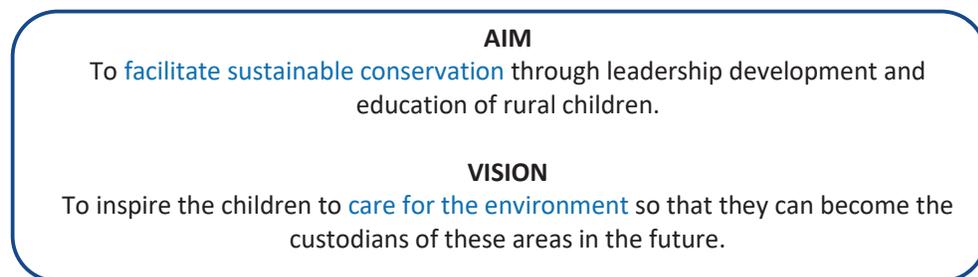
Figure 2.2 - Diagram showing how pro-environmental behaviour is encapsulated within CITW's aim and vision.

Structured into a five-tier programme as shown in Figure 2.3, CITW provides opportunities and support for local children from primary through to tertiary level. While there are numerous activities undertaken through the eco-clubs, the eco-garden is a central part of the programme and is referred to throughout Chapters 5 and 6. Each school that CITW partners with establishes an eco-garden where children learn more about agriculture and composting. Eco-club members tend to the garden throughout the year, planting a variety of crops that are then harvested and used as part of nutrition programmes at the schools. Any surplus produce is sold, allowing the schools to benefit economically.
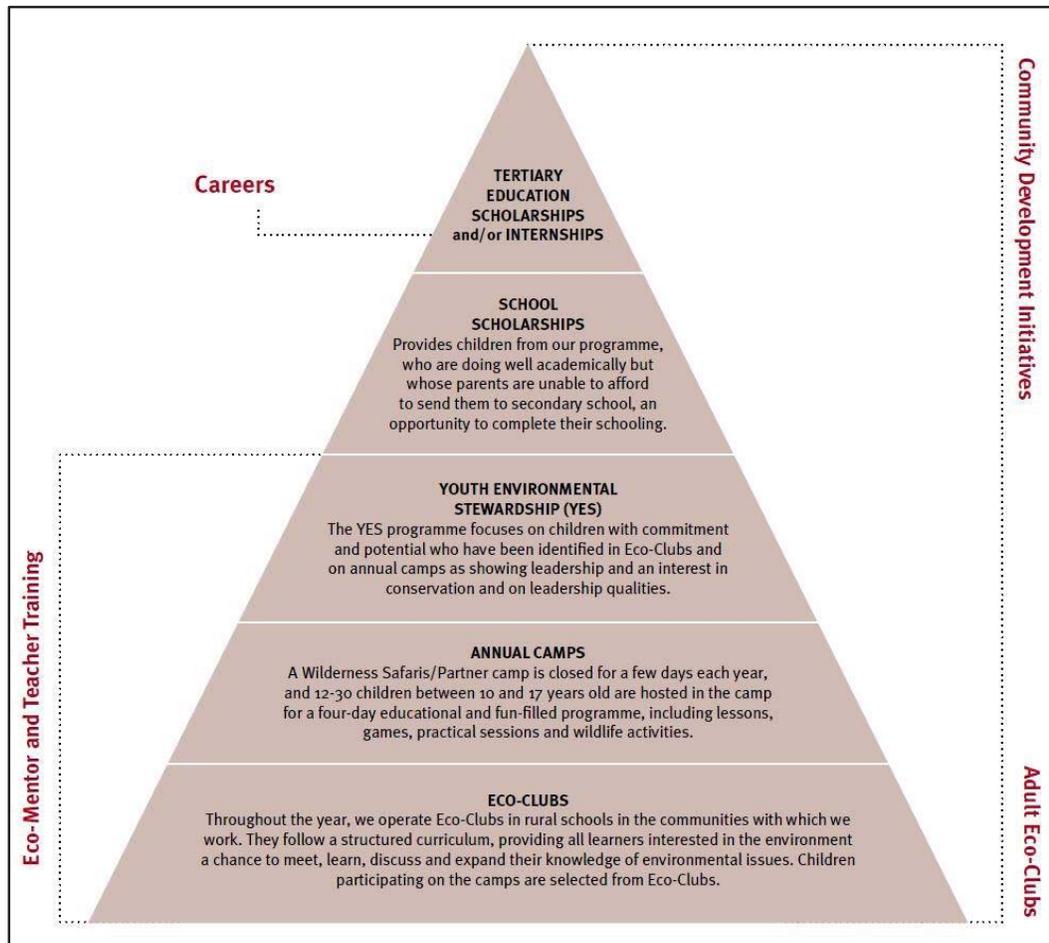
Figure 2.3 – Children in the Wilderness Programme Structure (WWT & CITW, 2018, p. 72).

The focus of this study is on the first tier of the programme: the eco-clubs. These are extracurricular groups that have been established at primary schools in communities in which Wilderness Safaris works, often near camps and on the periphery of national parks. The eco-club programme is a newer addition to CITW's programme structure to better achieve the organisation's aim. Previously, CITW hosted a selected number of children at annual camps for a few days each year. However, it became clear that the annual camps were limited in their capacity and capability to provide a comprehensive learning experience. The eco-club programme was therefore established to enable more children to take part and have regular lessons with richer subject content (CITW programme coordinator, personal communication, July 15, 2017). The eco-clubs take place at school and are facilitated by teachers who volunteer to become 'eco-mentors'. Economically incentivised by CITW, eco-mentors are trained by CITW and are provided with a curriculum and resources to run the eco-clubs. This tier of the

programme includes the largest number of children, with eco-club attendance ranging from 20-90 students depending on the country and school (WWT & CITW, 2016). To create a specialised and relevant curriculum, the eco-club is aimed at grade 6, but is open for grades 5-7 students to join (ages 10-13). This enables a longer relationship to be formed with the children involved, but also strikes a balance between targeting more than one age group and ensuring that the teaching material is relevant (CITW programme coordinator, personal communication, July 15, 2017). Grade 7 eco-club members still benefit from eco-club through exposure to relevant topics and demonstrate leadership to new members (Zimbabwean eco-mentor, personal communication, July 7, 2017). In the same way, grade 5 students who join get advanced exposure to topics that they will face in grade 6 but have the support of older students.

Children in the Wilderness also facilitates and supports community development initiatives. These include the creation of libraries, building of classrooms and teacher housing, installation of boreholes, and establishment of solar power. Adult eco-clubs have also been established in some of the schools where eco-clubs take place. These often consist of parents who have children in the eco-clubs and focus on income generating projects to address poverty. Facilitating community development initiatives simultaneously with eco-club establishment is often needed to ensure the sustainability and success of the eco-clubs, as the eco-clubs require schools, teachers, and a certain level of literacy as a starting point (CITW programme coordinator, personal communication, July 15, 2017). The integration between the eco-club programme, adult eco-clubs, and community initiatives is therefore crucial, and reflects the concept of the whole-school approach described by Buckler and Creech (2014). This is further discussed in Chapter 6.

2.4 CASE STUDY SITES

This study focuses on the CITW eco-clubs in the Zambezi Region. This includes Zambia and Zimbabwe, as these countries are managed within the Zambezi Region umbrella term (see Figure 2.1, p. 8). As the management and facilitation of the eco-club programme differs across each country that CITW works in, data collected from this study cannot be generalised for another region. To obtain accurate results and a comprehensive understanding of eco-clubs in other countries, further case specific studies will need to be conducted. Seventeen schools are supported by CITW Zambezi Region: seven in Zambia and 10 in Zimbabwe. Table 2.1 lists the schools where CITW facilitates eco-clubs in the Zambezi Region. The schools have been grouped according to 'sub-regions', as they are clustered in specific areas. Figure 2.4 corresponds with

Table 2.1 by showing the location of each sub-region. Although CITW has been working in these countries since 2007/8 with the annual camps, the eco-clubs were established in Zimbabwe in 2012, and in Zambia in 2013 (WWT & CITW, 2016). To gain a thorough understanding of the eco-club programme in this region, multiple eco-clubs were included in this study. These are highlighted in bold in Table 2.1.

Table 2.1 – The schools in the Zambezi Region supported by CITW, highlighting the schools included in this study.

	No. (Figure 2.4)	Sub-region	Name of school	Type of school
Zambia	1	Kafue	Kabulwebulwe Primary School	Rural
			Mapoko Primary School	Rural
	2	Livingstone	Holy Cross Primary School	Urban
			Nalituwe Primary School	Urban
			Simoonga Primary School	Rural
			Twabuka Primary School	Rural
	3	Kazungula	**Lupani Primary School**	Rural
Zimbabwe	4	Victoria Falls	Emfundweni Primary School	Rural
			Jabulani Primary School	Rural
	5	Hwange	Main Camp	Rural
			St Mary's Primary School	Rural
			Sinamatella	Rural
	6	Tsholotsho	**Jakalasi Primary School**	Rural
			Mpindo Primary School	Rural
			Ngamo Primary School	Rural
			Kapane Primary School	Rural
			Ziga Primary School	Rural
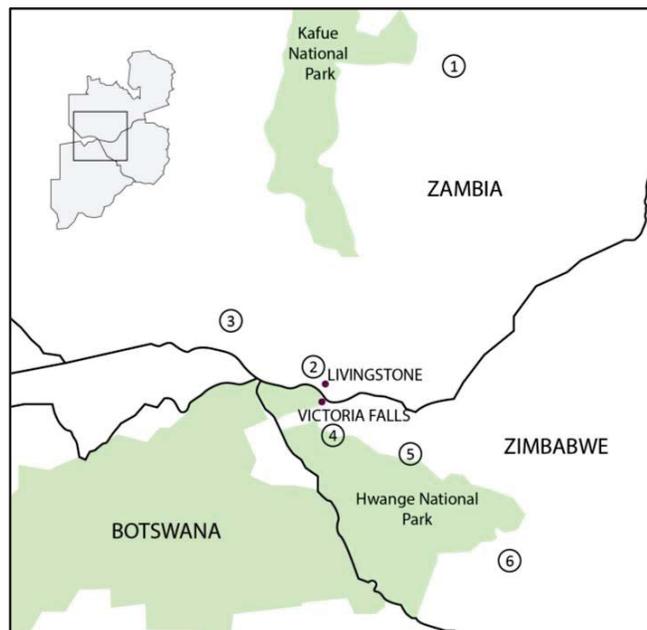
Figure 2.4 – Map showing the location of the 17 schools supported by CITW Zambezi. Base map adapted from Google (2018).

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2.4.1 ZAMBIA

Three of the seven schools supported by CITW were included in this study. As shown in Figure 2.5, all three schools are in the south of the country, nearest to Wilderness Safaris' Toka Leya Camp on the Zambezi River. Twabuka Primary School and Simoonga Primary School are located adjacent to Mosi-oa-Tunya National Park, approximately 14 kilometres from the town of Livingstone. Lupani Primary School is located 70 kilometres west of Livingstone, north of the town of Kazungula. The Zambian eco-clubs included in this study have 25-35 eco-club members (WWT & CITW, 2016).

Unlike Twabuka and Simoonga, which are fully supported by CITW, Lupani Primary School was built by the African Wildlife Foundation's (AWF) Classroom Africa initiative, and was opened in 2011. Prior to this re-build, classes were held in a run-down building that could accommodate only 50 pupils. Lupani Primary now has a classroom for each grade, a library, administration building, and teacher housing (AWF, n.d.). Children in the Wilderness partnered with AWF and established eco-clubs at Lupani Primary in 2014. An ongoing relationship means CITW facilitates the eco-clubs and community development initiatives on behalf of AWF.

Figure 2.5 – Map showing the location of the three CITW eco-clubs studied in Zambia, and Wilderness Safaris' Toka Leya Camp. Base aerial image source: Google Earth Pro (2017b).

2.4.2 ZIMBABWE

Five of the 10 schools supported by CITW were included in this study. These are Ngamo Primary, Ziga Primary, Kapane Primary, Jakalasi Primary, and Mpindo Primary. As shown in Figure 2.6, all five schools are located outside Hwange National Park in the Tsholotsho region, nearest to the Wilderness Safaris camps of Little Makalolo, Linkwasha Camp, and Davison's Camp. Each school is situated in a different village, at varying distances from the national park. The drive to Ngamo Primary from Linkwasha Camp, for example, took approximately one hour, while the drive to Mpindo and Jakalasi Primaries took more than 2.5 hours. The Zimbabwean eco-clubs included in this study have 24-30 eco-club members (WWT & CITW, 2016).

The location of the Zimbabwe schools has a significant influence on their resources. Ngamo Primary, for example, is the closest to Hwange National Park. Although being more susceptible to human-wildlife conflict, this community receives the most visits from Wilderness Safaris guests, benefitting economically from curio sales. Furthermore, many of the staff employed at Wilderness Safaris camps are from Ngamo and Ziga, which results in these villages benefiting directly from tourism. The further away and more isolated the villages are, the less they benefit directly from tourism. Mpindo, for example, is significantly isolated (off the main road as opposed to Kapane and Jakalasi), and also faces human-wildlife conflict. Aside from situational constraints, each of these schools has benefited significantly from CITW. In addition to the eco-club programme, community initiatives have provided classrooms and libraries that were not there before.
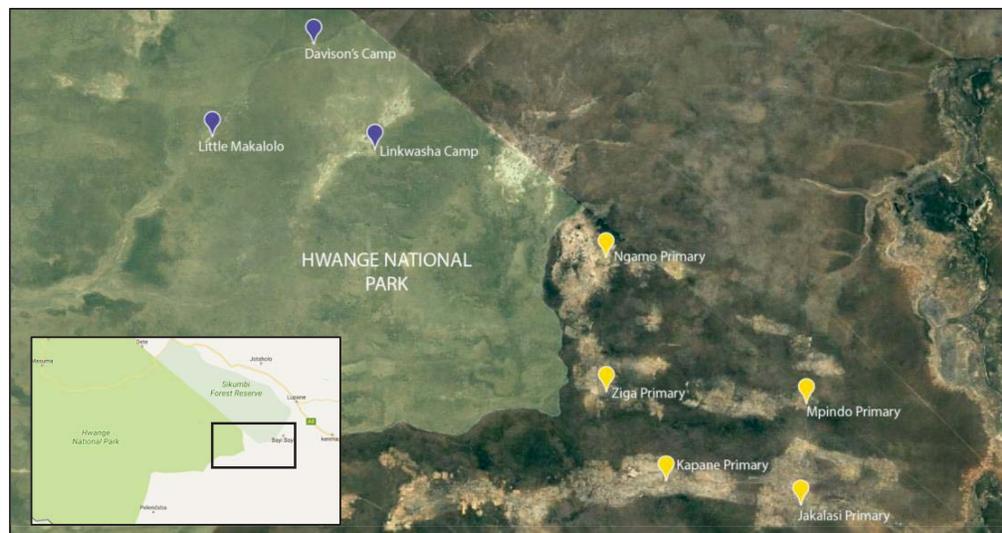
Figure 2.6 – Map showing the location of the five CITW eco-clubs studied in Zimbabwe, and the Wilderness Safaris camps in Hwange National Park. Base aerial image source: Google Earth Pro (2017a). Map inset source: Google (2017a).

2.5 CONCLUSION

This chapter has provided an overview of Wilderness Safaris and CITW. Wilderness Safaris addresses local community needs through relationships that benefit the company, as well as local communities, and the natural environment. Children in the Wilderness plays an important role as the company's non-profit organisation, providing further educational opportunities that enable CITW and Wilderness Safaris to move towards their respective visions. Although the location of villages influences economic prosperity and access to resources, schools that are supported by CITW receive equal attention so that students, the community, and the environment can derive benefits. A review of the existing literature on ESD relevant to this study is provided in the following chapter.

Chapter 3: Literature Review

3.1 INTRODUCTION

As discussed in the previous chapters, undertaking research regarding non-formal ESD in a developing context is needed, and the CITW eco-club programme provides an ideal case study to do this. To achieve the aim and objectives of this study, a review of the current academic literature and international convention documents is needed. Methods that are identified in this chapter will inform the following chapter, which outlines the research methodology.

This chapter aims to provide a detailed analysis of the current literature pertaining to ESD, particularly in a non-formal context. As there is a lack of research regarding non-formal ESD, several studies cited in this chapter are examples of formal ESD, but are relevant in the discussion of vertical policy integration and pro-environmental behaviour. The gaps identified in the literature regarding non-formal primary school ESD in a developing context are highlighted throughout this chapter, providing a strong case to undertake a study that addresses each of these aspects.

This chapter is divided into five sections. A brief history of ESD is provided, focusing on its establishment and evolution. Next, a discussion on non-formal ESD highlights some of the gaps in the existing research. The scope then narrows to a discussion on vertical policy integration and pro-environmental behaviour. The final section of this chapter draws the focus to the study, bringing together all that has been discussed, and providing an explanation of the criteria that was used to analyse the CITW eco-club programme in the Zambezi Region.

3.2 THE EVOLUTION OF ESD

Environmental education has been evolving constantly since its inception and establishment in the 1970s. The Belgrade Charter stipulated the need for a "new global ethic" (UNESCO, 1975, p. 1), one which would ensure the betterment of the human relationship with the environment. Education was seen as a crucial part of making this change. This document outlined the overarching goal of EE along with six objectives and guiding principles. The initial goal for EE, as defined by the Belgrade Charter (UNESCO, 1975) was:

> To develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations

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and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. (p. 3)

Environmental education was then the focus of UNESCO's *Intergovernmental Conference on Environmental Education* held in Tbilisi, Georgia, in 1977. Known as the Tbilisi Declaration, this conference expanded on the definition of EE together with its goals and guiding principles. It outlined strategies for the establishment and development of EE at all levels of government from national to local in both developed and developing countries. It also broadened the scope of EE to incorporate all aspects of society, including all ages, professions, the formal and non-formal education sector, all levels of the schooling system, and the public. The goals for EE set out in the Tbilisi Declaration demonstrated more depth to the concept of EE (UNESCO, 1977):

1. To foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas.
2. To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.
3. To create new patterns of behaviour of individuals, groups and society as a whole towards the environment. (p. 26)

Although not explicitly referring to ESD, Agenda 21 is a notable document in the evolution of EE to ESD. After sustainable development was defined by the World Commission on the Environment and Development (WCED, 1987), links between sustainable development and education began to be explored (Hopkins & McKeown, 2002). Chapter 36 of Agenda 21 refers to environmental education and the importance of "reorienting education towards sustainable development" (UNCED, 1992, Chapter 36, para. 2), highlighting the recognition of the link between sustainable development and education. This resulted in an objective in Agenda 21 seeking to "promote integration of environment and development concepts, including demography, in all educational programmes" (UNCED, 1992, Chapter 36, para. 4).

The *Decade of Education for Sustainable Development* (DESD), which ran from 2005-2014, established and defined the concept of ESD. The DESD's vision for ESD was "a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation" (UNESCO, 2005, p. 26). The DESD articulated key characteristics for ESD:

- Interdisciplinary and holistic

- Values-driven

- Critical thinking and problem solving

- Multi-method

- Participatory decision-making

- Applicability

- Locally relevant

(UNESCO, 2005, p. 18).

With regard to the terminology used, Jabareen (2012) notes the prevalence of confusion between the use of EE and ESD. UNESCO (2005), together with other authors (Jabareen, 2012; Jackson, 2016), highlight the importance of not equating ESD with EE. While it could be argued that the reformed goals for EE in the Tbilisi Declaration reflect many components of ESD (Ferreira, 2009), EE is purely environment-focused, while ESD is development-focused (UNESCO, 2005). Thus, the concept of sustainable development "encompasses environmental education, setting it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life" (UNESCO, 2005, p. 18). However, it has been noticed that EE is commonly used in national policy documents even when, on closer inspection of the definition and context, it is closer to ESD. The emergence of the term 'education for sustainability' (EfS) creates further confusion. It is unclear where and how this term developed, but Hopkins and McKeown (2002) explain that ESD and EfS are synonymous terms that are often used interchangeably. The authors do state, however, that ESD is more commonly used at an international level and within United Nations documents. Consequently, in this study, ESD is used to reflect the majority of international literature on this subject.

3.3 THE NON-FORMAL EDUCATION SECTOR AND ESD

Non-formal education can be defined as "education that takes place outside of formal schooling" (Jackson, 2016, p. 64). To achieve the research aim, examining the existing literature on the non-formal sector and ESD is important. It is widely agreed that non-formal education is a critical component of the education sector (Brennan, 1997; Buckler & Creech, 2014; Kieu & Singer, 2015), particularly in developing countries where a lack of financial resources often leads to the inability of the formal sector to provide quality education (Kieu & Singer, 2015). Therefore, the non-formal sector can augment the formal sector and provide ESD at little to no

additional cost to the government, while also enabling increased access to education for marginalised groups (Mahruf et al., 2011).

Existing research on ESD tends to focus on case studies within the formal education sector. As a result, little research has been undertaken regarding non-formal ESD, even though it is an "area of growing importance" according to Buckler and Creech (2014, p. 109). This emphasises the need and importance of including non-formal education in future research: a gap this study aims to address.   In many African nations, the uptake and implementation of ESD, particularly in the formal sector, has been slow. This was highlighted at the end of the DESD, where ESD was described as an "emerging interest" in many African countries (Buckler & Creech, 2014, p. 85). By expanding the research undertaken on ESD in developing contexts, the increased knowledge in this area could lead to further uptake of ESD.

The lack of academic studies that examine non-formal ESD programmes is notable, particularly in an African context. Mahruf et al. (2011) undertook a study around non-formal education in Bangladesh; their conclusions lead them to advocate strongly for an increase in non-formal education. This is supported by Buckler and Creech (2014), who highlighted that "non-formal education can be a powerful driver of change towards sustainable development" (p. 144). Mahruf et al. examined the transition of children from a non-formal primary school to a formal secondary school. The authors found that characteristics for ESD as stipulated by UNESCO (2005) surfaced to a greater degree in the non-formal education setting. For example, holistic teaching and active participation within non-formal primary schools taught children the importance of caring for their environment, while a lack of formal structure lead to greater immersion in the local communities. The practical, locally relevant, and "life oriented" non-formal curriculum led to clear differences between students with a non-formal education background and those with a formal education background (Mahruf et al., 2011, p. 135). This was highlighted through the discovery that students who had only been exposed to formal education lacked awareness about human wellbeing and the importance of caring for their environment. The overarching message conveyed through this study is the value of the non-formal education sector as an important supplement to formal education, not just for ESD, but for education in general. As Bangladesh is a developing country, the question is raised as to whether there would be similar differences between children in other developing contexts. Although the proposed study only includes participants who are involved with the non-formal

ESD programme, teachers could impart valuable insight into any differences that may be apparent between children who attend the eco-clubs and those who do not.

Brennan (1997) argues that non-formal education can be just as effective as, if not more effective than, the formal sector. This is corroborated by Haigh (2006) who examined the potential of collaborating ESD in higher education with NGOs and the non-formal sector. Haigh argues that the practical work carried out by NGOs provides a contrast to the more "factual, technical and objective" teachings in a classroom, and that non-formal education regarding the environment is "involving and emotionally affective" (p. 344). Another reason for the effectiveness of non-formal education could be that the non-formal sector is able to provide a specific curriculum that is based on locally relevant issues (Bran, Popa, & Ioan, 2016; Mahruf et al., 2011), while not being bound by academic requirements (Young & McElhone, 1986). In a rural and developing context, this could be more valuable to students, as they would have the opportunity to learn about locally relevant issues, gaining knowledge and skills to effectively resolve them. Poole, Álvarez, Penagos, and Vázquez (2013), for example, found that aspects of the formal education system in Mexico were not relevant to rural contexts. This meant that young people were less exposed to education on issues pertinent to their everyday lives. Furthermore, a lack of local relevance could significantly hinder the development of rural communities who might be struggling with avoidable or solvable problems (Ezeanya-Esiobu, 2017). Thus, the non-formal sector can supplement the formal curriculum, and contribute valuable resources that the national government may not be able to provide. The proposed research could provide further evidence in support of Brennan's (1997) argument, as it will allow for a comparison between CITW's contribution to ESD and the contribution of the formal sector to ESD. If the proposed study can confirm that ESD exists to a stronger degree through the CITW eco-club programme, further evidence could be provided to support the inclusion of non-formal education alongside formal education.

3.4 POLICY INTEGRATION

To gauge the success and value of non-formal ESD, analysing the extent of vertical policy integration between international guidelines, national policy, and the ESD programme is highly relevant. It is widely agreed by authors from various disciplines that vertical policy coherence and integration is crucial for policy effectiveness, and improving national outcomes (Fien, 2012; May, Jones, Beem, Neff-Sharum, & Poague, 2005; OECD, 2006). As national strategies for sustainable development are guided by international organisations such as UNESCO (Steurer,

Berger, & Hametner, 2010), these should reflect international guidelines, which in turn should filter down to local government policies (Roosa, 2010). Buckler and Creech (2014) support this notion, particularly as education is recognised as a critical component in moving towards sustainable development. In their final report on the DESD, Buckler and Creech closely examined the degree to which countries are integrating ESD into national policy. While there are considerable challenges in the integration and "institutionalizing" of ESD (p.10), the authors found that more nations are "committed to continuing to work to advance ESD at the national and local levels" (2014, p. 9). The need for policy integration highlights the importance and relevance of conducting a study that examines policy links, and the proposed study will contribute to the existing knowledge in this area.

