

**AN INVESTIGATION OF STAKEHOLDER
PARTICIPATION AND LEARNING IN TWO
SCHOOLS WITHIN THE SEYCHELLES ECO-
SCHOOL PROGRAMME**

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ABSTRACT

The aim of this study was to investigate stakeholder participation and learning in the Seychelles Eco-School programme within a primary school context and a secondary school context. Findings from each Eco-School have been presented in two case studies with the goal to explore and describe how teachers, students, parents and organizations are participating and learning in the Eco-School programme. Six elements of school community were used to deepen understanding of the participatory and learning processes in each Eco-School, namely, leadership, management and administration, curriculum planning, teaching and learning, resource use and management, management of physical surrounds of the school and networks and partnerships. Some of the contextual variables in each Eco-School that were constraining and enabling stakeholder participation and learning in the programme have also been explored within this study.

Data in this study was generated from historical documents analysed, semi-structured interviews, focus group discussions and field notes. Data was also generated from questionnaires completed by organizations involved in the programme at each Eco-School. Data was analysed in two phases, the first phase involved reading across data generated from the methods mentioned above to organize the data under broad themes in relation to the elements of school community. The second phase of analysis involved the use of the conceptual framework of situating learning in a community of practice to interpret and discuss the participatory and learning processes across the two cases.

The study showed that in each Eco-School there is a community of practice with the active involvement of teachers and students and the occasional involvement of parents and organizations. Students and adults are learning as they engage together in classroom and field-work interactions, environmental projects, environmental activities to commemorate environmental theme days, environmental campaigns and co-curricular activities through the practices of each Eco-School community. It was also discovered that students and adults are making different contributions in the Eco-School community based on their level of participation in the programme. It is hoped that the findings in this research contribute information regarding community

participation in environmental education programmes like the Seychelles Eco-School programme. In addition, findings will inform the Seychelles Government and its partners to consider the possibility of enhancing school and community partnerships to respond to some of the challenges of participation and learning in the Eco-School programme.

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DEDICATION

*I dedicate this thesis to the ones who have granted me the grace to achieve all I hoped
for in this research:*

My wife, mother, father and other family members

Eco-Schools in Seychelles

The Seychelles Government

*All the non-governmental organizations who have contributed in the programme from
the time of its conception to date*

Ms. Jeanette Larue for having trust in me to be where I am today

Dr. Michele Martin for your support

*And, lastly, to the pristine and unique environment of the Seychelles - the place where
I am at peace and close to nature.*

LIST OF ACRONYMS AND ABBREVIATIONS

- EE- Environmental Education
- ECA- Extra-curricular Activities
- EECC- Environment Education Coordinating Committee
- EEPA- Environmental Education Participatory Action Group
- EfS- Education for Sustainability
- EMPS- Environmental Management Plan of Seychelles
- ESD- Education for Sustainable Development
- IOC- Indian Ocean Commission
- PTA- Parent Teacher Association
- SIP- School Improvement Programme

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CHAPTER 1

INTRODUCTION

"To understand the many dimensions of participation, one needs to enquire seriously into all its roots and ramifications, these going deep into the heart of human relationships and the socio-cultural realities conditioning them" (Rahnema, 1992, p. 126).

1.1 Introduction

The purpose of this chapter is to introduce the research. Firstly, the rationale of the research followed by the focus of the research has been outlined. A description of the context in which the research took place is then presented. It also presents my role in the study, followed by the research questions and goals of the study. Lastly, a synopsis of each chapter of the thesis is provided.

1.2 Rationale

In 2009, the Environmental Education Participatory Action Research Group (EEPAR) in Seychelles compiled a report on an annual Eco-School competition. The Eco-School competition rewards Eco-Schools registered to the Seychelles Eco-School programme for their achievements of integrating environmental education into their daily operations. The report was informed by a survey conducted with school environment leaders in eighteen Eco-Schools (Martin, 2009). One of the issues from the findings in the report showed that in most of the Eco-Schools only a small group of teachers and students were involved in the integration of the programme at the school (*ibid*). Martin (*ibid*) recommended that new strategies needed to be developed in order to involve the whole school community in the programme so that it does not become the responsibility of only a group of teachers.