Although vertical policy integration is acknowledged as an important factor in the improvement of national outcomes, there is a lack of research focusing on ESD and education policy integration. However, other literature regarding policy integration, including environmental policy integration, climate policy integration, and the development of national sustainable development strategies are relevant, and can be applied to ESD and education policy. The few studies that have been undertaken regarding ESD are recent (Kadji-Beltran et al., 2017; Kuzich, Taylor, & Taylor, 2015; Læssøe & Mochizuki, 2015). This suggests that ESD policy integration is a growing body of research, thus providing further support for the relevance of conducting research in this area. Due to the lack of research on non-formal ESD, it is unsurprising that existing studies focus on the formal sector. This highlights another gap in the literature, raising questions as to the ability of the non-formal sector to respond to international guidelines, and complement the formal sector. If the proposed study finds that non-formal ESD responds more strongly to international guidelines than the national policy does, further evidence would be provided for the value of non-formal ESD.

The common agreement among academic authors is that where vertical policy integration is weak, fragmentation and weak links exist within and between levels of government, meaning many countries are currently unsuccessful in achieving integration (Læssøe & Mochizuki, 2015; Nordbeck & Steurer, 2016; Sedlacko, 2007). However, the opposite is also found, as Fien (2012) demonstrates that vertical policy integration can be successful. The lack of vertical integration is also outlined in the final report on the DESD, as it is stated that "ESD is not integrated coherently across relevant sectorial or sub-sectorial policies (Buckler & Creech, 2014, p. 36). Nordbeck and Streurer's (2016) study examined how various EU countries structure their

national sustainable development strategies. The authors' main finding was that many strategies were "fragmented" (p. 746) and therefore ineffective because they were not able to respond to scholarly suggestions or international organisation guidelines. This is highly pertinent to the proposed research, as determining the degree to which the eco-club programme and national policy responds to international guidelines for ESD will contribute to an understanding of how successful and valuable non-formal ESD can be. This is supported by Læssøe and Mochizuki (2015) who arrived at the same conclusion in their study of ESD and climate change education policy. As these studies cover both developed and developing case studies, it is suggested that challenges in achieving vertical policy integration are not unique to countries with similar characteristics, but that they are a common issue.

Despite the wide agreement that most countries have failed to achieve vertical policy integration, Fien (2012) provides a contrasting example. Although arriving at many of the same conclusions as the authors mentioned above, Fien believes that the Netherlands demonstrates good policy integration due to coordination and cooperation between government departments. The author found that the early national policy for EE was supported by a range of ministries because it focused on both ecological and socio-economic aspects. This led to a strong foundation for the transition to ESD. These results imply that a range of factors, both past and present, have an influence on a nation's ability to have integrated policy. The author collected data through secondary sources by analysing policy documents and academic papers. A potential drawback of this method is that without the inclusion of primary data, for example interviews, there is a lack of surety regarding the implementation and productivity of the processes in place.

Kuzich et al. (2015) identified policy infrastructure as a significant barrier to achieving ESD. This study was undertaken at a primary school in Australia with the aim of understanding the challenges teachers face at a purpose-built "sustainability school". The authors found that aspects of the curriculum that are mandated, compared with those that are suggested, have an impact on teacher practice. While the curriculum provides for ESD, a lack of detail within the policy means teachers lack guidance on how ESD should be incorporated into lessons. Furthermore, as ESD is not a subject area that is assessed, like numeracy and literacy, less time is spent on ESD as teachers need to accommodate all the mandated aspects of the curriculum into the class time available. Thus, the authors found that the integration of ESD into teaching is more of a "token effort" (p. 191) and does not demonstrate policy integration. Determining

whether this is also the case in the proposed case study could provide support for this finding. Kuzich et al.'s study demonstrates a gap in the achievement of policy integration, as the expectation for ESD incorporation is not implemented. The gap between policy and practice is also highlighted by Kadji-Beltran et al. (2017), who sought to determine whether ESD could lead to quality education. While their study did not focus on policy integration, references were made to UNESCO's (2005) characteristics to understand the extent to which a primary school ESD programme aligned with selected characteristics for ESD. Although Kadji-Beltran et al. concluded that ESD did have the potential to lead to quality education, the authors found that attention to political and cultural dimensions, together with active participation and community relationships, was scarce and did not align with international guidelines. Policy integration was an implicit part of Kadji-Beltran et al.'s study but is relevant to the proposed study in that the authors referenced many of the characteristics stipulated by UNESCO.

To determine policy integration, two methods of data collection are common throughout the literature. These include primary data collection through interviews, and secondary data collection through the analysis of policy documents and reports. Secondary data collection is the most common method used in recent policy integration literature (Ishii & Langhelle, 2011; Læssøe & Mochizuki, 2015; Nordbeck & Steurer, 2016; Steurer et al., 2010). For the authors cited, undertaking content analysis of policy documents was the most effective means by which to gather the information needed. Kadji-Beltran et al. (2017), Kuzich et al., (2015), and Scobie (2016) took a different approach by using primary and secondary data collection methods to better understand policy integration. These authors conducted interviews with relevant participants to support the secondary data acquired from policy documents (Kadji-Beltran et al., 2017). This led to more robust studies in terms of validity, as the authors could make comparisons between the policy documents and the interview participants' responses – something that using secondary data alone would not allow for. Regarding the selection of participants, Kadji-Beltran et al. acknowledged a drawback of their chosen method. The authors explained that by not observing the ESD lessons themselves and talking to the students, they were not able to ascertain exactly how ESD was taught or how effective it was.

3.5 PRO-ENVIRONMENTAL BEHAVIOUR

The concept of ESD has been described as transformative, whereby knowledge, attitude, skills, and behaviour are central components (Ferkany & Whyte, 2013; Jackson, 2016; UNESCO, 2017). The Oxford University Press (2017) defines transformative as "causing a marked change in

someone or something". Pro-environmental behaviour is encapsulated within UNESCO's (2005) aim for ESD, in the adoption of "behaviours and practices that enable all to live a full life without being deprived of basics" (p. 5). Due to the inextricable link between the two concepts, and the presence of pro-environmental behaviour in CITW's aim "to facilitate sustainable conservation" (WWT & CITW, 2016, p. 51), including it within the proposed study is relevant, and will help achieve the third research objective.

Numerous authors agree that ESD can lead to pro-environmental behaviour (Ampuero, Miranda, & Goyen, 2015; Breunig, 2013; Davis, Miller, Boyd, & Gibson, 2008; Redman, 2013; Salter, 2013). Various studies have been conducted, differing in scope, focus, and the type of ESD programme studied, from short-term voluntary programmes to school-wide integration of ESD. However, much of the existing research has been undertaken in developed countries. As a result, many of the behaviour changes that occurred were largely relevant to developed and 'first world' societies, such as using less electricity, buying organic food, and driving a car less frequently. This begged the question as to the sort of behaviour changes that could occur from an ESD programme in a developing context. This is a notable gap in the existing literature, as the challenges faced by developing countries differ substantially from developed countries. Thus, data from developed countries cannot necessarily be used to make inferences about ESD outcomes in a developing context. If behaviour change arises through this study, insight could be provided as to the kind of behaviour change that is possible from an ESD programme in a developing context. However, as pro-environmental behaviour is not the focus of this research, findings would be an indication only, as accurate and reliable conclusions could not be drawn.

While many studies tend to focus on case studies at a secondary and tertiary level (Breunig, 2013; Redman, 2013), there is a growing body of research on ESD programmes for younger children. Davis et al. (2008) and Salter (2013) found that ESD had a significantly positive impact on the knowledge, attitude and behaviour of students and their families. Although these studies differed in scope and focus: Davis et al. focusing on an early childhood centre water conservation programme, and Salter focusing on an upper-primary whole school ESD programme, both studies found that ESD was highly effective in creating awareness and behaviour change for students and their families. Salter undertook a more detailed study, and while it was concluded that ESD could lead to pro-environmental behaviour, the author emphasised that the extent to which behaviour is applied in everyday life is influenced by how difficult the behaviour change is, and the willingness of parents to accommodate changes. This finding is corroborated by

Kasapoğlu and Turan (2008) and Redman (2013). A significant advantage of these studies was inclusion of parents in the study, explicitly in Davis et al. and Salter, and implicitly in Redman. This allowed an in-depth analysis of the ESD programmes studied, as well as a comparison between participants' responses.

The importance of introducing ESD at a primary level is also highlighted by Ampuero et al. (2015) and Hoang and Kato (2016). Ampuero et al. found that behaviour change occurred much more quickly in younger children than it did in older children. While the authors concluded that behaviour changes did occur, the only change explicitly mentioned was the aesthetic improvement of less litter around the school. The lack of explanation regarding any additional behaviour change was a significant weakness, as the authors were unable to support their claim. Ampuero et al.'s study was the closest in context to the proposed study, as the authors examined a primary level ESD programme in a developing context. Therefore, it would have been beneficial if details regarding other behaviour changes were made more explicit. Hoang and Kato (2016) support the notion of ESD for younger children. Having also undertaken a study in a developing context, the authors found that the largest number of children can be reached at primary level, as "the number of out-of-school children of secondary- and higher-education age increases relative to those in primary education" (Hoang & Kato, 2016, p. 285). Thus, these studies provide support for undertaking research with this age group, as further research could provide additional evidence for the value of ESD at primary level. It could be argued that instilling environmental knowledge and promoting pro-environmental behaviour in children from a young age makes pro-environmental behaviour a way of life, enabling them to grow up with positive environmental habits as opposed to adapting behaviour later in life. Leeming, Dwyer, and Bracken (1995) provide support for this, stating that "early attitudes and knowledge shape the later thinking of adolescents and adults" (p. 23). While this is a critical point, and one that is important in understanding the effectiveness of ongoing ESD for younger children, only a longitudinal study would provide further evidence for Leeming et al.'s statement. The proposed study could provide baseline data for future longitudinal research in a developing context if pro-environmental behaviour does occur.

While many authors conclude that ESD can lead to pro-environmental behaviour, some authors are more critical. Blake (1999) discusses the 'value-action gap', where the existence of knowledge or attitude does not always enable a change in behaviour. Barriers to behaviour change are highlighted, such as responsibility perception, and practicality. This includes lack of

money, time, or personal ability. Rajecki (as cited in Kollmuss & Agyeman, 2002) also highlights barriers to behaviour change. These include a lack of indirect experience, and normative influences such as culture, society, and family routines. Kasapoğlu and Turan (2008) also found a disparity between knowledge and attitude, and behaviour change. Being aware of these barriers when examining behaviour change will allow for more objectivity and opportunity for critical analysis.

3.6 CRITERIA FOR ANALYSIS OF AN ESD PROGRAMME

Based on the literature thus far, the absence of research regarding non-formal primary school ESD in a developing context is clear. To achieve the aim of this study, it is beneficial to have a framework or set of criteria against which to analyse an ESD programme. The seven characteristics outlined by UNESCO in the 2005 *Draft International Implementation Scheme* for the DESD have been used in this research. In addition to the seven key characteristics for ESD, UNESCO (2005) also stipulates strategic perspectives that should be incorporated in the planning and implementation of ESD. These include socio-cultural, environmental, and economic aspects, some of which include human rights, health and HIV/AIDS, natural resources, and poverty reduction. As the strategic perspectives align with the key characteristics, they have been incorporated within the criteria to integrate UNESCO's guidelines into one 'checklist'. Table 3.1 depicts the seven characteristics for ESD and the criteria needed to achieve them. While some of the criteria are not explicitly stated in UNESCO's 2005 document, they do emerge in recent research undertaken by other authors (Davis, 2010a; Dreyer & Loubser, 2014; Stanišić, 2016; Sterling, 2012), or are acknowledged in Buckler and Creech's (2014) final report at the culmination of the DESD. It is important to note that many of these characteristics are linked, and the achievement of some criteria may contribute to several characteristics, particularly regarding values. In terms of the terminology used throughout this study, 'characteristics' refer to the seven characteristics for ESD as outlined by UNESCO. 'Criteria' refers to the individual aspects that are needed to achieve each characteristic, as demonstrated in the second column of Table 3.1. The following subsections group together related characteristics and provide a detailed discussion of UNESCO's guidelines. While UNESCO (2005) separates 'applicability' and 'locally relevant' into two characteristics, little can be distinguished between them. Thus, they have been combined into one characteristic for this study.

Table 3.1 – Characteristics and criteria for ESD. Adapted from UNESCO (2005).

	KEY CHARACTERISTIC	CRITERIA TO FULFILL CHARACTERISTIC
THE LEARNING PROCESS	**CRITICAL THINKING AND PROBLEM SOLVING**	- Evidence of problem-based learning in the ESD programme. - Evidence of group activity.

	MULTI-METHOD	- Evidence of a range of teaching methods, including but not limited to:
		   o Practical learning in addition to theory.
		   o Inclusion of outdoor learning.
		- Teacher organisation, i.e. evidence of pre-planning, use of lesson plans, etc.

	PARTICIPATORY DECISION-MAKING	- Students have some control over the learning process. - Relationships and interactions (teacher/student and student/student).

APPLICABILITY AND LOCAL RELEVANCE	**APPLICABILITY AND LOCALLY RELEVANT**	- The curriculum is locally relevant, enabling learners to understand and apply acquired knowledge and skills in their daily life.
		- The curriculum should address the following in a locally relevant/applicable way:
		   o Health
		   o HIV/AIDS
		   o Climate change
		   o Natural resource use
		   o Disaster prevention/management
		   o Rural development and poverty reduction
		- The incorporation of traditional knowledge into the curriculum.
		- Use of local language.

HOLISM AND VALUES	**INTERDISCIPLINARY AND HOLISTIC**	- The inclusion of various knowledge domains within the ESD curriculum, and the filtering of ESD into subjects outside of the ESD programme. - Evidence of a relationship between the ESD programme and the community.

	VALUES-DRIVEN	ESD teachings should build respect for:
		- Dignity and human rights, and intergenerational responsibility
		   o Gender equality
		   o Relationships with communities
		   o Incorporation of traditional knowledge
		- Biodiversity of eco-systems
		   o Natural resource use, climate change, and disaster management included in curriculum.
		- Cultural diversity
		   o Relationships and interactions (both teacher/student and student/student).

3.6.1 THE LEARNING PROCESS

UNESCO (2005) includes 'critical thinking and problem solving' as a key characteristic to enable "confidence in addressing the dilemmas and challenges of sustainable development" (p. 18). Although not explained any further, Davis (2010a) and Dreyer and Loubser (2014) also highlight the importance of these aspects for a more learner-centred as opposed to teacher-oriented approach to education. The pedagogies in ESD teaching explicitly stated by UNESCO (2005) include "word, art, drama, debate [and] experience" (p. 18). This highlights an example of overlap and integration between the characteristics, as these pedagogies align with interdisciplinary learning, but are also reflective of practical and theoretical teaching methods. The quote "Tell me and I forget, teach me and I may remember, involve me and I learn", famously said by Benjamin Franklin, perfectly encapsulates the importance of practical learning. In addition to being stated by UNESCO, several authors also advocate that participatory and action-based experiences enable children to feel empowered Warwick (2016) and fully engaged with what is being taught Green (2012). Jabareen (2012) also believes that active learning through practical activities helps develop skills, while complementing theory learned in the classroom. This suggests that a combination of theory and practice is beneficial in ESD. Outdoor learning is not specifically mentioned in the *Draft Implementation Scheme* (UNESCO, 2005), but is included in Buckler and Creech's (2014) final report on the DESD. It is also widely agreed by academic authors that outdoor learning is a critical component of ESD (Dreyer & Loubser, 2014; Stanišić, 2016), as it provides a more "authentic" learning experience (Carrier, 2009, p. 11).

Although not explicitly stated in the *Draft Implementation Scheme* for the DESD (UNESCO, 2005), working collaboratively is mentioned in Buckler and Creech's (2014) final report as an additional component to critical thinking and problem-based learning. Numerous academic authors also stipulate the need for group work (Dreyer & Loubser, 2014; Stanišić, 2016; Sterling, 2012). Stanišić (2016) elaborates on this, stating that teamwork is required to find solutions for increasingly complex environmental issues. Students therefore need to listen to, help, and support one another in order "to achieve a common goal" (Stanišić, 2016, p. 95). Furthermore, instilling this skill from a young age could lead to better decision-making in the future, as working with others is likely to be a more natural experience.

The importance of teacher organisation is also not stipulated in UNESCO's (2005) *Draft Implementation Scheme*. Stanišić (2016) advocates for well-prepared lessons, believing that they are crucial for a successful learning environment. In support of this, lesson plan examples

are provided in UNESCO's (2012) *Education for Sustainable Development Sourcebook*. This document is a resource for teachers to use, and the existence of lesson plans and pre-planning in this document suggests that it is important to include it in the framework. Teacher organisation is included as a criterion under this characteristic, as the planning and facilitation could be regarded as a method.

Providing students with some control over their learning is a key characteristic outlined by UNESCO (2005). A shift from "teacher-centred" to "teacher-facilitated" approaches where students are given more freedom in the learning process is important (Buckler & Creech, 2014, p. 86). Weimer (2012) supports this, as the author believes that students should be given the opportunity to make selected decisions regarding their learning, as wholly teacher-controlled lessons eventually lead to a reduction in student motivation. The author suggests that teachers can take a step back by enabling greater choice among students. This shared decision-making enables students to become more independent and empowered in a controlled environment, while also giving them greater responsibility (Johnson & Ryan, 2015). Teacher/student and student/student relationships also play an important role in achieving participatory decision-making. The existence of positive relationships and a supportive, enthusiastic environment could give students the confidence to get involved and enable a more learner-centred approach.

3.6.2 APPLICABILITY AND LOCAL RELEVANCE

UNESCO (2005, p. 18) explains applicability whereby the "learning experiences offered are integrated in day to day personal and professional life". As it could be argued that this characteristic and that of 'locally relevant' are very similar, the two been amalgamated for this study. Several strategic perspectives regarding learning topics serve as criteria for this characteristic. These include health, HIV/AIDS, climate change, natural resource use, disaster prevention and/or management, and rural development and poverty reduction. As these issues are highly applicable to learners' daily lives, particularly in a developing context, they are all highly relevant in this research.

Ensuring that an ESD programme is locally relevant is of paramount importance, and is emphasised by numerous authors (Davis, 2010a; Dreyer & Loubser, 2014; Mahruf et al., 2011) in addition to UNESCO (2005), and Buckler and Creech's (2014) final report. Establishing a curriculum that is applicable and responds to local needs is critical (Mahruf et al, 2011; UNESCO, 2005). Non-formal education programmes have an advantage in this area, as they are not bound

by national academic requirements (Young & McElhone, 1986). Furthermore, Ezeanya-Esiobu (2017) explains that one of the key functions of education is to enable learners to gain an appreciation for their environment, and the "curiosity to explore more in order to add value" (para. 3). The speaker argues that the use of locally relevant examples will enable this to occur. As the case study for the proposed research is in an African context, this is highly relevant. Ezeanya-Esiobu noted that when she was growing up, the lack of locally relevant examples and teaching made education an "abstraction" and "a foreign concept" (para. 4). This is inextricably linked with traditional knowledge, and the influence of colonial education systems addressed later.

The incorporation of traditional knowledge and languages in ESD is emphasised and suggested by UNESCO (2005). The inclusion of traditional knowledge has been shown to create environmental awareness among indigenous students in a developing context who, under a formal westernised system, had little knowledge about traditional customs, and native plant and animal species (Cocks, Alexander, & Dold, 2012). Through the incorporation of traditional knowledge, students' attitudes changed as they became aware of the importance of preserving native flora and fauna for future generations. Furthermore, Lotz-Sisitka, Belliethathan, Pradhan, Odeke, & Olewe (2017) state that the inclusion of traditional knowledge in ESD, particularly in Africa, is crucial. The authors identified the colonial education systems as the reason for reduced traditional knowledge as they imposed external methods that were irrelevant to the local people. Cocks et al. (2012) found a positive relationship between the incorporation of traditional knowledge and attitude towards the environment. Therefore, this is an important criterion to include when analysing ESD in developing countries with a large local population. Furthermore, the link between traditional knowledge and local language is highlighted and encouraged by UNESCO (2005), which states that different languages have "creative ways of expressing new concepts" (p. 18). While English is the predominant language of teaching in many African countries, it is often not learners' first language. Ensuring that local language is used, particularly to describe certain concepts, and using local knowledge to do so, could enable better understanding and association (UNESCO, 2005).

3.6.3 HOLISM AND VALUES

UNESCO (2005) explicitly states that ESD should be integrated into the whole school curriculum, as opposed to being a distinct 'subject'. However, in the case of an extracurricular non-formal programme that is established for ESD, this is not possible. Regardless, Mahruf et al. (2011)

found that interdisciplinary aspects arose to a larger extent in a non-formal setting, as the absence of a formal curriculum meant that teachers had more flexibility to include "cross-curricular issues" such as health, social education, and the environment in everyday learning (pp. 136-7). This demonstrates the ability of non-formal education to incorporate various knowledge domains. Furthermore, the whole-school approach outlined by Buckler and Creech (2014) could be applied. The authors describe a holistic approach to ESD, whereby the learning component is integrated with the rest of the school, community, and governance structures. While this is depicted in a formal capacity, it could be argued that a non-formal organisation could also establish a whole-school approach.

Linked to holism and a whole-school approach, it is widely agreed that connections with the wider community are an important part of ESD (Davis, 2010a; Davis, 2010b, Mahruf et al., 2011; UNESCO, 2005). Davis (2010b) found that a "two-way intergenerational reach" emerged as a result of a kindergarten water conservation programme (p. 35). Although Eilam and Trop (2013) argue that these relationships cannot work because of differing value systems, a different context could lead to a different outcome. Relationships between the ESD programme and the wider community could lead to the transfer of knowledge, attitude, and behaviour from the students into the wider community and enable Davis' (2010b) outcome. Determining the extent to which ESD programmes have links with the wider community could lead to more evidence either in support of, or rejecting the influence of, or on, the home environment in a developing context. Again, the concept of the whole-school approach could be present here, if links with the school and wider community emerge (Buckler & Creech, 2014).

The incorporation of the values and principles that underpin sustainable development is another key characteristic outlined by UNESCO (2005). Four values are mentioned:

a) Respect for the dignity and human rights of all people throughout the world and a commitment to social and economic justice for all.
b) Respect for the human rights of future generations and a commitment to intergenerational responsibility.
c) Respect and care for the greater community of life in all its diversity which involves the protection and restoration of the Earth's ecosystems.
d) Respect for cultural diversity and a commitment to build locally and globally a culture of tolerance, non-violence and peace.

(UNESCO, 2005, p. 16).

Holism is also reflected in these values and their link with the components of sustainable development (social, economic, environmental and cultural aspects). This makes them broad and all encompassing, resulting in significant overlap with other characteristics. Thus, a high response to the 'values-driven' characteristic requires a high response to criteria for other characteristics.

3.7 CONCLUSION

This chapter discussed the relevant literature regarding ESD. Its establishment and evolution were briefly outlined before the non-formal sector, policy integration, pro-environmental behaviour, and the criteria used to analyse an ESD programme were discussed. Buckler and Creech's (2014) emphasis on the need for further research into effective approaches for non-formal ESD highlights the importance of conducting a study in this area. Determining the level of vertical integration between internationally recognised characteristics for ESD, national education policy, and the CITW eco-club programme, will facilitate the achievement of the research aim. More broadly, this study will contribute to the existing knowledge on ESD, and the contribution that non-formal ESD could make to sustainable development. UNESCO's (2005) characteristics for ESD, together with the strategic perspectives outlined by the organisation, are used as the criteria against which to analyse the eco-club programme. An analysis of whether CITW is meeting its aim and vision enables further understanding of the success and value of non-formal ESD. As pro-environmental behaviour is encapsulated within UNESCO's description of ESD, as well as in CITW's aim and vision, including this concept is important to achieve the third objective of this research.

The case study of this thesis is relatively unique, in that few researchers have undertaken studies on non-formal ESD in a developing context. Even more unique is the focus on primary level ESD. Barratt Hacking, Barratt, & Scott (2007) maintain that "as present and future citizens, [children] are affected by environmental decision-making and have a right to be involved in it" (p. 532). The growing body of research that includes children demonstrates a growing awareness in this area. This study will therefore contribute to the existing literature by including a case study involving primary school children in an African context. The research methodology is discussed in the following chapter. A detailed account of the data collection methods and analysis is provided, some of which address the methods referred to in this chapter.

Chapter 4: Methodology

4.1 INTRODUCTION

This research aims to gauge the success and value of non-formal ESD using a case study of the Zambezi Region Children in the Wilderness eco-club programme. To achieve this aim, the relevant literature on ESD was examined in the previous chapter, culminating in an explanation of the criteria that were used to analyse the CITW eco-club programme. Appropriate methods to undertake this study were also identified. In this chapter, an outline of a theoretically sound research method to survey respondents, collect data, and undertake data analysis is presented. The chapter concludes with a discussion of the potential biases, limitations, and ethical considerations of the study.

4.2 RESEARCH DESIGN

A well-designed study that leads to "meaningful, robust and relevant" data should have a clear research purpose that is accompanied by highly integrated objectives and methodological approaches (Lewis & McNaughton Nicholls, 2014, p. 48). Two of the most widely agreed characteristics of research objectives are their need to be clear and focused (Agee, 2009; Lewis & McNaughton Nicholls, 2014; Thomas & Hodges, 2010) to ensure that they are understandable and interpretable by the reader (Thomas & Hodges, 2010).

The importance of vertical policy integration arose in Chapter 3. As UNESCO established the DESD and has published many reports on ESD, it is assumed that the CITW eco-club programme's response to UNESCO's (2005) characteristics for ESD will enable it to be successful. This led to the formulation of the first objective. Next, the extent to which national education policy responds to international guidelines, and the extent to which the eco-club programme responds to national education policy, adds another level of integration and indication as to whether the formal or non-formal sector responds better to international guidelines. As CITW's eco-club programme was not modelled on UNESCO's characteristics, solely analysing it against these criteria would be inappropriate, as the organisation has its own aim, vision, and specific issues that it is seeking to address. This led to the formation of the third objective: determining whether CITW is achieving its aim and vision through the eco-club programme.

The value of the eco-club programme can be gauged by looking at the national education policy in both countries and determining how much emphasis is placed on ESD. Further supporting this with local teacher accounts of whether ESD is implemented in the formal curriculum will enable an assessment as to whether the eco-club programme is supplementary to any ESD that is taught under the national curriculum or, if in fact, it compensates for a lack of ESD in the formal curriculum. Furthermore, any eco-club teachings that have filtered into the community, or any positive changes that have occurred as a result of the programme, will demonstrate value.

4.2.1 DATA COLLECTION METHODS

A qualitative research approach has been adopted to elicit participants' perceptions of, and experiences with, the eco-club programme (Hesse-Biber & Leavy, 2011; Camfield, Crivello, & Woodhead, 2009). A range of data collection methods was incorporated to a gain a holistic understanding of the vertical integration between UNESCO's (2005) characteristics for ESD, national education policy, and the CITW eco-club programme. To achieve the research objectives, using a combination of primary and secondary methods was most appropriate, as primary data could provide support for secondary data (Kadji-Beltran et al., 2017). Interviews and focus groups are the most common form of qualitative data collection used in the existing literature (Ampuero et al., 2015; Breunig, 2013; Davis et al., 2008; Redman, 2013; Salter, 2013) as they are flexible and can be applied in a range of contexts. Thus, primary data collection in this study included interviews, focus groups, and observation, while secondary data collection included analysis of national education policy, and the CITW eco-club curriculum (see Table 4.1). Kadji-Beltran et al.'s (2017) weakness of solely interviewing teachers and ESD mentors was addressed in this study by conducting interviews with CITW programme coordinators, eco-mentors, eco-club members, and parents to gain an understanding of the programme from multiple perspectives.

Table 4.1 – Primary and secondary data collection methods employed in this study.

PRIMARY DATA									
Interviews	**No. people interviewed**								**Total**
CITW Programme Coordinators	2								**2**
	Zambia Villages			**Zimbabwe Villages**					
	1	**2**	**3**	**1**	**2**	**3**	**4**	**5**	
Eco-mentors	1	1	1	1	1	1	1	1	**8**
Parents	2	2	0	4	4	0	0	0	**12**
Focus Groups	**No. focus groups undertaken**								
	1	1	1	1	1	1	1	1	**8**
Observation									
Eco-clubs	✓	✓							**2**
Villages				✓	✓				**2**
SECONDARY DATA									
	Zambia				**Zimbabwe**				
National education policy documents	1. *Zambia Education Curriculum Framework 2013* (MESVTEE, 2013c). 2. *Integrated Science Syllabus: Grade 1-7* (MESVTEE, 2013b). 3. *Grade 1-7 Social Studies* syllabus (MESVTEE, 2013a).				1. *Curriculum Framework for Primary and Secondary Education 2015-2022* (MoPSE, 2015a). 2. *Junior Science and Technology Syllabus (Grade 3-7) (2015-2022)* (MoPSE, 2015b).				
CITW eco-club curriculum (Johnson & Ryan, 2015).									

Data generated from interviews enabled detailed insight into participants' lives and experiences (Lewis & McNaughton Nicholls, 2014). Face-to-face semi-structured interviews were undertaken with the CITW programme coordinators, eco-mentors, and parents. Predominately consisting of open-ended questions, the interviews enabled participants to "express their attitudes and feelings" (Hesse-Biber & Leavy, 2011, p. 114) about the programme in their own words. The use of open-ended questions reduced the risk of leading participants to answer in a particular way – something the researcher actively avoided. On the other hand, open-ended questions could yield a range of responses, from a one- word or sentence answer, to an

extremely detailed reply. To mitigate this, a combination of open- and closed-ended questions were included, and interviewees were probed if more information was needed (Yeo et al., 2014) (see Appendix E).

Focus groups were chosen as the data collection method with the eco-club members (all children aged 10-13). This created a less formal environment, as the children were together with their peers (Lewis & McNaughton Nicholls, 2014). A more relaxed atmosphere was created through the introductions, as the researcher was introduced to the group by the CITW community liaison as an "auntie" as opposed to a teacher, ensuring the children were relaxed. Initially, it was intended that the focus groups would be facilitated by the eco-mentor so that the children involved would be familiar with the person asking them questions. However, it was later decided that the researcher would facilitate the focus groups to ensure that data was gathered in the way the researcher intended. To ensure ethical practice, the eco-mentor was present during the focus groups and was fully briefed about the research plan. It was intended that a range of methods would be used to make the focus groups fun and engaging. This included drawing pictures and having the children show the researcher the eco-club projects and activities. However, the focus groups were pre-organised by the CITW community liaison, and the researcher had not realised that they were arranged to take place during the school day. Although the school principals and teachers had agreed to the research being undertaken during class time, it was decided that the originally planned time allocated to the focus groups would be reduced to minimise disruption to the school day. Thus, the focus groups eventuated with a discussion, asking the eco-club members open-ended questions to get them thinking and encourage them to respond in their own words (see Appendix E).

Observation was an important part of this study, as it provided support for what was reported during the interviews and focus groups (Saldaña, 2011). For example, driving through and spending time in communities enabled the researcher to observe some of the behaviour changes that were reported. There was greater opportunity to spend time in the communities in Zimbabwe, so this was where most observation occurred. Several criteria from Chapter 3 required observation to determine the prevalence of certain aspects, such as the interaction between eco-mentors and students, and interaction between students themselves. A weakness of Kadji-Beltran et al.'s (2017) study was that ESD lessons were not observed by the authors. This study addresses this weakness by observing eco-club lessons to further ascertain how they are facilitated. While the researcher would have liked to observe more eco-club lessons, the

itinerary did not coincide with eco-club days in Zimbabwe, and therefore eco-clubs were only observed in Zambia. As it was not relevant to include all the photographs taken during the fieldwork within the body of the thesis, the photo-diary attached in Appendix A offers a more detailed presentation of the researcher's observations.

The use of secondary resources enabled the research aim and objectives to be achieved (see Table 4.1, p. 35). Determining the level of vertical integration required the analysis of national education policy documents and CITW reports. The national education frameworks, and science-related syllabi for Zambia and Zimbabwe were studied to gain an understanding of the importance placed on ESD by each country. Existing research regarding ESD in these countries was also used, as it provided recent data on some of the issues and challenges faced. The CITW eco-club curriculum was used to determine the level of integration with UNESCO's (2005) characteristics and national education policy. This was done by comparing the eco-club curriculum with the characteristics and criteria described in Chapter 3 (Table 3.1, p. 27). The CITW eco-club curriculum was also used to analyse whether the organisation is achieving its aim and vision, and whether there is consistency and coherency between the organisation's aim and vision, the curriculum, and the implementation in the eco-clubs. The primary data was then used to support the secondary findings.

4.2.2 RESEARCH TIME FRAME

Due to logistical and time constraints, the fieldwork component of this study was limited to a two-week period. However, the detailed and exploratory nature of qualitative research meant that data gathered did not have to be limited to participants' current perspectives, as retrospective data could be collected from participants (Lewis & McNaughton Nicholls, 2014). Eco-mentors and programme coordinators, for example, could answer questions regarding the evolution of the eco-club programme, and changes that have occurred in eco-club members. One issue with retrospective data is that it could be unreliable as people may forget facts over the years (Lewis & McNaughton Nicholls, 2014). In this study, however, the chance that any retrospective data would be unreliable is small considering that the eco-clubs were established between four and five years ago and are therefore relatively recent. Furthermore, triangulation between the interviews enabled greater reliability to compensate for the short fieldwork period.

4.3 CASE STUDY APPROACH

Creswell (2007) defines case study research as a "study of an issue explored through one or more cases within a bounded system" (p. 73). This could involve either a varied data collection process, a varied group of participants, or both. This study included both, as a combination of interviews, focus groups, and observation together with a range of participant groups in the selected case study sites was used. Case study research was chosen for this study so that the research aim could be achieved. By obtaining a detailed understanding of the Zambezi CITW eco-club programme, evidence was provided on its success and value.

Although technically one case study, this trans-border research is conducted in two countries. This is because CITW has amalgamated the programme for Zambia and Zimbabwe and facilitates the eco-clubs in this region in the same way. By including multiple sites within the study, various perspectives were highlighted (Creswell, 2007) that enabled cross-site comparison and triangulation (Jick, 1979; Saldaña, 2011) to make the study more reliable. The inclusion of two countries added another dimension to the study by allowing for comparison between the national education policies for each country, and the local level outcomes.

4.4 SAMPLE SELECTION

Purposive sampling selects participants based on certain criteria or characteristics that will enable the research questions to be answered (Ritchie, Lewis, Elam, Tennant, & Rahim, 2014). In this study, the intention was to examine the perspectives of people who share a common experience with the CITW eco-clubs, whether that be direct or indirect. As the perceptions of one group alone cannot provide a comprehensive understanding of the programme, the inclusion of, and comparison between, various groups is more effective (Lewis & McNaughton Nicholls, 2014). This allowed for a more holistic study as the participants were more reflective of society.

Of the seven Zambian schools in which CITW has established eco-clubs, two of them are urban. As there are differences between urban and rural schools, selecting an urban school would have affected the results. Therefore, these were purposely not selected, and three rural schools were included in the study. In Zimbabwe, five of the 10 CITW supported schools were included in this study (see Table 2.1, p. 12). As the eco-clubs in rural schools are operationally similar across the Zambezi Region, including approximately half of the eco-clubs in each country is beneficial, as the results are likely to be representative of the entire CITW supported rural school population.

To adequately analyse the qualitative data collected, the sample size was kept reasonably small (Ritchie et al., 2014). However, as numerous participant groups were included, it was important to ensure that each was adequately represented, particularly when comparisons were made between groups and case study sites (Ritchie et al., 2014). As there are only two CITW programme coordinators for the Zambezi Region, both were included in the study. Eight eco-mentors were interviewed, one from each eco-club studied. Involving parents in the study to find out whether the eco-club members take what they learn into the community was crucial. Finding parents willing to participate, however, was slightly more difficult. In Zambia, a total of four parents were interviewed across the three eco-clubs. In Zimbabwe, a total of eight parents were interviewed, but only across two of the five villages (see Table 4.1, p. 35). This was due to logistical issues, and is only partially representative, as the views of parents in other villages are unknown. Involving the eco-club members themselves was important in understanding their views of the eco-club, what they learn, and what knowledge, if any, filters into the community. As this group included the largest number of potential participants, focus groups of six to ten eco-club members were undertaken at each school. This enabled the involvement of approximately one third of the eco-club members from each school.

The initial intention was to spend more time in fewer schools to gain a detailed understanding of the eco-clubs. However, changes upon arrival meant that the research shifted from a more detailed analysis to a broader study that encompassed more eco-clubs. This made the study more representative and able to be generalised across the Zambezi Region, compared with the initial intention of studying just three eco-clubs. A broader approach helped with the validity of the study, as the researcher was able to see a much larger cross-section of the schools supported by CITW and compare the responses obtained from each school. Consequently, less detail was included, as it was not possible to observe the actual eco-club lesson at every school visited. It was also not possible to spend as much time in each community as was initially anticipated, as this would have allowed for more observation of changes that have occurred as a result of the eco-club programme.

4.5 DATA COLLECTION

Primary data were collected over a two-week period from the 1 - 15 July 2017. The researcher travelled between two areas: Hwange National Park in Zimbabwe, and Livingstone in Zambia. The following subsections provide an account of the recruitment process, and the interviews or focus groups of each participant group involved. The consent acquisition process is described

in Section 4.9. As each group differed in their involvement with the eco-club programme, and therefore their ability to provide certain information, selected questions were only relevant to some groups. Thus, separate questions were prepared for each participant group (see Appendix E). The interviews and focus groups were voice recorded so that the responses could be transcribed, and quotations used in the findings and discussion. Voice recordings also allowed the researcher to be fully engaged and more responsive when interviewing participants (Arthur, Mitchell, Lewis, & McNaughton Nicholls, 2014), as notes did not have to be taken, and eye contact could be maintained.

4.5.1   PROGRAMME COORDINATORS

The researcher met the CITW programme coordinators at the beginning of the fieldwork process and spent time with both intermittently over the two-week period. When explaining the research to the programme coordinators, they were asked whether they would be interested in participating, and both agreed. The interviews were undertaken at the end of the fieldwork and took about 25 minutes to complete. The original set of questions for the programme coordinators included several aspects that the researcher was able to answer during the fieldwork, and these were therefore omitted from the interviews. The programme coordinators were asked general questions regarding the establishment and evolution of the eco-club programme, the main issues the programme is seeking to address, and some of the predominant outcomes thus far (see Appendix E).

4.5.2   ECO-MENTORS

There are two eco-mentors at each school supported by CITW, all of them school teachers. In many cases, there was only one eco-mentor available when the researcher visited the schools. After being introduced to the eco-mentor by the CITW community liaison and explaining the research, the eco-mentors were invited to participate in the study. Once the researcher had answered any questions they had, all the eco-mentors were happy to participate in the interviews. At one school, the eco-mentors were in a process of transition, where the two existing eco-mentors were handing over to two new eco-mentors. As all four were present and happy to participate, the researcher selected one of the experienced eco-mentors, as it was assumed that they would be able to answer all the researcher's questions. The duration of the interviews with the eight eco-mentors ranged between 17 and 37 minutes. These took place after the focus group discussion, either in an empty classroom, the school library, or outside.

The depth of the answers given differed from school to school, with some eco-mentors needing more probing than others. Eco-mentors were asked questions regarding the implementation of the eco-club and associated activities, as well as questions relating to the national curriculum (see Appendix E). As they could communicate fluently in English, no translator was present.

4.5.3   PARENTS

English is not the first language of the research participants. Therefore, in Zambia, the CITW programme coordinator assisted with the recruitment of parents, and in Zimbabwe the CITW community liaison arranged that parents who were interested in participating in the research could gather in a central meeting place. After introductions, the research was explained to the parents in the local language on behalf of the researcher. Many parents were happy to participate in the research, and only a few decided against it. The parent interviews ranged in duration from five minutes to 19 minutes. Consequently, this led to significant differences in the amount of information gathered from parents, depending on their interest and willingness to share their thoughts.

All the parent interviews took place outdoors. In Zimbabwe, eight parents were interviewed separately on a Saturday morning. In one village, the interviews took place at a central meeting place, and in the other village, the interviews took place at the local primary school. These interviews were very successful, with the parents (and in many cases grandparents) keen to provide detailed responses. In Zambia, the researcher's itinerary did not coincide with a weekend, so the four parent interviews took place at the same time as the eco-mentor interviews and focus groups, usually somewhere on the school property. These interviews were mixed in terms of the willingness and enthusiasm of the parents. Although some provided detailed responses, others were less forthcoming. Parents were asked questions directly related to the activities and projects undertaken in the eco-clubs, together with questions on any transfer of knowledge from the eco-club members (see Appendix E). In both countries, there were parents who were not comfortable speaking in English. For these interviews, a translator was present.

4.5.4   ECO-CLUB MEMBERS

The CITW community liaison pre-organised the focus groups as parental consent needed to be acquired (further discussed in Section 4.9). Information sheets and consent forms relevant to the eco-club members were emailed to CITW Zambezi staff prior to the researcher's arrival (see

Appendices C & D), as well as with an explanation of what the researcher wanted to do, and how many children to include in each group. Upon arrival at each school, the selected eco-club members who had acquired parental consent were gathered. The researcher, with the help of the CITW community liaison, explained the research to the eco-club members and ensured that they were all happy to participate before the focus group commenced.

The eight focus groups that were undertaken ranged in duration from 10 to 16 minutes and were mostly held in the school library. The groups differed significantly in terms of the enthusiasm of the children involved. Some discussions went very well, as the children were more outgoing. Other groups, however, did not yield much data because the eco-club members were very shy and did not want to speak out. The researcher was highly conscious about using open-ended questions to avoid acquiescence bias (further discussed in Section 4.7) and to encourage the children to come up with their own answers. The focus groups comprised of questions relating to the environment, the eco-club, and the activities undertaken (see Appendix E). Questions on knowledge transfer between the eco-club and the home environment were also included. Although the focus groups did enable the collection of data, the researcher would consider doing things differently if this were to be repeated. For example, having the eco-mentor ask questions may have been more effective, as in the eco-clubs that were observed, children were much more comfortable and vocal when asked questions by the eco-mentor.

4.6 DATA ANALYSIS

There is no set procedure for the analysis of qualitative data, as it is not a linear process (Spencer, Ritchie, Ormston, O'Connor, & Barnard, 2014). The analysis of data in this study is explained below.

Before analysis could begin, data preparation was undertaken (Creswell & Plano Clark, 2011; Hesse-Biber & Leavy, 2011). This comprised of transcribing the interviews and focus groups from the oral recordings. This was done manually by the researcher, as it enabled the researcher to become more familiar with, and reflect upon, the data from an early stage. It became apparent that by transcribing one's own data, certain aspects came to light that were previously missed, emphasising the value of this initial step. The researcher intended to write brief notes to accompany the recordings, particularly regarding the focus groups with general comments on how they went, and the levels of participation and enthusiasm from the participants

(Spencer, Ritchie, O'Connor, Morrell, & Ormston, 2014). While this did not eventuate for every focus group, any notes that were taken were added to the transcriptions.

Following this, exploration of, and familiarisation with, the data was undertaken. In this study, familiarisation with the primary data collected: interviews, focus groups, and observational data, was crucial in building a comprehensive understanding of the data acquired. This phase involved the initial organisation of data into broad themes (Creswell & Plano Clark, 2011; Hesse-Biber & Leavy, 2011; Spencer, Ritchie, O'Connor, et al., 2014), a process that was guided by UNESCO's (2005) characteristics for ESD, and CITW's aim and vision. Following this, the key points from each interview and focus group were sorted into tables so that the researcher could compare participants' responses at a glance, and then go back to the transcript for further detail and quotations. Although data analysis software can be helpful in speeding up the process of data organisation, relying on this software can distance the researcher from the intricate details in the data (Spencer, Ritchie, Ormston, et al., 2014). Therefore, data analysis software was not used in this study.

4.7 ADDRESSING BIAS

Bias is a significant threat to the validity of qualitative data (Maxwell, 2005), and can arise from both the interviewer and the respondent. In this study, there were four types of bias that needed to be avoided or minimised by the researcher.

The first was investigator bias. This is "where the researcher imposes one's existing beliefs, values, assumptions and expectations on the research subject, ignores the evidential impact of data and draws conclusions that are aimed at reinforcing one's ideological preferences" (Tan, 2015, p. 85). To minimise the risk of investigator bias, it was important that the researcher remained neutral and constantly open to critique, whether that be of the programme, or any pre-conceived ideas that the researcher might have had. Second, cultural bias and ethnocentrism was also a risk in this study. To demonstrate cultural relativism, the researcher maintained a positive and neutral view, endeavouring to understand participants' responses from their perspectives. Crucial here, was that the researcher had to be acutely aware of their own cultural assumptions, and how these could have impacted the study.

Third and fourth, two types of participant bias relevant to this study were 'acquiescence bias' and 'sponsor bias' (Sarniak, 2015). The risk of acquiescence bias was particularly high in this study, especially as children were involved. To mitigate this, any questions that assumed a right

answer, such as yes/no and closed-ended questions, were followed by a probing question asking the respondent/s to explain why they had answered as they had, or to elaborate on an answer. This ensured that there was an open-ended aspect to each question, minimising any potential for acquiescence. As this study directly examined the CITW eco-clubs, and the researcher was accompanied by CITW and Wilderness Safaris staff, sponsor bias was a risk in this research. Participants' answers could have been affected by the misconception that the researcher was affiliated with CITW. These answers could have gone either way: respondents could have been overly positive in fear of saying anything negative about the organisation, or they could have been overly negative in the hope that they might catalyse change from the organisation (Allendorf et al., 2006). While this is a difficult bias to avoid, the researcher made it clear that this was an independent study, and that no participant would be adversely affected by the answers they gave.

4.8 LIMITATIONS

This study has two main limitations. First, the amount of time spent in the field. Due to logistical constraints in the time allocated for fieldwork, the researcher was only able to spend two weeks gathering primary data. Two weeks spent in multiple communities meant that the researcher did not have the opportunity to build a rapport with community members and students prior to carrying out the interviews and focus groups. Additionally, determining behaviour change as a direct result of the eco-club programme was a challenge. The researcher predominately had to rely on reported rather than observed behaviours, as there was not always an opportunity to spend time in the communities. To address this, a range of participants were included (programme coordinators, eco-mentors, eco-club members, and parents) so that the responses could be triangulated, and more robust conclusions made. However, a longitudinal study would be most effective.

Second, determining the extent of knowledge acquired in the eco-club itself is a limitation. As this study only includes children who take part in the eco-club programme, it is not possible to guarantee that any knowledge increases have arisen as a direct result of the programme. However, the incorporation of questions to eco-mentors regarding the amount of ESD taught in the national curriculum could mitigate this issue. Furthermore, gathering retrospective data from eco-mentors on children who have been attending eco-clubs for a longer period in comparison with those who have joined the eco-clubs more recently could also provide insight into how much knowledge is attained through the eco-clubs.

As a result of these limitations, it is emphasised that this research is intended as an exploratory study that aims to fill some of the gaps in the existing research regarding non-formal primary level ESD programmes in a developing context. The results from this study could be used as a baseline for future longitudinal studies, or as a starting point for more comprehensive studies on the impact of ESD on pro-environmental behaviour in a developing context. Regardless of these limitations, however, the data gathered from this study does have the potential to contribute to the existing literature on non-formal ESD. It also enables CITW to gauge the effectiveness of the Zambezi eco-club programme thus far, and potentially use the data from this study to further augment the development of the eco-clubs in the Zambezi, and those in other regions.

4.9 RESEARCH ETHICS

Maintaining ethical conduct as a researcher is crucial to ensure that no harm comes to any party involved, whether it be participants, Massey University, or the researchers themselves. The *Massey University Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants* was consulted in depth to determine potential ethical concerns (Massey University, 2015). An initial application to the Massey University Human Ethics Committee (MUHEC) resulted in the study being considered high-risk. Thus, a full application was submitted to the Committee, comprehensively discussing the ethical concerns and strategies for avoiding any harm to participants, the university, and the researcher. The main ethical concerns involved, and the strategies to address them, include the following:

1. Participant confidentiality

To ensure participant confidentiality, it was made clear to potential participants that no identifying factors would be used, including names and images. Images that have been used do not show faces, apart from Figures A13 and A16 in Appendix A, where both individuals were happy to have their photo taken. Focus group confidentiality was ensured through the consent process. Teachers who were present for the focus groups signed a confidentiality agreement, agreeing that all information discussed, and the identity of the participants would not be disclosed (see Appendix D). It was also imperative that any data and consent forms be kept secure to ensure participant confidentiality. All voice recordings were stored on the researcher's laptop and an external hard drive, both of which were password protected. As the fieldwork involved moving around to different locations, keeping the consent forms in a lockable filing

cabinet was not an option. Instead, signed consent forms were kept securely in a locked bag and were only accessible to the researcher.