This study was set out to further explore stakeholder participation and learning in the Seychelles Eco-School programme and to provide insights into the ways that stakeholder are participating and learning in the programme. Some of the factors that enable and constrain the participation and learning of stakeholders have also been explored in this study.

1.3 The focus of the research

The focus of the research was to investigate stakeholder participation and learning in the Seychelles Eco-School programme within a primary school context and a secondary school context. Stakeholders here mean teachers, students, parents and organizations such as Plant

Conservation Action Group (a non-governmental organization) and Ministry Environment and Energy (a governmental organization). Stakeholder participation and learning are explored within the six elements of school community. The six elements of school community are 1) leadership, management and administration; 2) curriculum planning; 3) teaching and learning; 4) resource use and management; 5) management of the physical surrounds of the school; and 6) networks and partnership (Section 2.6).

1.4 Context of study

The research study was conducted in two public schools in Seychelles: a primary school (School 1, refer to Figure 1.1) and a secondary school (School 2, refer to Figure 1.2). Both schools are located in the northern part of the island called Mahe, where the capital city and the governmental offices are located.

Figure 1.1 shows picture of School 1 on Mahe



Figure 1.2 shows picture of School 2 on Mahe



The Seychelles Government with the support of other organizations strives to protect the sensitive environment of this small island developing state. The environment contributes to two sectors of the Seychelles economy, namely the tourism and fishing industries (Ministry of Environment and Energy, 2012). The beauty, greenery, tranquillity and fresh air of Seychelles makes it a unique destination in the world. Seychelles has over 1000 plant species and more than 1000 animal species of which some are endemic and under threat (Ministry of Environment and Energy, 2012).

The Eco-School programme is an educational programme implemented at national level in schools responding to local and global socio-ecological issues relevant to the Seychelles and to support its policies on education and the environment (Section 2.2.2). It is compulsory for schools to register for the programme and currently all primary and secondary schools in Seychelles are members without any fee for registration (Commonwealth Secretariat, 2012). The programme is coordinated by the Environmental Education Unit within the Ministry of Education¹.

The schools registered for the programme promote environment learning and engage in different environmental education (EE)/education for sustainability (EfS) practices in response to socio-ecological issues. In Seychelles EE is the same as EfS since they both reflect education responding to socio-ecological issues influenced by human activities. Both

¹ The Seychelles Eco-School programme is not registered to the International Eco-School programme that is run by the Foundation for Environmental Education.

EE and EfS incorporate all educational and awareness initiatives for people to meaningfully engage with the socio-ecological issues affecting Seychelles and learn to take actions that will help them to live sustainably with nature and with each other (Martin, 2011; Ministry of Environment and Energy, 2012). As such, in general, I will be using EE/EfS throughout the thesis because of their similarities in relation of the goal of the Seychelles Eco-School programme to promote sustainability in the daily operations of schools. Some of the socio-ecological issues that the schools are responding to are climate change, unsustainable management of energy, water and waste, amongst others (Emilie, 2011 & Ministry of Environment and Energy, 2012). Martin (2007) explains that some of the EE/EfS practices happening in schools in response to the socio-ecological issues are "wide participation in decision making, holistic approaches to curriculum, student-centred pedagogy, links between school communities, energy and water conservation, innovative waste management and beautification/naturalization of school grounds" (p. 3).

1.5 My role in the Seychelles Eco-School programme

I am the national coordinator of the Seychelles Eco-School programme based in the Environmental Education Unit, Ministry of Education. I am responsible for the coordination of EE/EfS in all thirty-four government schools in Seychelles, ranging from primary to secondary schools. My responsibilities include liaising with government or non-government organizations as well as the private sector and international partners to plan, implement, monitor and evaluate EE/EfS in schools. I work closely with schools to help them integrate EE/EfS in their daily practices through teacher professional development sessions, meetings, in-service training during holidays, meetings and class presentations. In each Eco-School there is a focal person known as a school environment leader with whom I work directly for the leadership, management and administration of the programme. I am also responsible for materials development promoting EE/EfS in schools. I assist with the design of national plans promoting EE/EfS to include schools and coordinating the annual Eco-School competitions. I have been fulfilling duties in this post since 2011. Before that I used to work as a primary school teacher, specialising in Mathematics, Science and Geography. I was also coordinating the Eco-School programme at Grand Anse Mahe Primary School as a school environment leader and working closely with the school's three year development plan as a professional development facilitator.