2. The inclusion of children under the age of 15

Parental consent is required for the involvement of children under the age of 15. The CITW community liaison who organised the focus groups prior to the researcher's arrival explained the research to eco-club members and their parents and distributed the consent forms (see Appendix D). The signed forms were collected by the eco-mentors from each school and were given to the researcher before the focus groups began. In addition to parental consent, obtaining consent from the children themselves is essential. This ensures that children feel included and empowered to make their own decision regarding their participation (NSPCC, 2017). Before each focus group, the eco-club members were reminded that they did not have to participate if they had changed their mind. Only once consent had been obtained from the eco-club members themselves, did the focus groups commence.

3. Informed consent

Informed and voluntary consent is one of the major ethical principles stipulated by MUHEC. It is important that potential participants fully understand what the research entails and what is expected of them. In this case, information sheets appropriate for the intended participants were used together with verbal communication to explain the research to participants. As this study included a variety of participants, various versions of information sheets were created and distributed (see Appendix C). However, as English was not the first language of many of the participants, one of the CITW programme coordinators or the CITW community liaison explained the study to potential participants in the local language on behalf of the researcher. It was made clear to participants that they could ask questions at any time, refuse to answer any question, or withdraw from the study at any time. Participants were also asked whether the interview could be voice recorded. It was made clear to the participants that:

   a. Only the researcher and assigned supervisors would have access to the recording.
   b. Participants could request their own recording.
   c. The voice recorder could be switched off at any time during the interview.

Oral and written consent were used in this study. Once it was established that participants were happy to be interviewed, consent was obtained either orally or in writing. For those who gave

oral consent, the researcher first asked whether the interview could be voice recorded. Once permission was given for this, the recorder was switched on, and the researcher asked the participant to give consent again for the voice recorder. For those participants who gave written consent, this was acquired prior to the interview. Once consent was acquired, the interview commenced.

4.10 CONCLUSION

The qualitative nature of this study, together with the use of a range of data collection methods allowed for a comprehensive study that could achieve the research aim and objectives. Thus, the interviews, focus groups, observation, and document analysis were the most appropriate methods to employ for this study. The fluidity and evolving nature of fieldwork was emphasised in this chapter through the changes that occurred from the researcher's initial intentions, and what eventuated in the field. Including more eco-clubs than initially intended increased the validity and representation of the research, allowing for more effective cross-site comparison and triangulation. The changes that occurred during the fieldwork also highlighted the importance of research ethics, as the researcher had to ensure that, above all else, high ethical standards were upheld. While there were limitations to this study, the data gathered still has the potential to contribute to the existing literature on non-formal ESD by highlighting a case study in a developing context.

Chapter 5: Findings

5.1 INTRODUCTION

The previous chapter outlined the methodology used to carry out this research. To obtain an understanding of the success and value of a non-formal ESD programme, fieldwork and secondary data collection was undertaken in response to the research objectives. The aim of this chapter is to present the findings from the data collection before a critical discussion is presented in Chapter 6. Vertical policy integration was identified as a key theme in the literature review. To determine the extent of vertical policy integration for this case study, examining the CITW eco-club programme with respect to international and national ESD policy was necessary. This enabled an understanding of the relevance and value of the eco-club programme.

The Zambezi CITW eco-club programme responds to UNESCO's (2005) characteristics for ESD to varying degrees. Having examined the national curricula for Zambia and Zimbabwe, it became clear that the eco-club programme provides a more comprehensive learning experience for students, enabling them to gain a deeper understanding of many environment-related topics. This was further supported through the interviews, focus groups, and observation that was undertaken. The alignment of CITW's aim and vision with UNESCO's characteristics, together with the key issues CITW seeks to address, also demonstrates integration. Furthermore, the prevalence of leadership examples that arose during the fieldwork contribute much evidence towards the achievement of CITW's aim.

This chapter consists of three sections. Findings regarding the eco-club programme's response to UNESCO's (2005) characteristics for ESD are presented in Section 5.2. This section contributes to the fulfilment of the first objective. Although the Zambezi eco-clubs are facilitated in the same way, and are considered as one case study, the findings have been separated into those for Zambia and those for Zimbabwe, which follow in Sections 5.3 and 5.4. While many findings were the same across both countries, some differences did occur. Thus, more detailed findings on the implementation of the eco-club programme in each country are presented. National education policy findings relevant to ESD, and the degree to which the CITW eco-club programme responds to national education policy are also addressed in these sections, responding to the second objective of the study. As CITW's aim, vision, and the main issues the

organisation seeks to address largely align with UNESCO's characteristics, findings regarding the third objective are integrated throughout this chapter.

5.2 CITW RESPONSE TO UNESCO CHARACTERISTICS

General findings regarding the CITW eco-club programme's response to UNESCO's (2005) characteristics that are relevant to both countries are presented in this section. This includes mainly secondary data, and primary data collected from the programme coordinators. More specific findings from each country are outlined in Sections 5.3 and 5.4. These sections incorporate primary data from the interviews and focus groups, which allow for data triangulation. Observations from the fieldwork are presented throughout this chapter. Table 5.1 shows the degree to which the eco-club programme responds to UNESCO's characteristics and criteria for ESD. Three classifications have been included:

1. A high response to a criterion (✓✓)

If there was evidence in the eco-club curriculum of a criterion, and support was consistently provided through primary data, a high response was determined. For example, group activity is stated throughout the eco-club curriculum, and arose many times during the interviews, demonstrating a strong response to this criterion.

2. A partial response to a criterion (✓)

A partial response to a criterion was determined if evidence arose in the primary and/or secondary data of the existence or prevalence of a criterion, but it was not widespread. For example, interdisciplinary behaviour arose at two schools in Zambia, but was not identified to the same degree at the other schools visited.

3. No response to a criterion (✗)

This was determined if a criterion was not included within the eco-club curriculum, and no evidence of the criterion arose during the primary data collection. For example, UNESCO (2005) encourages the incorporation of topics such as health and HIV/AIDS in ESD, neither of which are included in the CITW eco-club programme.

Table 5.1 – Characteristics and criteria for ESD adapted from UNESCO (2005) and the degree to which the CITW eco-club programme responds to these characteristics.

	KEY CHARACTERISTIC	CRITERIA TO FULFILL CHARACTERISTIC	DEGREE OF RESPONSE TO CRITERIA
THE LEARNING PROCESS	**CRITICAL THINKING AND PROBLEM-SOLVING**	- Evidence of problem-based learning in the ESD programme. - Evidence of group activity.	✓✓ ✓✓

	MULTI-METHOD	- Evidence of a range of teaching methods, including but not limited to:
		    o Practical learning in addition to theory.
		    o Inclusion of outdoor learning.
		 - Teacher organisation, i.e. evidence of pre-planning, use of lesson plans, etc.
			
			 ✓✓
			 ✓
			
			 ✓✓

	PARTICIPATORY DECISION-MAKING	- Students have some control over the learning process. - Relationships and interactions (teacher/student and student/student).	✗ ✓✓

APPLICABILITY AND LOCAL RELEVANCE	**APPLICABILITY AND LOCALLY RELEVANT**	- The curriculum is locally relevant, enabling learners to understand and apply acquired knowledge and skills in their daily life.
		 - The curriculum should address the following in an applicable/locally relevant way:
		    o Health
		    o HIV/AIDS
		    o Climate change
		    o Natural resource use
		    o Disaster prevention/management
		    o Rural development and poverty reduction
		 - The incorporation of traditional knowledge into the curriculum.
		 - Use of local language.
			✓
			
			 ✗
			 ✗
			 ✗
			 ✓✓
			 ✓✓
			 ✓✓
			 ✗
			
			 ✓

HOLISM AND VALUES	**INTERDISCIPLINARY AND HOLISTIC**	- The inclusion of various knowledge domains within the curriculum, and the filtering of ESD into subjects outside of the ESD programme. - Evidence of a relationship between the ESD programme and the community.	✓ ✓✓

	VALUES-DRIVEN	ESD teachings should build respect for:
		 - Dignity and human rights, and intergenerational responsibility
		    o Gender equality
		    o Relationships with communities
		    o Incorporation of traditional knowledge
		 - Biodiversity of eco-systems
		    o Natural resource use, climate change, and disaster management included in curriculum.
		 - Cultural diversity
		    o Relationships and interactions (both teacher/student and student/student).
			
			 ✓✓
			 ✓✓
			 ✗
			
			 ✓
			
			 ✓✓

5.2.1 THE LEARNING PROCESS

The eco-club programme responds highly to UNESCO's (2005) characteristics of 'critical thinking and problem-solving', and a 'multi-method' approach. This is demonstrated through each topic in the eco-club curriculum, where most of the activities have an informative, problem-solving, critical thinking, and group activity element to them. This gives eco-club members many opportunities to refine these skills in relation to different contexts and topics, from animal adaptation, to birds, insects and animals, litter, water, and energy. Critical thinking is addressed in each topic through discussion questions at the end of each activity that encourage students to think about and reflect on what they have learned. There is also a separate topic on 'community debate/problem solving' in the eco-club curriculum which demonstrates a learner-centred approach by encouraging students to go beyond the classroom and work together to find possible solutions to local or national problems, as well as encourage further critical thinking through classroom discussion (Johnson & Ryan, 2015). Furthermore, many of the problem-solving activities are done in a group and require communication and teamwork. While some activities are purely for teambuilding purposes, other group activities are linked to a specific topic and require collaboration, either in small or large groups. The importance of teamwork is recognised in the eco-clubs and was encapsulated by one of the Zimbabwean eco-mentors who stated that "eco-club instils that feeling of working together so that [the students] help each other and they can transfer that into other situations. They know that working together leads to success".

In terms of a 'multi-method' approach, almost all the activities within the eco-club curriculum have a practical element to them, which is highly responsive to UNESCO's (2005) criterion. Practical activities have a recommended duration of 45 minutes to one hour each, whereas lessons of a theoretical nature have a recommended duration of 15 - 30 minutes. All the eco-mentors agreed that practical learning is crucial for a better understanding of concepts, as eco-club members "can assimilate the activity and the word they are using" (Zambian eco-mentor, personal communication, July 12, 2017). While many of the activities within the eco-club curriculum require space, and are therefore assumed to take place outdoors, there is a general lack of encouragement within the curriculum to use outdoor space as much as possible.

Children in the Wilderness currently prescribes six lesson plans per school term for eco-mentors to follow, encouraging them to provide feedback. To enable eco-mentors to discuss ideas with one another, the order of the topics to be covered each week is suggested by CITW. Eco-

mentors for the Zambezi Region are part of a group on the mobile phone application 'Whatsapp' so that they can discuss and share ideas, including aspects that went particularly well, or perhaps not so well during their eco-club. When asked about the provision of lesson plans as opposed to giving teachers greater control and flexibility to create their own lesson plans, one of the programme coordinators explained that there has been an evolutionary process regarding lesson plans and eco-mentor guidance, described in three phases as shown in Figure 5.1. When the eco-clubs were first established, eco-mentors were encouraged to create their own lesson plans based on given topics. However, unfamiliarity with interactive teaching methods meant that CITW's expectations were not reflected in the eco-club lessons. Responding to this, the second phase saw further training and the provision of guidelines and ideas for each topic. While there was an improvement, the extra-curricular nature of the programme meant eco-mentors lacked time, and likely inclination, to spend time on lesson plans. The third phase then saw the introduction of detailed lesson plans, which has resulted in the eco-clubs being carried out more effectively, with more "enthusiasm" from the eco-mentors (CITW programme coordinator, personal communication, July 15, 2017).

Phase 1

- **Process**: Eco-mentors were provided with training on interactive teaching methods and were given topics to cover in the lessons, together with ideas on how to do so.
- **Outcome:** Interactive teaching was not happening in the eco-clubs due to lack of familiarity with interactive teaching methods.

Phase 2

- **Process:** Eco-mentors were provided with a guideline of topics, general information, and then ideas on how they could adapt it.
- **Outcome:** While the eco-mentors were happier and more comfortable, eco-club lessons were still not reflecting the guidelines.

Phase 3

- **Process:** A new method was introduced, providing eco-mentors with detailed topics, methods and activities. These are more prescribed, but eco-mentors are encouraged to report back and add their ideas.
- **Outcome:** While the eco-mentors do not provide much feedback, the eco-mentors are much happier and the eco-club lessons are carried out much more effectively.

Figure 5.1 – The evolution of eco-mentor guidance and lesson plan provision as explained by a CITW programme coordinator.

When asked whether there are any challenges in following the lesson plans, a mixed response was received from eco-mentors. While two eco-mentors, one from each country, stated that the curriculum is easy to follow and that there are no challenges in implementation, others highlighted some of the challenges they faced which were related to time management:

1. Finding additional time to undertake eco-club lessons and activities. As the eco-club programme is not part of the national curriculum, finding time to undertake the lessons and maintain projects like the eco-gardens can be difficult, as this is done outside of school time.

2. National examinations and inter-school sporting events sometimes interrupt eco-club time, meaning some topics are missed or are not adequately addressed.

3. The ability to get through all the topics required per term. An eco-mentor in Zimbabwe stated that there are "too many [topics] due to eco-club not being the core business as teachers".

The eco-club programme does not respond to UNESCO's (2005) encouragement of participatory decision-making. Interestingly, the eco-club curriculum does encourage some student control through the election of student representatives to ensure shared responsibility between the eco-mentor and students. It also encourages "special efforts to ensure that it is not just the teacher-in-charge and [representatives] who decide what happens at meetings" (Johnson & Ryan, 2015, p. 9), and that students take turns planning upcoming clubs. This contrasts with the findings from the fieldwork, as participatory decision-making was not reflected to this degree in any of the eco-clubs visited. Seven of the eight eco-mentors interviewed said that eco-club members are not given any choices regarding their learning, because the eco-mentors "follow what is in the guidelines" (Zambian eco-mentor, personal communication, July 10, 2017). An eco-mentor from Zimbabwe stated that "we give [the students] some choices… but in the back of my mind I know what I want to do", again referring to the eco-club curriculum and stipulated lesson plans. This suggests that a balance has not yet been found between following the curriculum and allowing students to have more control. Furthermore, as the order of topics to be covered each week has been suggested by CITW so that eco-mentors can discuss ideas with each other via Whatsapp, fewer opportunities are available for participatory decision-making. Participatory decision-making and student involvement in the learning process is also not addressed in the national education policy for Zambia or Zimbabwe. Thus, neither the eco-club programme nor the national education policy responds to this characteristic.

5.2.2 APPLICABILITY AND LOCAL RELEVANCE

There are mixed responses to UNESCO's (2005) characteristics of 'applicability' and 'local relevance'. When asked about the key issues that CITW Zambezi seeks to address, the programme coordinators mentioned poverty, deforestation, poaching, and pollution. There is much overlap between the topics suggested by UNESCO and the key issues that CITW seeks to address. Thus, the findings presented in this section are also relevant to the third objective of this study, as they link with the achievement of CITW's aim and vision.

For the most part, the CITW eco-club curriculum is locally relevant. The following features demonstrate this:

1. Activities and games incorporate locally relevant aspects of the southern African surroundings where possible. For example, games that reference animals and other wildlife are all African animals that eco-club members will either be familiar with, or will get to know better. As many of the communities in which CITW operates are located on the periphery of national parks, becoming familiar with the animals around them offers a more direct experience for eco-club members.
2. Identification of plants, birds, insects, and animals around the school is a valuable skill for students to learn, as they can apply this knowledge in their everyday lives, as well as pass on knowledge to their families about the species that live around them.
3. The debating and problem-solving topic is locally relevant in that statements and ideas for discussion are linked to local issues such as bore holes, poaching of wildlife, water use, and deforestation. As these issues are widespread and highly relevant, eco-club members can exchange ideas and learn together.

There are, however, some aspects of the eco-club curriculum that hinder its potential to be more locally relevant. These include the following:

1. There are explanations in the eco-club curriculum that are in the imperial system, such as miles, gallons, feet, and inches, that are not likely to be understood by the eco-mentors. As Zambia and Zimbabwe both use the metric system, incorporating information in the imperial system is likely to add confusion and reduces the ability of teachers and students to use the data as a reference point.

2. There are elements of the curriculum that have been transferred from American resources, such as finding out from the local council what can be recycled, or using street lights and torches to find moths at night. Many of the schools where CITW has established eco-clubs are in rural areas where municipal waste management does not take place, nor are there street lights, torches, or even electricity.

UNESCO (2005) encourages the incorporation of health, HIV/AIDS, climate change, natural resource use, disaster prevention/management, and rural development and poverty reduction in ESD (see Table 5.1, p. 50). While the eco-club programme includes several of these topics, climate change and HIV/AIDS are not addressed in the eco-club curriculum. The only lesson pertaining to health is the construction of tippy taps. These are hygiene and water-saving handwashing devices that are constructed using sticks, string, and a water container. A hole is made in the container, and by using one's foot to push on the stick, water tips out (see Appendix B). While the tippy taps have been successful, with many being constructed within homesteads around the villages (see Figures 5.2 & 5.3), many of the eco-mentors reported challenges with the maintenance of tippy taps. In Zimbabwe, four of the five eco-mentors interviewed stated that the containers used were broken, while in Zambia, two eco-mentors noted that tippy tap structures get broken by animals.

Figure 5.2 – Example of a tippy tap in Zimbabwe village 1 (photograph taken by researcher).

Figure 5.3 – Example of a tippy tap in Zimbabwe village 2 (photograph taken by researcher).

Natural resource use is well integrated into the eco-club curriculum, demonstrating a high response to this criterion. Natural resources that UNESCO (2005) considers crucial for inclusion in ESD are water, energy, agriculture, and biodiversity. Topics in the eco-club curriculum that are relevant to natural resource use include animal adaptations, birds, insects, living and non-living things, plants, water, gardening, and energy. When eco-club members were asked why they like to attend the eco-club, four key themes emerged, all of which encapsulated natural resource use to some degree:

1. To learn about/how to look after the environment.
2. To learn about/how to look after animals.
3. To learn in general.
4. To learn about agriculture and tree planting.

Poaching is highly relevant with respect to biodiversity protection and is a key issue that CITW seeks to address. It became clear that CITW emphasises wildlife conservation and protection, as eco-club members in every focus group highlighted that wild animals should not be killed. All participant groups also had a heightened awareness of the link between wildlife and national economic gain through tourism. Wildlife is "a source of income for the state" (Zimbabwean parent, personal communication, July 8, 2017), and there is a realisation that "if people are poaching, tourists will stop coming" (Zambian parent, personal communication, July 11, 2017). Through the eco-clubs and the emphasis of the importance of wild animals, one of the programme coordinators stated that poaching has decreased in the areas where the eco-clubs have been established, and that over the last three years, there have been no arrests for poaching in these areas.

In Zambia and Zimbabwe, deforestation and the subsequent effect of soil erosion is a prominent issue. As addressing deforestation is also one of CITW's intentions, much effort is directed towards this within the eco-club programme, responding well to the criterion of disaster prevention. In addition to learning about the importance of trees within the curriculum, afforestation activities that are undertaken together with the eco-gardens emphasise the importance of planting and protecting trees. When asked for some examples of how they could look after the environment, eco-club members at every school highlighted that trees must not be cut down, and that more trees should be planted. Eco-club members then offered examples of trees they had planted at home, some of which included guava, mango, lemon, orange, and banana trees. The researcher was given a tour by the eco-club members from one of the

Zambian schools where students either planted or adopted a tree on the school property and look after them as part of their eco-club work (see Figures A22 & A23). During the interviews, parents and eco-mentors acknowledged that tree cutting had been a common pastime for children, but they had noticed a change in behaviour, as children no longer cut down trees "haphazardly" (Zimbabwean eco-mentor, personal communication, July 7, 2017). This behaviour change was attributed to the eco-club programme and the emphasis that is placed on the importance of trees.

Furthermore, there has been a transfer of knowledge from children to their parents, with many parents also demonstrating the adoption of new behaviour. Parents in both countries stated that their children had taught them the importance of trees and had encouraged them to plant trees around their homesteads. Many parents said they had planted fruit trees, some of which included "mango, orange, and guava", enabling their children to have "relishes" (Zimbabwean parent, personal communication, July 8, 2017). The researcher was then invited by several parents to their homesteads and was able to observe some of the trees that have been planted in the five years since the establishment of the eco-club programme (see Figures 5.4 & A15). A transfer of knowledge and willingness to change behaviour also arose regarding the deforestation that occurs to make homestead fences and animal enclosures shown in Figure 5.5. However, economic challenges inhibit behaviour change, as highlighted by a Zimbabwean parent who stated that "we cannot afford to get money to use the wire fences and remove the wooden fences. So, our hands are tied, but we have got a wish".

Figure 5.4 – Fruit trees that have been planted in a homestead (photograph taken by researcher).

Figure 5.5 – Fence construction using tree trunks and branches (photograph taken by researcher).

UNESCO (2005) stipulates that "educational activities have to be linked to the specific needs of the rural community for skills and capacities to seize economic opportunities, improve livelihood and enhance quality of life" so that rural development can occur (p. 21). Both programme coordinators stated that poverty is a key issue that CITW seeks to address. Thus, CITW responds to this criterion in several ways. The eco-gardens established within the eco-clubs have given members new knowledge and skills which they are able to take home and impart to their parents. For example, conservation tillage is a new method of agriculture introduced by CITW, where individual holes are dug for every two seedlings in a smaller area, as opposed to using oxen to scatter seedlings over a large area (see Figure 5.6). This technique has proven much more effective than using oxen, with one community member stating that his yields are much higher than they used to be.

Figure 5.6 – One of the adult community gardens in Zimbabwe using the conservation tillage method (photograph taken by researcher).

Several parents mentioned that the knowledge they have gained from their children regarding planting has helped them immensely. Pro-environmental behaviour is demonstrated through eco-members' and parents' adoption of gardening at home (see Figure 5.7), and the establishment of adult community gardens (see Figure 5.6). A parent in Zimbabwe stated that eco-club members have "taught us how to balance a nutritive garden that will take care of all

the required nutrients that the body needs". Furthermore, school nutrition schemes use produce from the CITW eco-gardens at each school, one of which is shown in Figure 5.8. As the eco-gardens are a large part of the eco-club programme, eco-club members spend much time planting and maintaining the crops. An eco-mentor from Zimbabwe stated that "we fed the whole school with maize (corn)", while an eco-mentor from Zambia stated that children "don't bring a packed lunch, so we benefit from the vegetables in the garden".

Figure 5.7 – A vegetable garden in one of the homesteads (photograph taken by researcher).

Figure 5.8 – An eco-garden at a school in Zimbabwe (photograph taken by researcher).

In addition to the eco-club eco-gardens, CITW has also established adult eco-clubs as part of their community initiatives. Here, income generating projects are established, which include selling produce from the adult community garden, or learning skills such as sewing to make products that can be sold (see Figures A3 & A4). Further behaviour change is demonstrated through parents' enthusiasm to adopt new behaviour. Several parents stated that they can now afford "to pay school fees for our daughters and sons" from selling surplus vegetables as well as their own crafts. The researcher was invited to see one of the community gardens in Zimbabwe, where one man was hard at work (see Figure A16). A strong sense of community and pride was apparent during the eco-garden tour, emphasising the applicability and local relevance of learning new skills that respond to UNESCO's (2005) criterion of 'rural development and poverty reduction'.

Waste management is not specified within UNESCO's (2005) characteristics or strategic perspectives for ESD. However, CITW has identified pollution as a key issue that needs to be addressed in the areas in which the organisation works, and it is therefore discussed in relation to 'applicability' and 'local relevance'. Much effort has been placed on the importance of keeping the environment litter-free, and there are two topics in the eco-club curriculum regarding waste. The first addresses litter, and the second introduces waste management and the concept of 'reduce, reuse, recycle'. This knowledge has transferred to the eco-club members, as many are aware that waste should be separated and recycled if possible. Several parents also stated that their children were active in keeping the home environment tidy, as well as educating members of the household on why they should not litter. Some students and parents make crafts out of recycled materials (see Figures 5.9 and 5.10) and separate their rubbish. However, the lack of recycling facilities or municipal waste pickup in these rural areas means that most rubbish is still burned – albeit in separate pits, one of which is for "combustible" materials (Zimbabwean parent, personal communication, July 8, 2017).

Figure 5.9 – One of the parents making a bowl from old chip packets and vegetable carry bags (photograph taken by researcher).
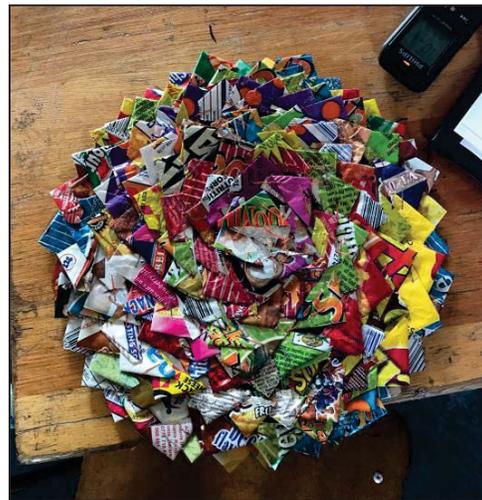
Figure 5.10 – Student crafts made from old confectionary wrappers (photograph taken by researcher).

The eco-club programme does not incorporate traditional knowledge, demonstrating a lack of response to this criterion. However, both CITW programme coordinators believe that it is crucial and should be integrated into the eco-club programme. One of the programme coordinators believes that traditional knowledge has been "eroded" due to the adoption of western culture.

However, the programme coordinator believes that there is still knowledge held by community elders, and that this should be harnessed in order to alleviate some of the issues faced by these communities, such as deforestation and poaching.

While the aim in the eco-club programme is to use English, as it is used in national examinations and for high school instruction, further explanation in the local dialect is often needed to help students gain a better understanding of certain terminology or processes. All the eco-mentors interviewed stated that English is used predominately, but that local language is used for further explanation, as "children understand certain things better in the local dialect" (Zimbabwean eco-mentor, personal communication, July 6, 2017). Through the fieldwork process, a combination of languages was observed at every school visited. In many instances the children understood what the researcher was asking, and in most cases responded in English. However, some younger students were probed in the local language, and either responded to the eco-mentor in the local language, or to the researcher in English. Therefore, there is a balance between the use of English and local languages.

5.2.3 HOLISM AND VALUES

UNESCO (2005) advises that ESD be integrated into the whole school curriculum. However, as the CITW eco-club programme is an extracurricular programme, it cannot respond to the 'interdisciplinary and holistic' characteristic in the way UNESCO recommends. Nevertheless, the eco-club programme does demonstrate interdisciplinary and holistic attributes in other ways, partially responding to this characteristic. While most of the eco-club curriculum is science-based, there is the inclusion of other life skills topics such as orienteering, and elements of geography in the topography and map skills topic (Johnson & Ryan, 2015). Furthermore, the use of English as the main language of teaching in the eco-clubs could also be regarded as interdisciplinary, particularly as English is not the students' first language. Different examples of interdisciplinary aspects arose from each country, and these are explained in Sections 5.3 and 5.4 respectively. UNESCO (2005) also states that in the formal education sector, holistic ESD should include a "whole school approach", where it is integrated into all aspects of schooling, and all levels from preschool to tertiary (p. 24). This ensures that ESD is not limited to one subject, but demonstrates connections with the school, wider community, and governance structures (Buckler & Creech, 2014). While CITW provides non-formal ESD, a whole-school approach is demonstrated through the programme structure (see Figure 2.3, p. 10), links with the schools, and community relationships.

Children in the Wilderness places significant importance on community relationships, responding strongly to this criterion. The organisation strives to approach the relationship between the school, parents, and the community as a holistic entity (as shown in Figure 5.11) where there is knowledge transfer from the school outwards (CITW programme coordinator, July 15, 2017). Community committees have been established in each village where CITW operates. These comprise of school representatives, parents, and community leaders who meet three times a year to discuss future projects and ways to move forward. Community partnerships that are created through the committees are crucial for the success of the eco-clubs, as the programme coordinators have found that respect for eco-clubs grows with this partnership and support from the wider community. The eco-clubs, adult eco-clubs, and wider community initiatives are facilitated simultaneously, as they work in collaboration with each other and are all needed to ensure success of the CITW programme. Another method of involving the community is via open days that are held at the eco-clubs where parents are invited to see what their children do in the eco-club. This reflects the whole-school approach described by Buckler and Creech (2014) and encouraged by UNESCO (2005). Figure 5.11 also demonstrates how these aspects come together to achieve CITW's vision of inspiring care for the environment.
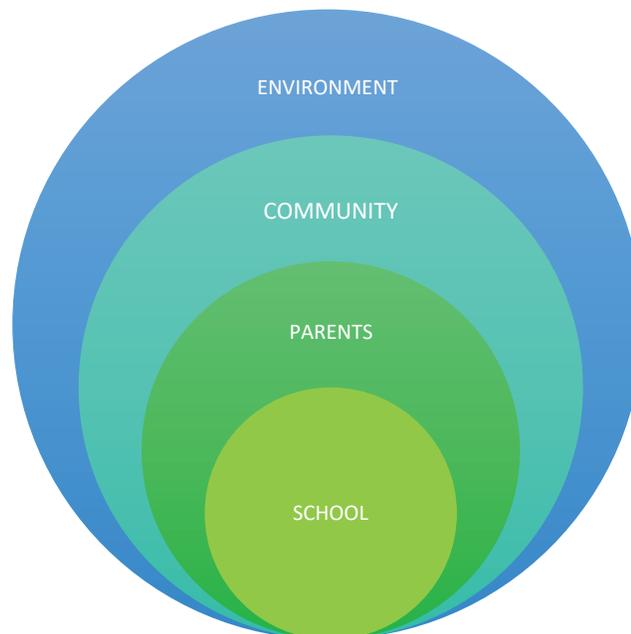

Figure 5.11 – The interrelationship between the school and the wider community as seen by CITW.

Many of the values that comprise the UNESCO's (2005) 'values-driven' characteristic have been implicitly addressed through the findings for other characteristics. However, gender equality, and particularly the empowerment of women and movement away from gender discrimination, is one criterion that has not yet been addressed. It became apparent through the interviews with the eco-mentors that most eco-clubs have more girls in attendance than boys. Six out of the eight eco-clubs comprise approximately 60 per cent girls, while in the other two the genders are more or less equally represented. While the reason for higher participation of girls than boys was not investigated in detail, the fact that there are many girls attending school and the eco-clubs signifies a positive response to this criterion.

Children in the Wilderness places significant emphasis on leadership development, as this is a central component of the organisation's aim and is associated with intergenerational responsibility. Leadership was a common theme that arose from each participant group, providing much support for its prevalence in the programme. An eco-mentor from Zimbabwe stated that the eco-club members "are the leaders in the school". Most of the eco-mentors gave examples of leadership that they had observed, such as watering the eco-garden after school, picking up litter, and ensuring that their peers did not litter. An eco-mentor from Zambia noted that the eco-club members demonstrate leadership as they "try to teach others, especially their families at home". Eco-club members from two schools: one in Zimbabwe and one in Zambia, mentioned that they like attending the eco-club because they can help and pass on information to others, also demonstrating leadership qualities. Lastly, leadership arose many times through the parent interviews. Almost all the parents interviewed noted that they had learned something through their child as a result of the eco-club as children came home and imparted their knowledge, particularly with regard to gardening and making tippy taps. Some parents also recounted that children had made changes in the home environment on their own initiative, such as picking up litter. This strongly signifies that CITW is achieving their leadership aim, as well as responding to UNESCO's (2005) criterion for intergenerational responsibility.

5.3 ZAMBIA – ECO-CLUB IMPLEMENTATION AND NATIONAL EDUCATION POLICY

This section outlines the relevant Zambian education policy for each ESD characteristic if applicable, and the implementation of the CITW eco-club programme. To determine the extent to which ESD is focused on by the Zambian government, three policy documents were examined. The first is the 2013 *Zambia Education Curriculum Framework* (ZECF) which details the intentions for future education in Zambia (MESVTEE, 2013c). The syllabi for integrated science (MESVTEE,

2013b) and social studies (MESVTEE, 2013a) were also studied, as these documents enabled a further understanding of the subject content and the degree to which the national framework intentions are realised through the curriculum.

Education for sustainable development is considered a national concern in the ZECF. As a national concern, ESD should be incorporated at all levels of the school curriculum, and is a concept that teachers need to be aware of (MESVTEE, 2013c). However, ESD is not integrated into the framework. Instead, it is mentioned as a separate component to be considered. The choice and responsibility to incorporate ESD into the curriculum lies with schools and teachers. As there is an overall lack of detail, explanation, and guidance as to how to incorporate ESD, a disparity arises between national policy and what occurs at a local level. In terms of the CITW eco-club programme's response to Zambia's education policy, many of the topics in the eco-club curriculum align with topics in the science syllabus. Topics in this syllabus that are also reflected in the eco-club curriculum are the environment, including water supply, plants and animals, and materials and energy, showing much overlap between the two.

Several eco-mentors in Zambia highlighted that the eco-club curriculum provides more detail than the national curriculum, and that by addressing these topics again in the eco-club, students can gain further understanding of national curriculum topics. This aligns with the finding that the Zambian curriculum lacked detail and suggestions for teachers on how to tackle different topics. One eco-mentor went on to mention that often topics that are not covered to an adequate extent in the national curriculum arise in examinations. However, "those who attend the eco-club are advantaged" because of their exposure to the topic through the eco-club programme (Zambian eco-mentor, personal communication, July 10, 2017).

Two examples of interdisciplinary behaviour were observed in Zambia. The first became apparent during one of the eco-club sessions where the eco-club members were talking about their drama competition and re-enacted their drama competition performance for the researcher. The performance was a rhyme about the environment: emissions, population growth, and plants. The second example arose at another school in Zambia. The school principal showed the researcher recent awards that students had received in a variety of subject areas, one of which was debating. The principal proudly declared that all three awards belonged to eco-club members. The emergence of eco-club topics in other subject areas demonstrates the potential of ESD to be represented through other school or extracurricular subjects. While the national curricula in Zambia do not single out ESD and expect it to be integrated into all subjects,

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this is compromised by the delegation of responsibility to teachers to do this without further detail or guidance. This highlights the ability of, and potential for, the eco-club programme to be more interdisciplinary.

A shift towards more interactive teaching and practical learning is specifically mentioned in the ZECF. Simultaneously, however, the framework identifies and acknowledges that a lack of resources in many schools means that most teaching is done theoretically, even in more practical subjects such as science (MESVTEE, 2013c). This is supported by one of the eco-mentors, who stated that students spend much of the day inside writing notes, with very little practical work undertaken. A multi-method approach to teaching is therefore not yet achieved though the national curriculum. As interactive and practical learning is a key component of the eco-club programme, multi-method approaches are much more common in the eco-clubs. Practical learning is emphasised through the eco-club curriculum, and eco-mentors agreed that practical learning is important as it enables children to learn more effectively. One of the eco-mentors went on to say that practical learning is crucial so that "lessons don't become boring and teacher-oriented". This demonstrates a shift towards a more learner-centred approach. The practical nature of the eco-clubs was also observed by the researcher (see Figure 5.12). When covering the topic of animal adaptations, children went outdoors and had to demonstrate how certain animals walked. While beneficial for their understanding, this activity brought out much laughter and excitement on the part of the eco-mentors and members, highlighting positive interactions and an enthusiastic learning environment. In terms of outdoor learning, only one Zambian eco-mentor stated that because of the proportion between practical and theoretical learning, approximately 80 percent of eco-club time is spent outside. The other two eco-mentors seemed to place less emphasis on going outdoors, with one stating that outdoor learning only occurs when necessary, and the other said it happens about 50 per cent of the time.

Figure 5.12 – Eco-club members acting out animal adaptations during the eco-club lesson (photograph taken by researcher).

A multi-method approach to teaching also links with UNESCO's (2005) characteristic of 'critical thinking and problem-solving'. The ZECF adopts an outcomes-based approach to education. As this approach aims to provide learners with "skills to access, criticise, analyse and practically apply knowledge" (MESVTEE, 2013c, p. 16), a link with critical thinking and problem-solving is highlighted. Whether this is reflected in day to day teaching was not able to be assessed, as the focus of the study was on the eco-club programme, and the researcher spent time only in the eco-clubs. However, through the eco-club programme, children have plentiful opportunity to practically apply knowledge, and work as a group, particularly through the eco-gardens. Group work also plays a significant role in critical thinking and problem-solving. As group work comprises a significant part of the eco-club curriculum activities, it was not surprising that the eco-mentors acknowledged its prevalence within the programme. One of the eco-mentors gave an example of an activity within the eco-club curriculum that requires eco-club members to work together and think critically to solve a problem. This activity involves using a rope to create a web. Each member of the group must get through the web without touching the rope. Through working as a group, eco-mentors stated that children "understand the importance of working together" and "achieve as a team".

As the eco-club curriculum aligns well with the national curricula, both are highly applicable to learners' daily lives. Zambia's southern province, where these schools are situated, faces five main environmental issues. These include deforestation, soil erosion, wildlife depletion, pollution, and salinisation (Ministry of Environment and Natural Resources, 1994). Each of these issues, except for salinisation, is addressed through the national science syllabus. As these are the main issues that CITW aims to address, they are also addressed through the eco-club programme. This responds to UNESCO's (2005) criterion of natural resource use, and the value of building respect and care for natural ecosystems. Health and HIV/AIDS is addressed in the ZECF and the science syllabus to a large degree, responding to UNESCO's criterion more than the eco-club programme does. Climate change is specifically mentioned in the ZECF as an important aspect for inclusion in the curricula. However, there is no reference to climate change in any of the national syllabi, signifying a discrepancy between the national policies. Climate change is also not addressed through the eco-club programme, demonstrating a lack of response to international guidelines for this criterion.

From grades 1 to 4, all instruction is in a local Zambian language, on the premise that children learn more effectively through a language with which they are familiar (MESVTEE, 2013c). This has created a challenge for the eco-clubs, as children who join the programme in grade 5 struggle to understand English terms. However, because English is used from grade 5 onwards in the national curricula, exposing children to English earlier, for example in the eco-clubs, is advantageous. There is a balance between the use of English and local dialects in the eco-clubs. While English is predominantly used within the eco-club programme, further explanations are often given in the local dialect for clarification purposes. The ZECF emphasises the importance of "reflective education" which provides for the inclusion of "cultural heritage, values, traditions, language, knowledge and skills" (MESVTEE, 2013c, p. 17). The framework encourages teachers to adapt the curriculum to include locally relevant issues and traditional knowledge where they can. While this responds to UNESCO's (2005) emphasis on traditional knowledge more than the eco-club programme does, there is still a reluctance to adapt teaching material. Two eco-mentors said they do incorporate some traditional knowledge, such as using ash as a fertiliser, but no other examples were given.

5.4   ZIMBABWE - ECO-CLUB IMPLEMENTATION AND NATIONAL EDUCATION POLICY

To determine the extent to which ESD is focused on by the Zimbabwean government, two policy documents were studied. First, the *Curriculum Framework for Primary and Secondary Education* was examined (MoPSE, 2015a). This document outlines the new curriculum that is being phased in over the coming years and details the intentions for future education in the country. Second, the *Junior Science and Technology Syllabus* was studied, as this document includes aspects of ESD, and enabled a further understanding of whether the intentions outlined in the framework have filtered through to the syllabus (MoPSE, 2015b). Unfortunately, the researcher did not have access to other relevant syllabi, such as those for social studies and agriculture.

Unlike the Zambian syllabi examined, the Zimbabwean science and technology syllabus provides more detail and guidance (MoPSE, 2015b) such as suggested notes, activities, and resources for each topic. In terms of the CITW eco-club programme's response to Zimbabwe's education policy, many of the topics in the eco-club curriculum align with topics in the science and technology syllabus. Topics in the Zimbabwe science and technology syllabus that are also reflected in the eco-club curriculum include water, energy, soils, plants and animals, sustainable resource management, and landforms and maps, showing much overlap between the two. Responses from eco-mentors and eco-club members provide additional support for the secondary findings, with unanimous agreement from eco-mentors that the eco-club programme aligns well with, and acts as a support for, the national curriculum. One of the eco-mentors stated that eco-club members "gain more than those who are not there", while another noted that "children who are in the eco-club do well when they go back and mix with the whole class". This was emphasised by a third eco-mentor who stated that students "can learn more while they are in the eco-club, unlike those who just learn from the classroom". Furthermore, one of the eco-mentors stated that "we are now using the eco-garden as a resource for agriculture, which is a compulsory subject, so we are in a better position compared with other schools that do not have eco-gardens". The researcher was given a tour of the eco-garden at every school by either the eco-mentor or the school principal. There was a great sense of pride in the eco-gardens, and the researcher was able to observe the hard work that the students put into them. Further support was provided for these statements through eco-club members themselves. Two students from different schools stated that the eco-club lessons helped them with school and national examinations.   These findings strongly demonstrate the value of the eco-club programme as a support for the national curriculum.

Like Zambia, ESD is not outlined as a separate subject within Zimbabwe's curriculum. It is classified as a "cross-cutting" issue that teachers are expected to integrate into all existing subjects (MoPSE, 2015a, p. 32). While this aims to be interdisciplinary, it is unclear how teachers will incorporate it into each subject with prescribed syllabi and a lack of further guidance. While examples of interdisciplinary outcomes arose more in Zambia, the importance placed on English was more noticeable in Zimbabwe. Three eco-mentors explicitly stated the importance of using English, because the national curricula are in English. One eco-mentor noted that the "children in eco-club are slightly more advanced than others, especially when it comes to communication in English".

There is significant emphasis in both the curriculum framework and the science and technology syllabus on shifting from "content-based" to "competency-based" learning (MoPSE, 2015a, p. 4) that enables a more "learner centred participatory approach" (MoPSE, 2015b, p. 2). The new syllabus aims to incorporate more practical and varied approaches to learning, demonstrating an awareness and intention to respond to international guidelines. However, teachers are still trying to adapt to the new curriculum, and one eco-mentor noted that children still "do theory the whole day during school". One eco-mentor went on to say that the eco-club programme enables a more "hands-on approach" to teaching, implying that the national curriculum does not yet respond to this characteristic. Furthermore, some of the suggestions in the syllabus do not consider the diversity of schools in the country. For example, watching videos and using electronic media are not possible for schools in rural areas, such as those included in this study that do not have electricity, or are still struggling to obtain basic teaching resources.

The eco-club programme therefore demonstrates a stronger response to these characteristics by providing teachers with training and resources to carry out the eco-clubs. One of the eco-mentors gave an example of a topic that was "better understood when we did it in the eco-club through a rhyme", noting that "the [eco-club] resources are very helpful". Another eco-mentor stated that the teaching methods between the national curriculum and the eco-club programme are very different. Although not expanding on this, this suggests that the national curriculum is not responding to these characteristics. If they were, the teaching methods would be more aligned with the eco-club programme. All the eco-mentors stated that practical learning is more common than theory, with one eco-mentor noting that students "become happy with practical" activities, while another stated that "students learn better through practical" activity. It seems outdoor learning takes place more in Zimbabwe than in Zambia, with Zimbabwean eco-mentors

reporting that 60 – 70 per cent of the eco-club time takes place outdoors. One eco-mentor noted that sometimes even theory is undertaken outside, as this "evolves into practical [activity]". The importance of group work arose from two participant groups in Zimbabwe. All the eco-mentors interviewed stated that group work was a large part of the eco-club programme, particularly in the eco-gardens. This was observed by the researcher in many schools; children worked together carrying buckets of water (see Figure 5.13). There was a wide recognition of the importance of working together, as it "encourages [eco-club members] to socialise and share ideas". Another eco-mentor noted that "when we give them a problem, they must help each other to come up with solutions". This statement also reflects critical thinking and problem-solving elements that are integrated within the eco-club activities. Interestingly, one of the parents from Zimbabwe noted the importance of teamwork shown through the children:

> I was motivated by the teamwork that our kids were doing in the eco-clubs. I [then] saw it fit that we, as adults, have to work in teams and units. We are empowered, and now we see the benefits of working as a team… Teamwork applies in every form of society.

This emphasises the effect of the eco-club programme beyond the school and into the wider community. Although only one parent brought up the importance of working as a team, this comment stood out in that it signified that some parents are keeping up with what their children do and are also realising the benefits that can come to the community.

Figure 5.13 – Eco-club members helping each other carry water to their eco-garden (photograph taken by researcher).

Local relevance is a principle embedded in the curriculum framework to ensure that all aspects of the syllabi are relevant to learners, communities, and the country. To complement this, there is also a high awareness of the importance of integrating culture and indigenous knowledge systems into the curriculum, and this is emphasised throughout the framework. A life-skills orientation programme has also been introduced as a subject to expose children at all levels to their natural heritage. The extent to which this has been implemented so far is unclear, however, due to the lack of time spent in the schools and the fact that teachers are still adapting to the new syllabi. Zimbabwe differs from Zambia in that English is the language of instruction. However, the criterion for the inclusion of local language is met, as indigenous language is scheduled in the primary school timetable with its own syllabus (MoPSE, 2015a), as well as being used for further explanation in subjects that are taught in English. The eco-club curriculum complements the national curricula with topics that are applicable to learners' everyday lives. Unlike Zambia and the eco-club curriculum, the science and technology syllabus does address climate change, responding to this criterion to a greater extent than the eco-club programme does.

5.5 CONCLUSION

This chapter has provided a detailed presentation of the findings from the data collection. Many aspects of the eco-club programme provide eco-club members with more than the national curricula in Zambia and Zimbabwe can provide in terms of knowledge, resources, and teaching methods. While the national curricula in both countries strive to be more learner-centred and practical, they both fall short and do not place significant emphasis on ESD itself. The CITW eco-club programme, on the other hand, responds to several of UNESCO's (2005) characteristics for ESD, particularly regarding the learning process, and the community relationships that are formed. Integration with national education policy is prevalent, as the CITW eco-club curriculum intends to "extend the boundaries and scope of the formal education system" (Johnson & Ryan, 2015, p. 6), demonstrating the value of the programme as a supplement to the formal curriculum and providing learners with the opportunity to learn more about the environment and conservation. The following chapter discusses some of the findings in more detail and in relation to the findings from the literature review. Chapter 7 concludes the research and provides recommendations to further improve the programme's response to international guidelines.

Chapter 6: Discussion

6.1 INTRODUCTION

To gauge the success and value of non-formal ESD, the findings from the fieldwork have been discussed with respect to those from the literature review, before conclusions and recommendations are made in the final chapter. A notable finding is that non-formal education does have a valuable role to play, as it augments the formal sector by providing knowledge and resources that the national government may not be able to provide. This chapter draws links to existing research that has been undertaken, enabling a critical discussion around the extent to which the findings from this study align with previous studies, or whether they differ. As many of the findings are supported by the existing literature, a strong argument is made for the importance of non-formal ESD to supplement the formal education system, particularly in developing contexts. Thus, this chapter demonstrates the contribution of this study to the existing knowledge on ESD.

This chapter consists of three sections, each of which corresponds to a research objective. First, a critical discussion of the key research findings regarding CITW's response to international guidelines is provided, and relevant findings from the literature review are discussed. Second, selected national policy findings for Zambia and Zimbabwe are discussed in relation to the existing literature on ESD policy integration. While both countries provide for ESD in their education frameworks, little evidence of implementation at a local level suggests that this represents more of a token effort. Finally, a discussion on how CITW is meeting its aim and vision is provided. The significance of non-formal ESD is highlighted throughout each section, responding to the research aim.

6.2 CITW RESPONSE TO INTERNATIONAL GUIDELINES

The study revealed that the eco-club programme does respond to UNESCO's (2005) characteristics for ESD (see Table 5.1, p. 50). The learning process adopted by CITW, the formation of community relationships, and the lack of traditional knowledge inclusion are some of the most prevalent findings that provide support for existing theories and previous studies that have been undertaken.

6.2.1   THE LEARNING PROCESS

With regard to active participation and practical learning, the findings from this study resonate with Haigh's (2006) finding that non-formal ESD can provide a contrast to traditional classroom learning. Providing support for Haigh's finding, an eco-mentor from Zambia aptly remarked that the eco-club members "become much more participative in the eco-club lessons because they feel free. To them it is time to relax and they learn through fun unlike when they are in class". This suggests that the eco-club environment is providing a markedly different educational experience for the students. Many teachers are not used to practical and student-centred learning. This is supported by Chikunda (2007) who found that most teachers prefer the more traditional authoritarian method of teaching where active participation of students is not encouraged. This could also be the reason why participatory decision-making is not prevalent within the eco-clubs, even though it is encouraged through the eco-club curriculum. The eco-club programme and introduction of a more practical and participatory approach, however, is showing teachers the benefits of practical learning. This demonstrates another way that non-formal education may complement the formal system. If teachers are provided with training on how to adapt their teaching to be more learner-centred, this may transfer into their classroom teaching, or be passed on to other teachers. Without CITW's involvement, teachers in these remote areas would still be unfamiliar with this method of teaching. As Zambia and Zimbabwe are shifting towards these methods and expect teachers to adapt, non-formal education is a way that teacher training and capacity building can be provided across both countries.

Eco-mentors noted that group work is a large component of the eco-club programme, with group size depending on the activity undertaken. This gives students the opportunity to become familiar with working collaboratively in different circumstances, further emphasising Stanišić's (2016) comment that teamwork is needed to find solutions to environmental issues. As the national curricula in both countries are focused on individual achievement and are exam-oriented (Chikunda, 2007), group work is not focused on in the formal curricula. The eco-club therefore provides a balance by focusing on group work where students can learn from each other.

The eco-club programme supports Young and McElhone's (1986) notion that the non-formal sector is not bound by national requirements, and is therefore able to provide locally relevant content that can adapt to the needs of a community (Bran et al., 2016). While there are aspects of the eco-club curriculum that could improve with regard to local relevance, many of the

activities within the curriculum utilise local examples, including animals, birds, trees, and issues such as boreholes, poaching, and deforestation (Johnson & Ryan, 2015). This aligns with Ezeanya-Esiobu's (2017) notion that locally relevant examples will enable greater association and appreciation of the learner's own environment, while also providing support for Poole et al.'s (2013) recommendation that a locally relevant curriculum is needed to build knowledge and skills "to enhance the activities of everyday life" (pp. 74-75).