My interest in this research was influenced by two environmental change projects that I implemented as part of Rhodes/SADC alumni course in 2011 and 2012 (Emilie, 2012a & Emilie, 2012b). The first change project focused on the expansion of the concept of the Eco-School programme within twelve schools in Seychelles through a three day workshop. The workshop targeted schools that were not meeting the criteria of the programme because of issues such as lack of interest from stakeholders to support the integration of EE/EfS in the daily running of the school (Emilie, 2012a). The second change project also responded to the same issue and was also organized as a workshop to build the capacity of all school environment leaders from Eco-Schools in Seychelles (Emilie, 2012b). The one day workshop was aimed at enhancing the leadership roles and practices of the leaders with new knowledge to deal with challenges in the programme, and stakeholder involvement was one of them. Influenced by these initiatives, I decided to conduct an in-depth study to understand the problem of stakeholder involvement in the programme.

1.6 The research questions and goals

As previously mentioned in Section 1.3 of this chapter, the aim of this research was to investigate stakeholder participation and learning in the Seychelles Eco-School programme within a primary school context and a secondary school context. The two research questions are: 1) How are stakeholders participating and learning in two Seychelles Eco-Schools? and 2) How are the participation and learning of stakeholders enabled and constrained in each Eco-School investigated? With a view to explore the research questions outlined above, three goals were framed to guide the process of data collection and analysis (see Section 3.6):

- 1) to describe how stakeholders are participating and learning in Eco-School activities and projects within the six elements of a school community;.
- 2) to deepen the discussion on how the stakeholders are participating and learning within the six elements of school community using a model of situated learning in a community of practice; and
- 3) to analyse and identify the different factors that have enabled or constrained stakeholder participation and learning in the programme.

The findings generated from the research questions and goals will inform the Seychelles Government and its partners of the current situation of stakeholder participation and learning in support of environmental and sustainability learning and practices in schools. Findings will deepen understanding on the participatory and learning processes in each Eco-School supported by the Seychelles National Curriculum, other school programmes, and initiatives from stakeholders. This will provide baseline data to potentially increase more meaningful participation and learning opportunities in Eco-Schools. On one hand, the findings are likely to strengthen the integration of EE/EfS into the Seychelles formal education system from primary to secondary education in support of one goal of EfS in the Seychelles Sustainable Development Strategy plan (SSDS) (Ministry of Environment and Energy, 2012). This goal emphasises the provision of "... life-long learning experiences to empower all levels of society to adopt environmentally sustainable practices" (Ministry of Environment and Energy, 2012). On the other hand, there is potential for enhanced networking and partnership between Eco-Schools and the community to reinforce the mission of the Ministry of Education of Seychelles for quality of education emphasizing "shared universal and national values which promote the integrated development of the person and empower him/her to participate fully in social and economic development" (Ministry of Education, 2000, p. 5). The former could potentially support the formation of a socio-ecologically sustainable society which strives to achieve quality of life and of the environment through economic development that does not exceed the ecological capacity of Seychelles.

1.7 Overview of the chapters

The six chapters in this thesis reflect the focus of this research (see section 1.3) and are outlined below:

Chapter One introduces the research study and provides a contextual description of the research. The research questions and goals are introduced, followed by an overview of my role in the Seychelles Eco-School programme.