6.2.2   COMMUNITY RELATIONSHIPS

The formation of community relationships was a key finding from this study that contradicts Kadji-Beltran et al. (2017), who found that community relationships in a Cypriot ESD programme did not align with UNESCO's (2005) guidance. This contradiction could be due to an understanding by CITW that community support is crucial to the success of the programme. As discussed in Chapter 2, Wilderness Safaris is an ecotourism company that is acutely aware of the importance of involving local communities and ensuring "that neighbouring communities benefit from ecotourism and, therefore, value conservation areas and will ensure their long-term sustainability (Wilderness Holdings Limited, 2017, p. 62). As a subsidiary of Wilderness Safaris, and established to increase community relationships, CITW would have been inherently aware of, and oriented towards, this from the onset. Eilam and Trop (2013) maintain that community relationships are often not sustained due to differing, changing, and entrenched value systems between generations. The opposite is found in this study, as community relationships help build a strong and respected foundation for the eco-clubs. Several parents openly stated their gratitude for the programme as it has enabled them to make positive changes in their daily lives. In Zimbabwe, one parent stated:

> This programme is very important because we are catching [the children] very young and even for us, we are seeing a direct benefit just because our way of living has transformed as opposed to yesteryear when we never had this knowledge. We have changed and followed what our kids have taught us, and starting at primary school will even change the old generation, as it does not only change the young generation.

While it could be argued that acquiescence bias may be present, this is unlikely, as it was clear how proud parents were of their children, as well as what they have been able to achieve themselves because of the programme. As the eco-club programme does not work in isolation, with adult eco-clubs and wider community initiatives facilitated simultaneously, CITW is able to

reach more of the community and create connections between the eco-club programme, the school, and the community, as demonstrated in Figure 5.11 (p. 62). This also reflects the whole-school approach discussed by Buckler and Creech (2014), where ESD is a holistic entity that extends beyond classroom teaching. This provides further support for CITW's response to international guidelines and demonstrates the ability of an organisation within the non-formal sector to establish a whole-school approach. Figure 6.1 depicts the whole-school approach, together with how CITW reflects these aspects. The community relationships formed by CITW provide further support for the "two-way intergenerational reach" described by Davis (2010b, p. 35) and confirms the potential for children to spread knowledge and awareness into the wider community. In this way, children become leaders, reflecting CITW's aim.
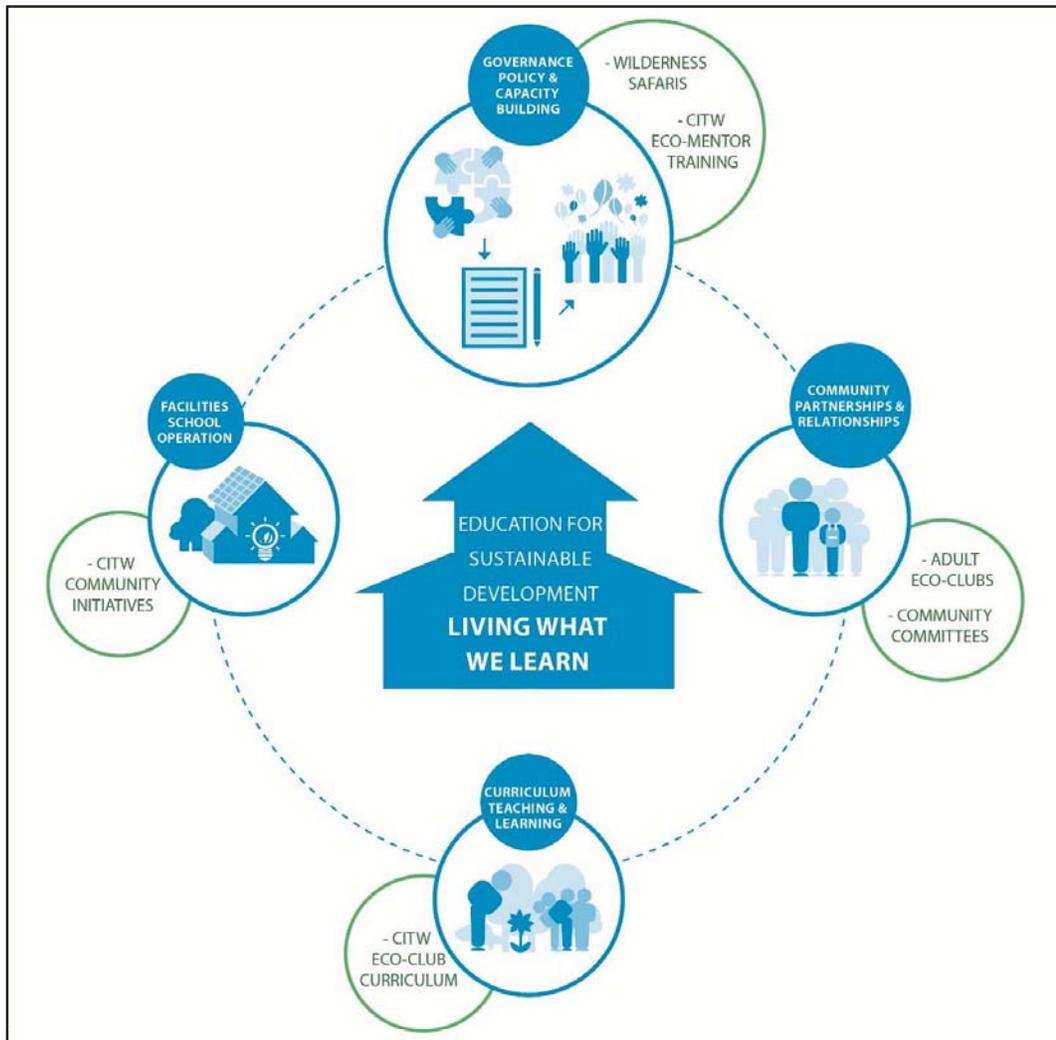

Figure 6.1 – Diagram showing the whole-school approach, together with how CITW aligns with this approach. Adapted from Buckler and Creech (2014, p. 89).

6.2.3 TRADITIONAL KNOWLEDGE

The lack of traditional knowledge in the eco-club programme was a notable finding of this research. These findings are supported by those of Kadji-Beltran et al. (2017), who also found that traditional knowledge was not apparent in the Cypriot ESD programme. Further support is thus provided for the argument that western influence and the externally imposed colonial education system has the potential to marginalise traditional knowledge (Chikunda, 2007; Lotz-Sisitka et al., 2017). Chikunda's (2007) study in Zimbabwe also reported a lack of traditional knowledge. As this knowledge will vary across and within each country, stipulating specific knowledge in the national curricula will not be locally relevant. The non-formal sector is therefore provided with an opportunity to incorporate traditional knowledge alongside what is taught in the formal curriculum. One of the CITW programme coordinators is confident that much of this knowledge still exists among community elders and should be harnessed and incorporated into the eco-club programme. As traditional knowledge is likely to differ across each country and between the areas where CITW operates, it is important that this knowledge is harnessed and applied only where it is relevant.

6.3 NATIONAL POLICY RESPONSE TO INTERNATIONAL GUIDELINES AND CITW RESPONSE TO NATIONAL POLICY

Determining the extent to which national education policy responds to international guidelines, and the extent to which the CITW eco-club programme responds to national education policy enabled an understanding of the value of non-formal ESD. The main findings regarding this objective were the lack of detail and guidance in national education policy for both countries, but a strong topic alignment between national curricula and the CITW eco-club curriculum. These findings corroborate Jackson's (2016) statement that generally, in Africa, more progress is being made towards ESD in a non-formal capacity.

6.3.1 DETAIL AND GUIDANCE OF NATIONAL CURRICULA

Although ESD is mentioned in the education frameworks for both countries, the lack of detail and guidance to ensure that it is incorporated into everyday teaching is a notable finding of this study. It seems that a lack of national guidance is not unique to a developing context. Kuzich et al. (2015) found that a lack of guidance on ESD in Australia meant that teachers were unfamiliar with how ESD should be incorporated into lessons. In this study, the reluctance of educators to adapt teaching material became evident during the fieldwork. Several eco-mentors, and one of

the CITW programme coordinators stated that teachers purely follow guidelines, and do not make adaptions to what is provided for them. While this was in the context of the eco-club programme, which encourages eco-mentors to modify lesson content, this suggests that teachers do not adapt national curricula either. Monde (2011) and Sitali (2014) both reported that teachers lacked knowledge and resources around ESD, which limited their effectiveness in teaching it. As these studies were undertaken in a Zambian context, Monde's and Sitali's findings provide a potential explanation for the reluctance of teachers to adapt material, as well as providing further support for the lack of national guidance on ESD. The research findings are supported by those of Kuzich et al. (2015) who suggest that national incorporation of ESD is more of a token effort. There is clearly a gap between national policy and the resources allocated to ensuring that teachers are provided with the knowledge and means to implement ESD at a local level, hindering vertical integration.

Another reason for the lack of integration between national policy and local implementation is the extent to which ESD is mandated through the national curricula. In addition to little guidance, Kuzich et al. (2015) found that teachers were not setting aside time for ESD because it was not mandated to the same degree as subjects like literacy and numeracy. Chikunda's (2007) study highly reflects this, as the author found that teachers in Zimbabwe strictly follow an "exam-driven curriculum" where the syllabus dictates what is covered (p. 167). This is seen through the frameworks for each country, particularly Zambia, where subjects and the time expected to be allotted to them each week is explicitly stated (MESVTEE, 2013c). This provides further evidence for teachers' reluctance to deviate from this. The exam-oriented curriculum and lack of assessment related to practical activity means teachers spend more time on written exercises because that is what will be tested. There is, therefore, a lack of integration between the exam-driven curricula and both frameworks' desire to be more practical and learner-centred. This provides much support for Kuzich et al.'s finding, suggesting that ESD will not be incorporated into every day teaching unless it is stipulated through the national curricula, and there is explicit guidance through the syllabus on how to integrate it. National governments, therefore, need to provide more guidance and capacity building as stated in the *Policy Integration in Government in Pursuit of the Sustainable Development Goals* report by the United Nations (2015) to ensure that teachers are better equipped to teach ESD. This will also lead to better vertical integration, as the national frameworks will align better with the curricula and syllabi for each country, and also enable local implementation.

6.3.2   CITW ALIGNMENT WITH NATIONAL CURRICULA

The research findings highlight discrepancies between national and local integration of ESD, providing an opportunity for non-formal education to fill some of the gaps. This study found a high level of integration between the topics in the national curricula for Zambia and Zimbabwe, and the CITW eco-club curriculum. Furthermore, it became apparent that the eco-club programme provides more detail than that provided by the national curricula. As an organisation unaffiliated with the formal sector, CITW has greater opportunity to provide an extra-curricular programme that can respond to both international guidelines and the national education frameworks (Young & McElhone, 1986), while providing further resources and teaching methods to educators that the national governments have not been able to provide (Kieu & Singer, 2015). While the CITW eco-club curriculum aligns well with the topics stipulated in the national curricula, differing teaching methods between the two, particularly that of a learner-centred approach, helps develop skills (Jabareen, 2012) that lead to differences between students who attend the eco-club, and those who do not. This is supported by Mahruf et al. (2011) who found that students who were exposed to non-formal education were more caring towards the environment, a sentiment reflected in a Zambian eco-mentor's statement that eco-club members "really know the importance of natural resources and the environment around us". This contributes evidence to the existing literature by reinforcing the importance of the non-formal sector in furthering the uptake of ESD (Buckler & Creech, 2014).

6.4 ACHIEVEMENT OF CITW AIM AND VISION

Determining the level of vertical policy integration is one method of gauging the success and value of a non-formal ESD programme (Kadji-Beltran et al., 2017). Additionally, whether CITW is achieving its aim and vision is another crucial component of this analysis, and one that is needed to achieve the third objective of this study. Despite not modelling the eco-club programme around UNESCO's (2005) characteristics for ESD, much of CITW's policy aligns with these international guidelines. This emphasises the relevance of UNESCO's guidelines, as well as CITW's commitment to providing a quality ESD programme. The United Nations (2015) advocates for capacity building at a national level to help with policy integration. However, it could be argued that capacity building is also needed at a local level to enable community development. Using education to achieve their aim and vision, CITW can facilitate capacity building through the eco-club programme, adult eco-clubs, and other community initiatives. The main issues that CITW seeks to address are poverty, deforestation, poaching, and pollution.

These issues are encompassed within the organisation's overall aim "to facilitate sustainable conservation through leadership development and education of rural children" and their vision "to inspire the children to care for the environment so that they can become the custodians of these areas in the future" (WWT & CITW, 2016, pp. 51-52).

6.4.1   LEADERSHIP AND PRO-ENVIRONMENTAL BEHAVIOUR

Leadership arose many times across all the participant groups, both directly and indirectly, emphasising its prevalence within the CITW eco-club programme. This finding is supported by Breunig (2013), Davis et al. (2008), and Redman (2013), all of whom found that ESD led to leadership among learners. The leadership shown by eco-club members at school and at home demonstrates that they are being inspired to care for the environment, reflecting CITW's vision. Building leadership skills from an early age through ESD will hopefully lead to eco-club members being leaders in the future, supporting Leeming et al.'s (1995) notion that instilling knowledge at an early age will influence thinking later in life.

Pro-environmental behaviour is fundamentally linked with ESD (UNESCO, 2017), and is encapsulated within the aim and vision of CITW (see Figure 2.2, p. 9). It was therefore important to include this in the study, particularly as behaviour change did become apparent through the interviews, focus groups, and observation. The existence of behaviour change as a result of the programme cannot be disputed, as the lack of litter and the prevalence of planting, eco-gardens, and tippy taps was notable. As these are projects that have been introduced by CITW, it is possible to attribute these behaviour changes to the eco-clubs and other initiatives. The findings from this study align with existing literature on behaviour change. Rajecki (as cited in Kollmuss & Agyman, 2002) cites normative influences such as culture, society, and family routines as barriers to behaviour change. Salter's (2013) study provides support for this, as the author finds that the home environment and parents' willingness to adapt their behaviour does have an influence on behaviour change at home. A similar finding became apparent in this study, as it became clear through the parent interviews that those who were more enthusiastic and willing to adopt new knowledge had made changes to their behaviour at home, particularly regarding vegetable planting. Conversely, other parents had acquired the same knowledge but had not yet taken steps to change their behaviour or allow their children to introduce changes at home. This provides much support for Rajecki and Salter's work which highlights the importance of involving parents and communities so that they learn and work collaboratively with the school

and students to enable sustained behaviour change. Nevertheless, leadership is demonstrated through the eco-club members' sharing of knowledge with their parents.

Blake (1999) discusses the 'value-action gap' and identifies 'practicality' as a barrier to pro-environmental behaviour. This includes lack of money, time, information, facilities, and personal skill and ability, even if the intention to change is apparent. In this study, it became apparent that practicality is more of a barrier than normative influences, as it seemed that most parents were willing to try new things and adapt their behaviour, but there were certain challenges that they faced. For example, several parents noted that cutting down trees to make fences is bad for the environment, but due to the lack of an alternative option, this continues to happen. There was, however, a willingness to change behaviour if challenges such as these could be overcome. This suggests that if community members are provided with the means to overcome practicality barriers, behaviour change could become more apparent. Although some practicality barriers are more challenging to overcome, CITW does help communities overcome various challenges such as lack of money, information, and facilities. By imparting knowledge that communities lack, building skills, and providing resources such as seeds and materials for certain projects, eco-club and community members can make initial changes. While these communities have always grown crops, the new farming techniques have enabled more efficient farming, which has led to higher crop yields, and in turn the ability to sell surplus produce and gain an income.

6.4.2   KEY ISSUES CITW SEEKS TO ADDRESS

Poverty is a significant issue addressed by CITW through the eco-club programme and the wider community initiatives. Income generating projects, mostly for adult groups, and education around food planting within the eco-clubs, have had an impact on poverty alleviation; parents are able to sell crafts and surplus produce. From a nutritional perspective, CITW has provided information about food and planting a variety of vegetables. This knowledge was not present before, and the introduction of the conservation tillage method has enabled communities to have varied crops in a smaller area. As well as signifying poverty alleviation through the improvement of malnourishment, leadership is reflected here, as eco-club members share knowledge with their families based on what they plant in their eco-gardens at school. This provides much support for Fien and Guevara's (2013) finding that non-formal education is "more innovative and effective as a poverty alleviation strategy" for marginalised groups (p. 261), as CITW has empowered and motivated communities in both countries to make positive changes.

Deforestation is highly associated with poverty, and it is therefore crucial to address this through the eco-club programme. By educating children on deforestation and highlighting the link between deforestation and soil erosion, eco-club members have become aware of the negative consequences of cutting down trees needlessly. Furthermore, it is hoped that eco-club members will spread knowledge by informing their families as to what they have learned – something that became apparent through the parent interviews. Several eco-mentors and parents explained that cutting down trees was a regular pastime but is no longer happening to the same degree. This, together with the number of eco-club members who reported planting trees at home, supports Roy, Kihoza, Suhonen, Vesisenaho, and Tukiaianen's (2014) notion that ESD influences student's behaviour, as the authors found that students planted trees on their own initiative.

Poaching is another issue that CITW seeks to address. The understanding from eco-club members, eco-mentors, and parents, that tourism brings income into villages and creates employment opportunities, has led to the realisation of the importance of conserving wildlife and the natural environment. This finding aligns with Mbaiwa and Stronza (2011) who also found that local communities in the Okavango region of Botswana had positive attitudes towards tourism and conservation when they derived benefits from tourism. Conversely, if communities cannot benefit from tourism, their attitudes are understandably more negative. This highlights the role that ecotourism plays by demonstrating the importance of involving local communities as much as possible and establishing a sense of ownership, something that Mbaiwa and Stronza also emphasise in their study. While it cannot be guaranteed that CITW is the main reason for the decline in poaching mentioned by one of the CITW programme coordinators, it is likely that the eco-club programme and the emphasis placed on wildlife protection has contributed to the increased knowledge on the importance of wildlife.

In terms of pollution, CITW is going further than just ensuring a litter-free environment by introducing and focusing on 'reduce, reuse, recycle' (the 3Rs). While there is an awareness by children and their parents of the importance of keeping the environment clean, and the lack of litter around the villages was notable, much still needs to be done regarding waste management. The eco-club curriculum waste management section lacks local relevance, as it is directed more at an urban developed context. Rural communities such as the ones in which CITW works face different waste management challenges than those in urban or developed countries (Seth, Cobbina, Asare, & Duwiejuah, 2014). As these communities are isolated and do

not have municipal waste collection or recycling, burning of rubbish is still a common way to dispose of waste due to the lack of alternative options. Furthermore, the introduction of solar equipment such as lights for studying, and small panels for charging mobile phones, has emphasised the issue of solar panel disposal. As separate pits are dug for various types of waste, this suggests that solar panels are being incinerated or buried together with plastics and other harmful materials. In this way, much needs to be done, as the incorrect disposal of solar panels could release harmful metals into the environment, creating more degradation (Kelly, 2017). While the eco-club curriculum addresses the 3Rs, and the knowledge gained is important, this education does not align with the context, meaning people are limited in their capacity to act on the knowledge they obtain.

By addressing issues like poverty, deforestation, poaching, and pollution through leadership development, CITW is providing knowledge, skills and resources that local communities previously lacked, enabling positive changes to be made. The relationships that CITW aims to establish between the schools, parents, and the wider community also mean that knowledge and skills can be shared, enabling benefits for each group. For example, the income generated from selling crafts or surplus vegetables can pay for school fees, ensuring that children can continue with their education. Non-formal ESD has therefore provided something that would otherwise not be there for these communities, emphasising its value and potential as a "driver of change towards sustainable development" (Buckler & Creech, 2014, p. 144).

6.5 CONCLUSION

The importance of the environment and ensuring that children can become custodians in the future is central to CITW's focus on the younger generation. Many of the findings from this study confirm and provide further support for the existing literature on non-formal education and policy integration. The alignment with existing research, much of which has been undertaken in a developed context, suggests that achieving vertical policy integration is not a unique challenge, and that there is an overall lack of government support for the implementation of ESD. In this study, CITW's eco-club programme aligns better with the national education frameworks for each country with regard to learner-centred and practical learning than the curricula and syllabi do. This is significant, as it demonstrates the ability and potential for the non-formal sector to fill the gaps where national governments cannot provide what is needed.

Although the CITW eco-club programme did not consciously set out to emulate UNESCO's (2005) characteristics for ESD, there is much alignment with the international guidelines. Many of the findings also align with, and provide support for, existing studies; therefore, much support is garnered for the establishment of non-formal ESD to work alongside the formal system. Children in the Wilderness, while aligning well with international guidelines for ESD, has its own aim and vision that it is working to achieve. Leadership and inspiring environmental custodianship emphasise the organisation's commitment to sustainable development while being mindful of the importance of the environment. Pro-environmental behaviour is inextricably linked with CITW's aim and vision. While behaviour change was not the focus of this study, its emergence through the fieldwork highlights the potential for pro-environmental behaviour as a direct result of the eco-club programme and CITW's involvement in the communities.

This chapter provides support for Brennan's (1997) argument, as the discussion strongly conveys that non-formal education can be more effective than the formal sector, as it is in this case study. This study contributes to the current ESD literature by detailing a case study in southern Africa, with primary school children, and a non-formal ESD programme. This is a unique combination that highlights the importance of non-formal ESD, particularly in countries where resources are scarce, and the non-formal sector can provide children with more than the formal sector is able to. The following chapter provides recommendations to improve vertical policy integration. Opportunities for future research in this area are also discussed.

Chapter 7: Conclusions and Recommendations

7.1 INTRODUCTION

This study aimed to gauge the success and value of non-formal ESD, using the Zambezi CITW eco-club programme as a case study. To achieve this aim, the vertical integration between international guidelines for ESD, national education policy, and the Zambezi CITW eco-club programme was studied. Determining whether CITW is achieving its own aim and vision through the eco-club programme was also crucial in gauging the success and value of the programme. Many of the findings from this research resonate with, and are supported by, previous studies (Brennan, 1997; Kadji-Beltran et al., 2017; Kuzich et al., 2015; Mahruf et al., 2011; Salter, 2013). This emphasises the importance of non-formal ESD, while contributing further evidence to this body of research. This chapter concludes the thesis by summarising the main findings and drawing conclusions. Recommendations are also provided where necessary to improve vertical integration and enable CITW to better achieve its aim and vision. As there were limitations to this study, opportunities for further research in this area are also discussed.

Having undertaken the fieldwork, presented the findings, and discussed them in relation to the existing literature, Table 7.1 summarises the findings with respect to each of the research objectives. Recommendations are also suggested. The sections that follow expand upon the points in the table, drawing conclusions from each objective.

Table 7.1 – The main findings and recommendations of the study with respect to the research objectives.

OBJECTIVES	MAIN FINDINGS	RECOMMENDATIONS
Objective 1 - CITW response to international guidelines	The eco-club programme aligns strongly with UNESCO's characteristics of problem-based learning, multi-method approaches, and relationships with the wider community. There are areas where the eco-club programme does not respond to international guidelines, namely: participatory decision-making, and the inclusion of traditional knowledge. The eco-club curriculum also lacks the inclusion of health, HIV/AIDS, and climate change topics that are suggested by UNESCO. Many of the activities have been adapted for local surroundings. However, in some instances, imperial units such as miles, gallons, feet, and inches are used, which could confuse users as Zambia and Zimbabwe use the metric system.	Harness, and include traditional knowledge within the eco-club programme. Actively incorporate participatory decision-making within the eco-clubs. Health, HIV/AIDS, and climate change should be included in the eco-club curriculum. Encourage eco-mentors to filter eco-club learnings into other school subjects. Ensure that any activities that have been adapted from online American resources are locally relevant to the greatest extent, such as using the metric system for measurements.
Objective 2 - National policy response to international guidelines & CITW response to national policy.	While mentioned in the national education frameworks for both countries, ESD is not integrated into the curricula. There is a lack of detail and guidance in the national curricula in both countries as to what is required of teachers so that they can incorporate ESD into everyday lessons. This leads to a disparity between the national documents and what occurs at a local level. CITW responds well to the national curriculum for both countries by addressing and expanding on the key environmental topics. Eco-club members are provided with learning opportunities, enabling them to become more familiar with various topics.	More detail and guidance regarding ESD is needed within the national curricula and syllabi, as well as teacher training and capacity building (United Nations, 2015).

	CITW is meeting its aim and vision:	
Objective 3 - Achievement of CITW aim and vision	Leadership is demonstrated through eco-club members' initiative to teach peers and family members what they learn in the eco-club. CITW seeks to address four issues through the eco-club programme: poverty, deforestation, poaching, and pollution. While there are aspects that need further improvement, many of the topics in the eco-club curriculum, and the projects facilitated, address these issues. Inspiring care for the environment and conservation are demonstrated through behaviour changes that have occurred in the communities.	CITW is on the right path for this aim and vision. No current changes are recommended. More focus is needed on alternative ways to deal with waste disposal, particularly hazardous material. Include more locally relevant waste management content in the eco-club curriculum.