Chapter Two presents a detailed description of the Seychelles Eco-School programme and its history. This chapter provided a general overview of some organizations' participation in the Seychelles Eco-School programme. This chapter also presents the conceptual framework

of situated learning in communities of practice. The framework has also been used to deepen discussion on stakeholders' participation and learning in the programme. The relationship between participation and learning has also been outlined followed by the concept of whole school community approaches and the levels of participation in a community of practice. Lastly, some factors that enable and constrain participation and learning are also presented.

Chapter Three presents the research methodology used to investigate stakeholder participation and learning in two Seychelles Eco-Schools. An interpretive approach to research is discussed in this chapter in relation to its relevance to the research questions and goals. The different research methods used to generate data to inform the content of both case studies and how data was analysed are elaborated. In addition, the ethical protocols, trustworthiness and validity of the research are also presented.

Chapter Four describes how stakeholders are participating and learning at different levels within the six elements of school community in relation to the first goal of the research. This is explored from data generated from semi-structured interviews, focus group discussions, questionnaires, field notes and documents analyzed. There are two case studies presented in this chapter.

Chapter Five discusses the findings from Chapter Four through a second phase of analysis. The conceptual framework of situating learning in a community of practice was used to deepen discussion on the participatory and learning processes in the two Eco-Schools investigated as the second goal of the research. This second layer of analysis has also included the discussion of factors enabling and constraining stakeholder participation and learning in the Seychelles Eco-School programme, as the third goal of the research.

Chapter Six concludes the thesis with a general summary of the research. It also considers some recommendations for Eco-Schools and the Seychelles Government based on the findings from Chapter Five to enhance stakeholder participation and learning in the programme.

CHAPTER 2

LITERATURE REVIEW

"Most importantly, genuine participation in education for sustainability is essential to building people's abilities and empowering learners to take action for change toward sustainability. Through participation, learners build skills to take control of both the decision making process and responsibility for its outcomes... It gives participants the confidence to share knowledge, negotiate with others, develop persuasion skills, think through problems and practice leadership" (Tilbury and Wortman, 2004, pp. 53-54).

2.1 Introduction

The Seychelles Eco-School programme is more than just a programme that concerns teachers and students alone. It is aimed at involving other members in the community and organizations to work together and promote environmental learning and environmental management practices in schools (Emilie, 2011). A partnership is established between the school and the local community within the Eco-School programme that draws on what Epstein (2010) describes as vital to improve school programmes, creating a conducive learning environment in the school and providing support to teachers for school activities, amongst others. Epstein (2012, p. 82) points out that "when parents, teachers, students, and others view one another as partners in education, a caring community forms around students and begins its work". It is through this partnership that stakeholders (teachers, students, parents, and organizations) learn from each other and engage through practices in relation to the Eco-School programme. Stakeholders are learning from each other through a process of social participation as referred to in Wenger's (1998) concept of communities of practice.

This chapter presents the concept of the Seychelles Eco-School programme, its history and how some organizations are involved in the programme. This aspect of the chapter is drawn from a contextual profile conducted by Emilie (2013). It then discusses situating learning within the notion of communities of practice to understand stakeholder participation and learning in each Eco-School investigated. The relationship between participation and learning is also discussed. The six elements of school community that create the opportunity for stakeholders to participate and learn in the Eco-School programme and the levels of participation in communities of practices are presented. In addition, some of the enablers and constrainers of participation and learning are also highlighted in this chapter.

2.2.1 Programme Description

The Seychelles National Eco-School programme was established 20 years ago, and aims at promoting environmental learning and sustainable management practices at the local level through EE/EfS in the day to day running of the schools registered in the programme. The Environmental Education Unit within the Ministry of Education was mandated to coordinate the programme in all 34 government schools, that is, 24 primary schools and 10 secondary schools.

In each Eco-School, teachers, students and parents find ways to help the school to become more environmentally friendly with support from other partners such as governmental organizations and non-governmental organizations (Emilie, 2013). For example, one of the main governmental organizations supporting the programme is the Ministry of Environment and Energy. The Wildlife Clubs of Seychelles is one of the local non-governmental organizations, and the Save Our Seas Foundation is one of the international non-governmental organizations supporting Eco-Schools. The partners from all three sectors mentioned are providing different forms of support according to their organisational mandates. For example, the Ministry of Environment and Energy provides financial support for educational trips and the Eco-School competition prize-giving ceremony. The Wildlife Clubs of Seychelles produces resources and funds projects for school-based clubs. These clubs are coordinated by Wildlife Clubs leaders who are also teachers working alongside school environment leaders in each Eco-School.