7.2 CITW RESPONSE TO INTERNATIONAL GUIDELINES

The large extent to which the eco-club programme reflects UNESCO's (2005) characteristics for ESD is marked, particularly as CITW did not model the programme on UNESCO's characteristics. This has allowed the researcher to conclude that CITW has been successful in establishing its ESD programme, both in theory and practice, in accordance with international best practice. Observation in the local communities, schools, and eco-clubs, together with the interview and focus group responses, demonstrated alignment between CITW documents and implementation. To further align the eco-club programme with UNESCO's characteristics, there are some changes and additions that CITW could make to the programme and curriculum:

1. Traditional knowledge was one of the most notable criteria absent from the eco-club programme. As the importance of traditional knowledge is widely emphasised through the literature (Cocks et al., 2012; Lotz-Sisitka et al., 2017; UNESCO, 2005), and recognised by CITW programme coordinators and eco-mentors, it is recommended that CITW harness and incorporate it into the programme where appropriate.

2. The lack of participatory decision-making was notable. While it is suggested through the eco-club curriculum that students be given greater responsibility in the eco-clubs, data gathered during the fieldwork suggests this does not occur. It is, therefore, recommended that eco-mentors be encouraged to give eco-club members selected choices, such as what topics will be covered, or how they will be covered, to ensure a sense of responsibility (Johnson & Ryan, 2015) and empowerment (Weimer, 2012).

3. Health, HIV/AIDS, and climate change are not addressed in the eco-club curriculum. It is recommended that these topics be added to the curriculum, particularly as the eco-clubs are facilitated in rural areas where HIV/AIDS is an issue. UNESCO (2005) explicitly recommends that these topics are included in ESD. Health and HIV/AIDS are addressed in the national curricula for both countries. Climate change, however, is missing from national curricula in Zambia. Therefore, it is recommended that climate change is added to the eco-club curriculum so that eco-club members get more exposure to this topic.

4. There is potential for the eco-club programme to be more interdisciplinary. This was demonstrated in the findings through one of the Zambian schools which applied eco-club themes in drama. To achieve this characteristic to a greater degree, it is recommended that eco-mentors are encouraged to filter ESD into other school subjects where they can. Additionally, this will enable the eco-club programme to provide further support to the formal curriculum, as eco-mentors hold much of the knowledge on ESD that other teachers may lack.

5. The use of imperial units such as miles, gallons, feet, and inches could confuse eco-mentors and students. Ensuring that the eco-club curriculum uses the metric system will increase its local relevance. Furthermore, aspects of the eco-club curriculum such as "standing near a street light or shining a flashlight" to see moths and other insects, or asking the "local City Government about what can be recycled near where you live" (Johnson & Ryan, 2015, pp. 78 & 163), are not relevant to the rural areas in which the eco-clubs take place. Adjusting these teaching points to be more locally relevant to the surroundings is recommended.

7.3 NATIONAL POLICY RESPONSE TO INTERNATIONAL GUIDELINES AND CITW RESPONSE TO NATIONAL POLICY

Having gathered data from the national policies in Zambia and Zimbabwe, it became clear that the CITW eco-club programme responds to UNESCO's (2005) characteristics to a greater degree than the national curricula for both countries. This emphasises the value of the non-formal sector as a support for the formal sector, particularly as the eco-club programme also responds well to the national policy for each country. By addressing, and expanding on, many of the environmental topics from the national curricula, eco-mentors stated that eco-club members are more advantaged than those who do not participate in the eco-club programme. This highlights the value of the programme, as it provides students with more content than, and varying teaching methods from, the formal curricula. The findings also demonstrate that vertical integration is possible, as the national frameworks aspire to respond to international guidelines but fail in their implementation due to a lack of guidance and resources. In this way, CITW provides a bridge between national policy and international guidelines, enabling integration that would otherwise not be present. Thus, it can be concluded that non-formal ESD is valuable, and CITW has been successful in establishing a programme that provides significant support to the formal sector.

To augment vertical integration, the national governments of Zambia and Zimbabwe should provide more guidance, resources, and teacher training. Currently, CITW provides resources and teacher training for the eco-mentors who facilitate the eco-clubs. However, this should not be a replacement for national government provision, as it is not the aim of CITW to train all teachers, neither is it feasible.

7.4 ACHIEVEMENT OF CITW AIM AND VISION

Children in the Wilderness has a clear aim and vision that it is seeking to achieve. Examples of leadership and care for the environment arose numerous times through the fieldwork, and it became clear that students, eco-mentors, and parents took pride in the eco-club and what they have been able to achieve. Furthermore, the focus on key issues such as poverty, deforestation, poaching, and pollution, enables CITW to respond to its aim and vision in a more structured way. This is because each project established responds to one or more of these issues, and ultimately contributes to the organisation's aim of facilitating sustainable conservation. Therefore, it can be concluded that the eco-club programme is successful in achieving CITW's aim and vision thus

far. The behaviour changes that were observed and reported further support this, as CITW has provided knowledge, skills and resources that enable changes to be made within schools and communities. This also demonstrates the value of the programme, as without CITW involvement, these changes are not likely to have occurred.

To further improve the achievement of the organisation's aim and vision, it is recommended that CITW seek further options for waste management to find alternatives to burning rubbish, particularly hazardous waste such as solar panels which are burned at end of product life. It is also recommended that waste management be further incorporated into the eco-club curriculum. This should be done in the most locally relevant way, by focusing on the waste that is generated in the local environments.

7.5 FURTHER RESEARCH

As the nature of this study was exploratory, several opportunities for further research have been identified:

1. The replication of this study in other areas.

The methods used for this research were robust, as they enabled the aim and objectives of the study to be achieved. Using UNESCO's (2005) characteristics for ESD allows for a transferable study, as they can be applied to any ESD programme. Undertaking similar research with different case studies will enable the analysis of other ESD programmes that can contribute knowledge from various areas to the existing literature.

2. Undertake a longitudinal study.

One limitation of this study was the short amount of time spent in the field. Studying one eco-club over a period of a year or more would provide much more detailed and valuable evidence regarding the effectiveness of non-formal and primary level ESD. Additionally, following children through to higher tiers of the CITW programme such as the annual camps, secondary school, or tertiary scholarships, could provide more robust data on any long-term impacts of the eco-club programme, including student leadership in society with regard to sustainable development.

3. Focus on pro-environmental behaviour.

Longitudinal studies that focus on pro-environmental behaviour and behaviour changes that occur as a result of non-formal ESD, and whether these are maintained, would provide further data on its success and value. An in-depth examination of the barriers to behaviour change could also be included, while offering potential drivers for pro-environmental behaviour change.

7.6 CONCLUSION

This research has contributed to the existing literature on non-formal ESD and is valuable because it focuses on a case study in southern Africa, a region that has been slow to implement ESD in the formal sector (Buckler & Creech, 2014), with an age group that is relatively unresearched in a developing context. UNESCO (2017) states that individuals "require the knowledge, skills, values and attitudes that empower them to contribute to sustainable development. Education, therefore, is crucial for the achievement of sustainable development" (p. 7). This emphasises the inextricable link between ESD and pro-environmental behaviour. Further establishment of ESD programmes in all levels of education, in both formal and non-formal capacities, and in developed and developing countries, will contribute to the achievement of the SDGs (UNESCO, 2017), and the "societal goals for sustainability" (Buckler & Creech, 2014, p. 185). It appears that the CITW eco-club programme and wider community initiatives have been highly positive for those involved directly and indirectly with the programme, making it difficult to believe that no negative issues arose. However, due to the isolated location where this research was undertaken, the programme seems to be a truly positive aspect of their lives. The CITW eco-club programme provides an enriching learning experience for children, giving them the opportunity to learn about, understand, and build a love for nature in the hope that they become environmental custodians in the future.

References

African Wildlife Foundation (AWF). (n.d.). *Lupani Primary School*. Retrieved from http://www.awf.org/projects/lupani-primary-school

Agee, J. (2009). Developing qualitative research questions: A reflective process. *International Journal of Qualitative Studies in Education, 22*(4), 431-447. doi: 10.1080/09518390902736512

Allendorf, T., Swe, K.K., Oo, T., Htut, Y., Aung, M., Aung, M., … Wemmer, C. (2006). Community attitudes toward three protected areas in Upper Myanmar (Burma). *Environmental Conservation, 33*(4), 344-352. doi:10.1017/S0376892906003389

Ampuero, D.A., Miranda, C., & Goyen, S. (2015). Positive psychology in education for sustainable development at a primary-education institution. *Local Environment, 20*(7), 745-763. doi: 10.1080/13549839.2013.869199

Arthur, S., Mitchell, M., Lewis, J., & McNaughton Nicholls, C. (2014). Designing fieldwork. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 147-176). London, United Kingdom: Sage Publications.

Barratt Hacking, E., Barratt, R., & Scott, W. (2007). Engaging children: Research issues around participation and environmental learning. *Environmental Education Research, 13*(4), 529-544. doi: 10.1080/13504620701600271

Blake, J. (1999). Overcoming the 'value-action gap' in environmental policy: Tensions between national policy and local experience. *Local Environment, 4*(3), 257-278.

Blumenfeld, P.C., Soloway, E., Marx, R.W., Krajcik, J.S., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist, 26(*3-4), 369-398. doi: 10.1080/00461520.1991.9653139

Bran, F., Popa, D., & Ioan, I. (2016). Non-formal education for sustainable development. *The USV Annals of Economics and Public Administration, 16*(1), 24-29.

Brennan, B. (1997). Reconceptualizing non-formal education. *International Journal of Lifelong Education, 16*(3), 185-200. doi: 10.1080/0260137970160303

Breunig, M. (2013). Environmental sustainability and environmental justice: From buzzwords to emancipatory pro-environmental behaviour change. *Journal of Sustainability Education, 5*, 232-246.

Buckler, C., & Creech, H. (2014). *Shaping the future we want: UN Decade of Education for Sustainable Development (2005-2014): Final report.* Paris, France: UNESCO.

Camfield, L., Crivello, G., & Woodhead, M. (2009). Wellbeing research in developing countries: Reviewing the role of qualitative methods. *Social Indicators Research, 90*(1), 5-31. doi: 10.1007/s11205-008-9310-z

Carrier, S.J. (2009). Environmental education in the schoolyard: Learning styles and gender. *The Journal of Environmental Education, 40*(3), 2-12. doi: 10.3200/ JOEE.40.3.2-12

Chikunda, C. (2007). Zimbabwe's Better Environmental Science Teaching Programme: A step towards education for sustainable development. *Southern African Journal of Environmental Education, 24*, 157-170.

Children in the Wilderness (CITW). (2017a). *Eco-Stars* (Annual Issue 02). Retrieved from http://images.wilderness.co.za/NewsletterTemplate/June_2017/CITW_Eco-Stars.pdf

Children in the Wilderness. (CITW). (2017b). *Governance*. Retrieved from https://www.childreninthewilderness.com/about-us/governance/

Children in the Wilderness. (CITW). (2017c). *Our partners*. Retrieved from https://www.childreninthewilderness.com/about-us/our-partners/

Cocks, M.L., Alexander, J., & Dold, T. (2012). "Inkcubeko Nendalo": A bio-cultural diversity schools education project in South Africa and its implications for inclusive indigenous knowledge systems (IKS) sustainability. *Journal of Education for Sustainable Development, 6*(2), 241-252. doi: 10.1177/0973408212475232

Creswell, J.W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd. ed.). Thousand Oaks, CA: Sage Publications.

Creswell, J.W., & Plano Clark, V.L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Davis, J.M. (2010a). Introduction. In J.M. Davis (Ed.), *Young children and the environment: Early education for sustainability* (pp. 1-17). New York, NY: Cambridge University Press.

Davis, J.M. (2010b). What is early childhood education for sustainability? In J.M. Davis (Ed.), *Young children and the environment: Early education for sustainability* (pp. 21-42). New York, NY: Cambridge University Press.

Davis, J., Miller, M., Boyd, W., & Gibson, M. (2008). *The impact and potential of water education in early childhood care and education settings: A report of the Rous Water Early Childhood Water Aware Centre Program*. Brisbane: Queensland University of Technology. Retrieved from http://eprints.qut.edu.au/17871/1/14488_Water_Education_LR%5B1%5D.pdf

Dreyer, J., & Loubser, C. (2014). Curriculum development, teaching and learning for the environment. In C.P. Loubser (Ed.), *Environmental Education and Education for Sustainability: Some South African perspectives* (2nd ed., pp. 145-177). Pretoria, South Africa: Van Schaik Publishers.

Eilam, E., & Trop, T. (2013). Evaluating school-community participation in developing a local sustainability agenda. *International Journal of Environmental & Science Education, 8*(2), 359-380. doi: 10.12973/ijese.2013.201a

Ezeanya-Esiobu, C. (2017, August). *How Africa can use its traditional knowledge to make progress* [Video file]. Retrieved from https://www.ted.com/talks/chika_ezeanya_ esiobu_how_africa_can_use_its_traditional_knowledge_to_make_progress

Ferkany, M., & Whyte, K.P. (2013). The compatibility of liberalism and mandatory environmental education. *Theory and Research in Education, 11*(1), 5-21. doi: 10.1177/1477878512468381

Ferreira, J-A. (2009). Unsettling orthodoxies: Education for the environment/for sustainability. *Environmental Education Research, 15*(5), 607-620. doi: 10.1080/13504620903326097

Fien, J. (2012). *Governance and education for sustainable development: An analysis and synthesis of governance and related frameworks, policies and strategies in education for sustainable development across five jurisdictions: England, the Netherlands, Germany, Ontario and Victoria.* Retrieved from http://www.environment.nsw.gov.au/resources/ communities/FienGovEfSDRpt.pdf

Fien, J., & Guevara, J. R. (2013). Skills for a green economy: Practice, possibilities and prospects. In R. Maclean, S. Jagannathan, & J. Sarvi (Eds.), *Skills development for inclusive and sustainable growth in developing Asia-Pacific* (pp. 255-263). Retrieved from https://link-springer-com.ezproxy.massey.ac.nz/book/10.1007%2F978-94-007-5937-4

Gilbert, R. (2003). Ecotourism and education for sustainability: A critical approach. *International Review for Environmental Strategies, 4*(1), 75-83.

Google. (2017a). [Hwange National Park], [map]. Retrieved from https://www.google.co.nz/ maps/place/Zimbabwe/@-19.1736441,27.0146313,9.85z/data=!4m5!3m4!1s0x1931a 4e706b17161:0xa1c0385fc5cbbfee!8m2!3d-19.015438!4d29.154857

Google. (2017b). [Southern Africa], [map]. Retrieved from https://www.google.co.nz/maps /place/Africa/@-19.6440386,18.8779623,4.92z/data=!4m5!3m4!1s0x10a06c0a948cf5 d5:0x108270c99e90f0b3!8m2!3d-8.783195!4d34.508523

Google. (2018). [Zambezi Region], [map]. Retrieved from https://www.google.co.nz/maps/@- 16.7241561,27.6076689,6.74z

Google Earth Pro. (2017a). V 9.2.46.2. *Hwange National Park, Zimbabwe,* [map], 19°09'06" S, 27°26'38" E, Eye alt 71.69km. Retrieved from http://www.earth.google.com

Google Earth Pro. (2017b). V 9.2.46.2. *Zambezi River, Southern Africa,* [map], 17°53'05" S, 25°32'11" E, Eye alt 84.97km. Retrieved from http://www.earth.google.com

Green, M. (2012). Place, sustainability and literacy in environmental education: Frameworks for teaching and learning. *Review of International Geographical Education Online, 2*(3), 326-346.

Haigh, M.J. (2006). Promoting environmental education for sustainable development: The value of links between higher education and non-governmental organizations (NGOs). *Journal of Geography in Higher Education, 30*(2), 327–349. doi: 10.1080/03098260600717422

Hesse-Biber, S.N., & Leavy, P. (2011). *The practice of qualitative research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Hoang, T.T.P., & Kato, T. (2016). Measuring the effect of environmental education for sustainable development at elementary schools: A case study in Da Nang city, Vietnam. *Sustainable Environment Research, 26*(6), 274-286. doi: 10.1016/j.serj.2016.08.005

Hopkins, C., & McKeown, R. (2002). Education for sustainable development: An international perspective. In D. Tilbury, R.B. Stevenson, & D. Schreuder (Eds.), *Education and sustainability: Responding to the global challenge* (pp. 13-24). Gland, Switzerland: IUCN.

Ishii, A., & Langhelle, O. (2011). Toward policy integration: Assessing carbon capture and storage policies in Japan and Norway. *Global Environmental Change, 21*(2), 358-367. doi: 10.1016/j.gloenvcha.2011.02.005

Jabareen, Y. (2012). Towards a sustainability education framework: Challenges, concepts and strategies – the contribution from urban planning perspectives. *Sustainability, 4*(9), 2247-2269. doi: 10.3390/su4092247

Jackson, L. (2016). Education for sustainable development: From environmental education to broader views. In E. Railean, G. Walker, A. Elçi, & L. Jackson (Eds.), *Handbook of Research on Applied Learning Theory and Design in Modern Education* (pp. 41-64). doi: 10.4018/978-1-4666-9634-1.ch003

Jick, T.J. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly, 24*(4), 602-611. doi: 10.2307/2392366

Johnson, A., & Ryan, C. (2015). *Eco club curriculum guide* (3rd ed.). Unpublished report.

Kadji-Beltran, C., Christodoulou, N., Zachariou, A., Lindemann-Matthies, P., Barker, S., & Kadis, C. (2017). An ESD pathway to quality education in the Cyprus primary education context. *Environmental Education Research, 23*(7), 1015-1031. doi: 10.1080/13504622.2016.1249459

Kasapoğlu, A., & Turan, K. (2008). Attitude-behaviour relationship in environmental education: A case study from Turkey. *International Journal of Environmental Studies, 65*(2), 219-231. doi: 10.1080/00207230701502316

Kelly, J. (2017, June 28). A clean energy's dirty little secret. *National Review*. Retrieved from http://www.nationalreview.com/article/449026/solar-panel-waste-environmental-threat-clean-energy

Kieu, T.K., & Singer, J. (2015). The contribution of non-formal education for training teachers in education for sustainable development in Vietnam: A case study. *The International Journal of Sustainability Education, 11*(4), 1-20.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research, 8*(3), 239-260. doi: 10.1080/1350462022014540 1

Kuzich, S., Taylor, E., & Taylor, P.C. (2015). When policy and infrastructure provisions are exemplary but still insufficient: Paradoxes affecting education for sustainability (EfS) in a custom-designed sustainability school. *Journal of Education for Sustainable Development, 9*(2), 179-195. doi: 10.1177/0973408215588252

Læssøe, J., & Mochizuki, Y. (2015). Recent trends in national policy on education for sustainable development and climate change education. *Journal of Education for Sustainable Development, 9*(1), 27-43. doi: 10.1177/0973408215569112

Leeming, F. C., Dwyer, W. O., & Bracken, B. A. (1995). Children's environmental attitude and knowledge scale: Construction and validation. *The Journal of Environmental Education, 26*(3), 22-31. doi: 10.1080/00958964.1995.9941442

Lewis, J., & McNaughton Nicholls, C. (2014). Design issues. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 47-76). London, United Kingdom: Sage Publications.

Lotz-Sisitka, H., Belliethathan, S., Pradhan, M., Odeke, G., & Olewe, B.W. (2017). *Africa environmental education and training action plan 2015–2024: Strengthening sustainable development in Africa.* Nairobi, Kenya: United Nations Environment Programme.

Mahruf, M., Shohel, C., & Howes, A.J. (2011). Models of education for sustainable development and nonformal primary education in Bangladesh. *Journal of Education for Sustainable Development, 5*(1), 129-139. doi: 10.1177/097340821000500115

Massey University. (2015). *Code of ethical conduct for research, teaching and evaluations involving human participants*. Retrieved from http://www.massey.ac.nz/massey/fms /Human%20Ethics/Documents/MUHEC%20Code%202015.pdf?CA6CFFFAA5150271FD 193A0B0C56C5CF

Maxwell, J.A. (2005). *Qualitative research design: An interactive approach* (2nd ed). Thousand Oaks, CA: Sage Publications.

May, P.J., Jones, B.D., Beem, B.E., Neff-Sharum, E.A., & Poague, M.K. (2005). Policy coherence and component-driven policymaking: Arctic policy in Canada and the United States. *The Policy Studies Journal, 33*(1), 37-63. doi: 10.1111/j.1541-0072.2005.00091.x

Mbaiwa, J.E., & Stronza, A.L. (2011). Changes in resident attitudes towards tourism development and conservation in the Okavango Delta, Botswana. *Journal of Environmental Management, 92*(8), 1950-1959. doi: 10.1016/j.jenvman.2011.03.009

Ministry of Education, Science, Vocational Training and Early Education (MESVTEE). (2013a). *Grade 1-7 social studies.* Lusaka, Zambia: Curriculum Development Centre.

Ministry of Education, Science, Vocational Training and Early Education (MESVTEE). (2013b). *Integrated science syllabus: Grade 1-7.* Lusaka, Zambia: Curriculum Development Centre.

Ministry of Education, Science, Vocational Training and Early Education (MESVTEE). (2013c). *Zambia education curriculum framework 2013*. Lusaka, Zambia: Curriculum Development Centre.

Ministry of Environment and Natural Resources. (1994). *The national environmental action plan*. Lusaka, Zambia: Author.

Ministry of Primary and Secondary Education (MoPSE) (2015a). *Curriculum framework for primary and secondary education 2015-2022*. Retrieved from http://preview.miweb.co. zw/mopse.org/wp-content/uploads/2017/03/Zim-CurriculumFramework-4-PSE-2015-22_FINAL_A4.pdf

Ministry of Primary and Secondary Education (MoPSE) (2015b). *Junior science and technology syllabus (Grade 3-7) (2015-2022)*. Harare, Zimbabwe: Curriculum Development and Technical Services.

Monde, P. N. (2011). *Barriers to successful implementation of environmental education in Zambian high schools: A case study of selected high schools of central province* (Master's thesis, University of Zambia, Lusaka, Zambia). Retrieved from http://dspace.unza.zm:8080/xmlui/bitstream/handle/123456789/809/Monde.pdf?seq uence=1

National Society for the Prevention of Cruelty to Children (NSPCC). (2017). *Research with children: ethics, safety and avoiding harm. What to consider when conducting research involving children.* Retrieved from https://www.nspcc.org.uk/services-and-resources/impact-evidence-evaluation-child-protection/conducting-safe-and-ethical-research/

Nordbeck, R., & Steurer, R. (2016). Multi-sectoral strategies as dead ends of policy integration: Lessons to be learned from sustainable development. *Environment and Planning C: Government and Policy, 34*(4), 737-755. doi: 10.1177/0263774X15614696

Organisation for economic co-operation and development (OECD). (2006). *Good practices in the national sustainable development strategies of OECD countries*. Paris, France: Author.

Oxford University Press. (2017). *Oxford living dictionaries*. Retrieved from https://en.oxforddictionaries.com/

Poole, N., Álvarez, F., Penagos, N., & Vázquez, R. (2013). Education for all and for what? Life-skills and livelihoods in rural communities. *Journal of Agribusiness in Developing and Emerging Economies, 3*(1), 64-78. doi: 10.1108/20440831311321656

Poultney, C., & Spenceley, A. (2001). *Practical strategies for pro-poor tourism, Wilderness Safaris South Africa: Rocktail Bay and Ndumu Lodge* (Pro-Poor Tourism Working Paper No. 1). London, United Kingdom: Centre for Responsible Tourism and the University of Greenwich (CRT), International Institute for the Environment and Development (IIED), Overseas Development Institute (ODI).

Redman, E. (2013). Advancing educational pedagogy for sustainability: Developing and implementing programs to transform behaviors. *International Journal of Environmental & Science Education, 8*(1), 1-34.

Ritchie, J., Lewis, J, Elam, G., Tennant, R., & Rahim, N. (2014). Designing and selecting samples. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 111-145). London, United Kingdom: Sage Publications.

Roosa, S.A. (2010). *Sustainable development handbook* (2nd ed.). Lilburn, GA: The Fairmont Press.

Roy, A., Kihoza, P., Suhonen, J., Vesisenaho, M., & Tukiaianen, M. (2014). Promoting proper education for sustainability: An exploratory study of ICT enhanced problem based learning in a developing country. *International Journal of Education and Development using Information and Communication Technology (IJEDICT), 10*(1), 70-90.

Saldaña, J. (2011). *Fundamentals of qualitative research*. New York, NY: Oxford University Press.

Salter, Z.T. (2013). *Impact of whole-school education for sustainability on upper-primary students and their families.* (Unpublished doctoral dissertation). The University of Western Australia, Australia.

Sarniak, R. (2015, August). 9 types of research bias and how to avoid them. *Quirks Media.* Retrieved from https://www.quirks.com/articles/9-types-of-research-bias-and-how-to-avoid-them

Scobie, M. (2016). Policy coherence in climate governance in Caribbean small island developing states. *Environmental Science & Policy, 58,* 16-28. doi: 10.1016/j.envsci.2015.12.008

Sedlacko, M. (2007). The Slovak national SD strategy process: A mix of achievements and shortcomings. *European Environment, 17*(6), 387-402. doi: 10.1002/eet.457

Seth, K., Cobbina, S.J., Asare, W., & Duwiejuah, A.B. (2014). Household demand and willingness to pay for solid waste management service in Tuobodom in the Techiman-North District, Ghana. *American Journal of Environmental Protection, 2*(4), 74-78. doi: 10.12691/env-2-4-3

Sitali, N. (2014). *Environmental knowledge and practices of selected Zambian primary school teachers of Lusaka district* (Master's thesis, University of Zambia, Lusaka, Zambia). Retrieved from http://dspace.unza.zm:8080/xmlui/bitstream/handle/123456789/3803/Main%20Document.pdf?sequence=1

Snyman, S.L. (2012). The role of tourism employment in poverty reduction and community perceptions of conservation and tourism in southern Africa. *Journal of Sustainable Tourism, 20*(3), 395-416. doi: 10.1080/09669582.2012.657202

Spencer, L., Ritchie, J., O'Connor, W., Morrell, G., & Ormston, R. (2014). Analysis in practice. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 295-345). London, United Kingdom: Sage Publications.

Spencer, L., Ritchie, J., Ormston, R., O'Connor, W., & Barnard, M. (2014). Analysis: Principles and processes. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 269-293). London, United Kingdom: Sage Publications.

Stanišić, J.M. (2016). Characteristics of teaching environmental education in primary schools. Иновације у настави *[Teaching Innovations], 29*(4), 87-100. doi: 10.5937/inovacije1604087S

Sterling, S. (2012). *The future fit framework: An introductory guide to teaching and learning for sustainability in HE*. York, United Kingdom: The Higher Education Academy.

Steurer, R., Berger, G., & Hametner, M. (2010). The vertical integration of Lisbon and sustainable development strategies across the EU: How different governance architectures shape the European coherence of policy documents. *Natural Resources Forum, 34*(1), 71-84. doi: 10.1111/j.1477-8947.2010.01272.x

Tan, C. (2015). Investigator bias and theory-ladenness in cross-cultural research: Insights from Wittgenstein. *Current Issues in Comparative Education, 18*(1), 83-95.

Thomas, D.R., & Hodges, I. (2010). *Designing and planning your research project: Core skills for social and health research*. http://dx.doi.org.ezproxy.massey.ac.nz/10.4135/9781 446289044

Tippytap.org. (n.d.). *How to build your own tippy tap.* Retrieved from http://www.tippytap.org/wp-content/uploads/2011/03/How-to-build-a-tippy-tap-manual.pdf

United Nations. (2015). *Policy integration in government in pursuit of the sustainable development goals* (Report No. E/CN.16/2015/CRP.2). Retrieved from http://workspace.unpan.org/sites/Internet/Documents/UNPAN94443.pdf

United Nations. (2017a). *4. Quality education.* Retrieved from http://www.un.org/sustainabledevelopment/education/

United Nations. (2017b). *Sustainable development goals.* Retrieved from http://www.un.org/sustainabledevelopment/sustainable-development-goals/

United Nations. (2017c). *The sustainable development agenda.* Retrieved from http://www.un.org/sustainabledevelopment/development-agenda/

United Nations Conference on Environment and Development (UNCED). (1992). *Agenda 21.* Retrieved from https://sustainabledevelopment.un.org/content/documents/Agenda 21.pdf

United Nations Educational, Scientific and Cultural Organization (UNESCO). (1975). *The Belgrade Charter: A framework for environmental education.* Retrieved from http://unesdoc.unesco.org/images/0001/000177/017772eb.pdf

United Nations Educational, Scientific and Cultural Organization (UNESCO). (1977). *Intergovernmental conference on environmental education* (Tbilisi (USSR)). Retrieved from http://unesdoc.unesco.org/images/0003/000327/032763eo.pdf

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2005). *United Nations Decade of Education for Sustainable Development 2005-2014: Draft international implementation scheme* (Report No. ED/2005/PI/H/1). Retrieved from http://unesdoc.unesco.org/images/0013/001399/139937e.pdf

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2012). *Education for sustainable development sourcebook*. Paris, France: Author.

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2017). *Education for sustainable development goals: learning objectives.* Paris, France: Author.

United Nations World Tourism Organisation (UNWTO). (2016). *2017 International Year of Sustainable Tourism for Development*. Retrieved from http://www.tourism4 development2017.org/about/

Warwick, P. (2016). Education for sustainable development: A movement towards pedagogies of civic compassion. *Forum, 58*(3), 407-414. doi: 10.15730/forum.2016.58.3.407

Wearing, S., & Neil, J. (2009). *Ecotourism: Impacts, potentials and possibilities* (2nd ed.). Oxford, United Kingdom: Elsevier.

Weimer, M. (2012, August 8). Five characteristics of learner-centred teaching. *Faculty Focus*. Retrieved from https://www.facultyfocus.com/articles/effective-teaching-strategies/ five-characteristics-of-learner-centered-teaching/

Wilderness Holdings Limited. (2017). *Integrated annual report 2017*. Retrieved from http://www.wilderness-group.com/system/assets/201/original/Wilderness_Holdings_ Integrated_Annual_Report_2017_4.pdf?1502889385

Wilderness Wildlife Trust & Children in the Wilderness (WWT & CITW). (2016). *2016 annual report*. Retrieved from http://www.wildernesstrust.com/wp-content/uploads/2016/08 /TrustCITW-Annual-Report-2016.pdf

Wilderness Wildlife Trust & Children in the Wilderness (WWT & CITW). (2018). *Annual report 2017.* Retrieved from http://www.wildernesstrust.com/wp-content/uploads/2018/01 /Trust-Annual-Report-FA.pdf

World Commission on Environment and Development (WCED). (1987). *Our common future*. Oxford, UK: Oxford University Press.

Yeo, A., Legard, R., Keegan, J., Ward, K., McNaughton Nicholls, C., & Lewis, J. (2014). In-depth interviews. In J. Ritchie, J. Lewis, C. McNaughton Nicholls, & R. Ormston (Eds.), *Qualitative research practice: A guide for social science students and researchers* (2nd ed., pp. 177-210). London, United Kingdom: Sage Publications.

Young, A.J., & McElhone, M.J. (1986). *Guidelines for the development of non-formal environmental education* (Environmental Education Series 23). Wales, United Kingdom: UNESCO.

Zeitz Foundation. (2017). *About us.* Retrieved from http://www.zeitzfoundation.org/About-Us/4Cs

Appendix A: Photographic Appendix of Thesis Journey

A photographic presentation of more images from the fieldwork period comprises this appendix. These photographs create a greater visual representation for the reader of the two weeks I spent with CITW in the Zambezi. Again, I thank Children in the Wilderness and Wilderness Safaris for giving me this amazing opportunity and hosting me during my fieldwork.

I spent six days in Zimbabwe. While I visited seven of the CITW supported schools, I only conducted interviews and focus groups in five of them. On the first day in Victoria Falls, we visited a CITW supported school just outside the town. A reading programme was about to begin, where international guests come and sit with grade 1s and 2s and help them with reading. Although difficult to see, Figure A1 shows the desks being moved outside under the trees. The next day, we drove to Hwange National Park. On the way, we visited another school to have a look at their newly completed library (Figure A2). This is an example of a community initiative that CITW facilitates.

Figure A1 – Desks outside under the tree in preparation for the reading lesson.

Figure A2 – The newly completed library of a primary school between Victoria Falls and Hwange National Park.

The first two days in Hwange National Park were spent visiting various schools, and observing an adult sewing group session. These ladies were learning how to set up a business (Figure A3) and were learning how to make shirts with newly acquired sewing machines (Figure A4). This is an example of the adult eco-clubs and enterprise activities that are facilitated by CITW.

Figure A3 – To ensure that the ladies sewing group continues to be sustainable, they were learning about income and expenses.

Figure A4 – The ladies sewing group making skirts.

My interviews and focus groups began on the third day. As some of the villages are located a few hours' drive outside of Hwange National Park, we set out early. Many of the roads are just sand paths, so it was a bumpy ride, but a lot of fun!

Figure A5 – Driving between villages in Zimbabwe.

Figure A6 – One of many tippy taps I noticed in the communities.

As the eco-gardens are a central part of the CITW eco-club programme, each school has one. The Zimbabwean schools had recently harvested their crops, so many of the eco-gardens were being prepared for new planting.

Figure A7 – An eco-garden at one of the Zimbabwe schools.

Figure A8 – Another school's eco-garden.

The drive from camp to the villages passed through a stunning plain where there was always something to see. As we spent the whole day out in the communities, we had sunset drives back to camp.

Figure A9 – Buffalo on the plain on the way out of Hwange National Park one morning.
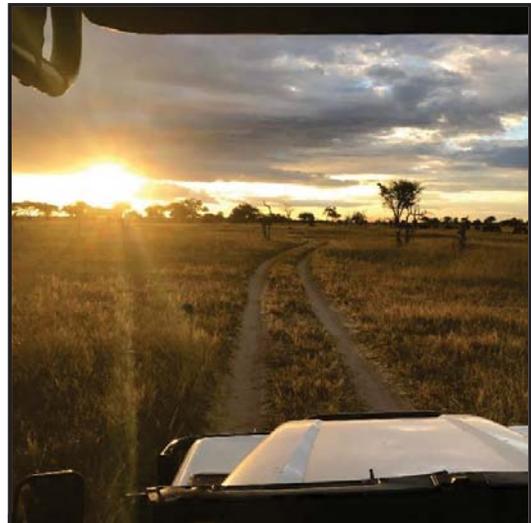
Figure A10 – The drive back to camp after a day in the villages.

On my final day in Hwange National Park, a Saturday morning, we headed out to two villages for the parent interviews. In one village, these took place at a central meeting place, while in the other village, the interviews took place at the local primary school. Sitting under the tree shown in Figure A12 to speak with parents was something very special! I was invited by several parents to see their homesteads (Figure A13 – A15), and they were happy for me to take photos. In one of the villages I was also invited to see the adult community garden, where one man was hard at work and was happy to have his picture taken (Figure A16).

Figure A11 – Last minute preparation for the parent interviews.

Figure A12 – One of the schools in Zimbabwe, showing the tree under which I conducted parent interviews.

Figure A13 – As part of a homestead tour, this lady was showing me how she makes curios out of recycled materials.

Figure A14 – A parent demonstrating how ash is used as a fertiliser.

Figure A15 – Trees planted in a Zimbabwe homestead.

Figure A16 – Hard at work in the adult community vegetable garden.

After the five days in Hwange National Park, I flew back to Victoria Falls. From there, it was a short drive to Zambia. The flight was very exciting, as I had never been on such a small plane before. The views over Hwange National Park as we flew north were incredible.

Figure A17 – Getting ready to fly to Victoria Falls from the airstrip in Hwange National Park.

Figure A18 – View of Hwange National Park from above.

I spent four days in Zambia. I conducted interviews and focus groups at three schools and sat in on two eco-club lessons. As the distances between the schools were not as great as in Zimbabwe, I used the additional time to begin transcribing the interviews and focus groups. This took a long time, but I was very fortunate to have an amazing view to do this (Figure A24). I then spent two days back in Victoria Falls before flying back to Johannesburg.

Figure A19 – This eco-garden is surrounded by a solar-powered electric fence due to wild animals, particularly elephants, who roam through the school grounds.

Figure A20 – The school property where students are planting or adopting trees to look after.

Figure A21 – A tree walk at one of the schools where trees have been labelled.

Figure A22 – The beginnings of a baobab tree at one of the Zambian schools.

Figure A23 – An existing tree that has been adopted by an eco-club member.

Figure A24 – Beginning the interview transcriptions.

Figure A25 – Visiting Victoria Falls National Park.

Appendix B: Tippy Tap Construction

Source: Tippytap.org (n.d.).

Appendix C: Participant Information Sheets

INFORMATION SHEET – PROGRAMME COORDINATOR

My name is Sarah Adams, and I am a postgraduate student completing a Master of Environmental Management degree at Massey University, New Zealand. Dr Trisia Farrelly and Professor John Holland, Massey University, New Zealand are supervising this research.

     The purpose of my research is to gauge the success of the Children in the Wilderness eco-club programme. As the programme coordinator for the Zambezi Region, your opinions of the programme would be a valuable addition to this study. Thus, I would like to invite you to participate in this research.

     Participation in this research will involve one interview of no longer than one hour. The information discussed in the interview will be used in the research report; however, no identifying factors will be used. If you agree, the interview will be voice recorded, but only my supervisors and I will have access to the recording. The research findings will be shared with Children in the Wilderness. As well as being used in the research report, the findings may be used in official publications by Children in the Wilderness or Wilderness Holdings, and journal articles or conference papers published and presented by me.

     You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview.

Please contact my chief supervisor, Dr Trisia Farrelly at any time if you have questions regarding the research.

Thank you.

Sarah Adams (Researcher)	Research supervisor: Dr Trisia Farrelly
Email: sarahjaneadams77@gmail.com	School of People, Environment and Planning
	Massey University, Manawatu Campus
	Aotearoa New Zealand
	Email: T.Farrelly@massey.ac.nz
	Phone: +64 6 356 9099 Extn 83664

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 17/14. If you have any concerns about the conduct of this research, please contact Dr Lesley Batten, Chair, Massey University Human Ethics Committee: Southern A, telephone 06 356 9099 x 85094, email humanethicsoutha@massey.ac.nz

INFORMATION SHEET – ECO-MENTORS

My name is Sarah Adams, and I am a postgraduate student completing a Master of Environmental Management degree at Massey University, New Zealand. Dr Trisia Farrelly and Professor John Holland, Massey University, New Zealand are supervising this research.

The purpose of my research is to gauge the success of the Children in the Wilderness eco-club hosted in your community. As you are an eco-mentor involved with this programme, your perceptions of the programme and associated projects would be greatly appreciated. Thus, I would like to invite you to participate in this research.

Participation in this research will involve one interview of no longer than one hour at a time that is convenient for you. If you agree, this interview will be voice recorded, but only my supervisors and I will have access to the recordings. The information discussed in the interview and the focus group will be used in the research report; however, no identifying factors will be used in the report. The research findings will be shared with Children in the Wilderness, and these will also be anonymous. As well as being used in the research report, the findings may be used in official publications by Children in the Wilderness or Wilderness Holdings, and journal articles or conference papers published and presented by me.

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview.

Please contact my chief supervisor, Dr Trisia Farrelly, at any time if you have questions regarding the research.

Thank you.

Sarah Adams (Researcher)
Email: sarahjaneadams77@gmail.com

Research supervisor: Dr Trisia Farrelly
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Phone: +64 6 356 9099 Extn 83664

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 17/14. If you have any concerns about the conduct of this research, please contact Dr Lesley Batten, Chair, Massey University Human Ethics Committee: Southern A, telephone 06 356 9099 x 85094, email humanethicsoutha@massey.ac.nz

INFORMATION SHEET – PARENTS/GUARDIANS

My name is Sarah Adams, and I am a postgraduate student completing a Master of Environmental Management degree at Massey University, New Zealand. Dr Trisia Farrelly and Professor John Holland, Massey University, New Zealand are supervising this research.

The purpose of my study is to gauge the success of the Children in the Wilderness eco-club hosted in your community. As your child is a member of the Eco-Club, I would like to know your views on this programme and would like to invite you to participate in this research.

Participation in this research will involve one interview of no longer than one hour. The information discussed in the interview will be used in the research report. However, no identifying factors will be used in the report. If you agree, the interview will be voice recorded, and only my supervisors and I will have access to this recording. The research findings will be shared with Children in the Wilderness. As well as being used in the research report, the findings may be used in official publications by Children in the Wilderness or Wilderness Holdings, and journal articles or conference papers published and presented by me.

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview.

Please contact my chief supervisor, Dr Trisia Farrelly at any time if you have questions regarding the research.

Thank you.

Sarah Adams (Researcher)	Research supervisor: Dr Trisia Farrelly
Email: sarahjaneadams77@gmail.com	School of People, Environment and Planning
	Massey University, Manawatu Campus
	Aotearoa New Zealand
	Email: T.Farrelly@massey.ac.nz
	Phone: +64 6 356 9099 Extn 83664

INFORMATION SHEET FOR PARENTS REGARDING CHILD PARTICIPATION

My name is Sarah Adams, and I am a postgraduate student completing a Master of Environmental Management degree at Massey University, New Zealand. Dr Trisia Farrelly and Professor John Holland, Massey University, New Zealand are supervising this research.

The purpose of my research is to gauge the success of the Children in the Wilderness eco-club hosted in your community. I would like to invite your child to participate in this research as I am interested in their perceptions of the eco-club and the projects that they are involved in.

Participation in this research will involve a group discussion with other children. If your child does not want to take part, their involvement with the eco-club will not be affected. If you and your child agree, the group discussion will be voice recorded. Only my supervisors and I will have access to the recording. I would also like to spend time in the eco-club, both observing and taking part in the activities.

My observations and the information collected in the group discussion will be used in the research report. Information collected from your child will be anonymous. The research findings will be shared with Children in the Wilderness. As well as being used in the research report, the findings may be used in official publications by Children in the Wilderness or Wilderness Holdings, and journal articles or conference papers published and presented by me.

You are under no obligation to accept this invitation. If you allow your child to participate, you and your child have the right to:
- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview.

Please contact my chief supervisor, Dr Trisia Farrelly, at any time if you have questions regarding the research.
Thank you.

Sarah Adams (Researcher)   Research supervisor: Dr Trisia Farrelly
Email: sarahjaneadams77@gmail.com   Email: T.Farrelly@massey.ac.nz
                                            Phone: +64 6 356 9099 Extn 83664

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 17/14. If you have any concerns about the conduct of this research, please contact Dr Lesley Batten, Chair, Massey University Human Ethics Committee: Southern A, telephone 06 356 9099 x 85094, email humanethicsoutha@massey.ac.nz .

Appendix D: Participant Consent Forms

MASSEY UNIVERSITY
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Analysis of Children in the Wilderness Eco-Clubs

PARTICIPANT CONSENT FORM – ADULT

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being sound recorded.

I wish/do not wish to have my recordings returned to me.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature:……………………………………………………………. **Date:** ………………..

Full Name – printed: …………………………………………………………………………

Analysis of Children in the Wilderness Eco-Clubs

FOCUS GROUP PARTICIPANT CONFIDENTIALITY AGREEMENT - ECO-MENTOR

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand that I have an obligation to respect the privacy of the children in this group by not disclosing any personal information that they share during the discussion.

I understand that the names of all the students in the focus group will be kept confidential by the researcher and me.

Note: There are limits on confidentiality as there are no formal sanctions on other group participants from disclosing your involvement, identity or what you say to others in the focus group. There are risks in taking part in focus group research and taking part assumes that you are willing to assume those risks.

Signature: …………………………………………………………. **Date:** ………………....

Full Name – printed: ………………………………………………………………………..

MASSEY UNIVERSITY

COLLEGE OF SCIENCES

TE WĀHANGA PŪTAIAO

Analysis of Children in the Wilderness Eco-Clubs

PARTICIPANT CONSENT FORM & CONFIDENTIALITY AGREEMENT – CHILD

I have read the Information Sheet and have had the details of the study explained to both my child and me. My child's and my questions have been answered to my satisfaction, and I understand that my child or I may ask further questions at any time.

I agree/do not agree for the researcher to be present in the eco-club, and to take part in the activities.

I agree/ do not agree for my child to take part in the group discussion.

I agree/do not agree to the group discussion being sound recorded.

My child understands that they must respect the privacy of the other children in the group by not talking about what other children say in the discussion.

My child and I understand that the names of all the students in the focus group will be kept confidential by the researcher and the teacher involved.

I agree for my child _____ to participate in this study under the conditions set out in the Information Sheet.

Signature of parent/legal guardian: …………………………………**Date:** ……………........

Full Name – printed: ………………………………… **Relationship to participant:** ………………

Appendix E: Interview and Focus Group Schedules

INTERVIEW SCHEDULE - ECO-MENTORS

1. Are there any aspects of ESD that are taught in the formal curriculum?
   a. If so, does the eco-club programme complement what is taught?
   b. If not, does the eco-club programme fill gaps in the areas where formal education falls short?
2. Are there any noticeable differences between children who attend the eco-clubs and those who do not (with regard to behaviour)?
3. What are some of the main things you think your students have learnt about the environment and conservation?
4. What differences, if any, have you noticed between grade 5 and grade 7 children regarding environmental/ conservation knowledge/behaviour?
5. Is working as group something that is encouraged in the eco-clubs?
   a. If not, why?
   b. If so, which activities?
6. Do you follow six prescribed lesson plans and one project per term?
   a. (if no), why, and what topics did you cover?
   b. Are there any challenges in following the lesson plans? Why/why not?
7. How much theory as opposed to practical learning is undertaken in the eco-club?
   a. Do you have a preference for doing either theory or practical?
   b. Why?
8. Are children given any control or choices with regard to their learning in the eco-club and what activities and projects are undertaken?
   a. If not, why?
   b. If so, how? And what sorts of ideas have they come up with?
9. What percentage of learning would you say takes place in the classroom, and what percentage takes place outdoors?
10. Have you noticed if children are able to apply what they have learnt in their daily lives?
    a. If yes, what?
    b. If not, why do you think not?
11. Is there any traditional knowledge that is incorporated into what you teach at the eco-club?
    a. If yes, why does it need to be incorporated?
    b. If not, why?

12. What language is predominantly used in the eco-clubs?

13. What is the fraction of boys and girls who attend the eco-clubs?

Specific activities:

14. *Tippy taps*. Do you have a tippy tap?

15. *Eco-gardens and worm farming*:

    a. What are some of the benefits you have seen as a result of the eco-gardens?

    b. Has the fertiliser from worm farming increased crop yields in the eco-gardens?

16. *Reduce, reuse, recycle*.

    a. How is waste managed?

17. Are any of these activities established and maintained in the wider community?

18. What, if anything, would you add or remove to the programme to better what CITW is trying to achieve?

PROGRAMME COORDINATORS

1. What are some of the most pressing environmental/social issues that led to the establishment of CITW eco-clubs in the Zambezi communities?

2. Are the eco-clubs in the Zambezi Region operationally similar to each other in terms of the activities undertaken? Are there activities that are undertaken at some eco-clubs and not others?

3. How has the programme evolved over the years in terms of the curriculum taught and the projects facilitated?

4. How does the eco-club curriculum respond to national and international guidelines for ESD?

5. How does the curriculum respond to local issues? How often is it reviewed or amended?

6. How is it decided what activities and projects will be undertaken?

7. What is the reason behind limiting the eco-club to grade 5 – 7 students?

8. Are there aspects of indigenous knowledge embedded into the eco-club curriculum?
   a. If so, where did CITW acquire this knowledge, and what led to CITW needing to bring it back?

9. What is the relationship between the eco-club programme and the community?

10. With regard to student involvement in the planning process – what are some of the ideas that children have come up with to take greater ownership of their eco-clubs?

11. Is problem-based learning actively incorporated into the curriculum?
    a. Are children given the opportunity to investigate and apply their knowledge in order to discover solutions to problems?

12. Does the training provide eco-mentors with interdisciplinary knowledge?
    a. For example, are various subject domains (science, geography, art) included in the programme curriculum?

13. Are teachers encouraged to prepare their own lesson plans, or are they provided with lesson plans/ ideas?

14. Are teachings about health and HIV/AIDS integrated into the curriculum?
    a. If so, how is this topic addressed?

15. Is climate change and disaster prevention included in the curriculum?
    a. If so, how has this been included and does it have a global or predominately local focus?

16. What are some of the most noteworthy outcomes of the eco-club programme thus far?

PARENTS

1. Does your child talk about what they learn at the Children in the Wilderness eco-club?

    a. If yes, what have you learnt?

    b. Has this made a difference in your life?

    c. How?

    d. If no, what are some of the challenges to changing behaviour?

2. Are you familiar with the tippy taps? Do you have a tippy tap?

3. How do you feel about the eco-gardens/ tree planting in the community?

4. How do you manage waste in your household?

    a. If it is separated, what happens next?

5. Do you think the eco-clubs and learning about the environment in primary school is a good idea?

    a. Why/why not?

ECO-CLUB MEMBERS

1. Why do you attend the eco-club?

2. What are some of the things you can do to help and protect the environment?

3. What is your favourite activity in the eco-club and why?

4. Do you talk to your family about what you have learnt in the eco-club?

    a. What have you told them?

5. Do you [recycle/plant/separate waste] at home like you do in the eco-club?

    a. Why/ why not?

    b. Can you tell me what you do? Or..

    c. *…If the answer is no*, why is it difficult to [recycle/plant/separate waste] at home?