There is a budget allocated by the Seychelles Government to ensure that the Environmental Education Unit continues to provide support to all Eco-Schools through field trips, workshops, training, educational activities and projects with support from other partners, namely governmental and non-governmental organizations. All Eco-Schools implement EE/EfS activities and compile portfolios of evidence over which they are judged for performance through the annual Eco-School competition. Schools are awarded points annually for their efforts based on the general criterion (see Appendix 1) and participation in national school competitions. Certificates, cash prizes and flags are examples of rewards given to schools for their respective level (see Table 2.1). See Appendix 2 for a sample of the flags. There is also a separate category to reward a school for showing best practices in either a) water management; b) energy management; c) waste management; or d) integration

of EE/EfS in teaching and learning, sponsored by local organizations/institutions (Emilie, 2013).

Table 2.1 shows the level system of the national Eco-School competition

| Level | What does it mean? | Total number of points (Example) | What do they win as prize (s)? |
|-------|---|---|---|
| 1 | Get going (Room for improvement) | <175 points | A certificate only |
| 2 | Almost there (Good work and can work harder-medium) | Between 176-299 points | A yellow flag, certificate and cash prize sponsored by Ministry of Environment and Energy |
| 3 | Finally there (Very good performance) | >300 points | A green flag, certificate and cash prize sponsored by Ministry of Environment and Energy, educational trip to an island sponsored by President's office and other partners |
| | Outstanding performance in primary and secondary category | The highest points from one school in each category | A green flag, certificate, a coco-de-mer trophy sponsored by Seychelles Island Foundation, cash prize, educational trip to an island sponsored by President's office and other partners |

Each Eco-School has a School Environment leader who has the following responsibilities for the coordination of the Eco-School programme in their respective school:

- Set up and chair an Eco-School committee
- Establish a School Environmental Education Policy or an Eco-Code, together with general guidelines towards its implementation
- Coordinate an Eco-Audit to look at the conditions, issues and opportunities at the school
- Develop and implement an Eco-school Action plan with input from the Eco-School committee
- Coordinate and implement Environmental Education activities featured on the Ministry of Education's annual Extra-Curricular activities/events calendar
- Act as the liaising person between the school and outside partners
- Compile the Eco-School portfolio with support from the Eco-School committee
- Assist with the integration of EE/EfS in all subjects with support from the Eco-School committee

There are four criteria considered in the annual Seychelles Eco-School competition, namely, administrative practices, maintenance practices, school initiatives or projects, and integration of environmental education in teaching and learning (see Appendix 1). These criteria guide the schools to promote environmental learning and environmental management activities and projects in order to address some of the local and global socio-ecological issues affecting Seychelles.

Martin (2007) who used to be the national coordinator of the Eco-School programme and is currently one of the leading researchers and environmental educators in Seychelles has argued that several participating schools have implemented immensely successful projects in order to address some of the socio-ecological issues. Some of the projects are composting of organic waste, producing heritage gardens containing fruit and medicinal plants, building outdoor seating areas for students, re-use and recycling of solid waste materials in subjects across all levels, and harvesting rainwater for cleaning and gardening, to name a few (Martin, 2007).

2.2.2 History of the Seychelles Eco-School programme

During the 1980s, the Seychelles Government implemented educational reforms to integrate EE within the curriculum. A curriculum unit was set up to produce a curriculum for both primary and secondary schools with the support of locally designed instructional materials. Martin (2011) states that some of the primary curriculum resources that were developed and used during the 1980s "had an interdisciplinary environmental focus, and a number of high quality EE curriculum resources for secondary science education were locally produced and used by teachers" (p. 5).

During the 1990s the Seychelles' curriculum was reviewed again to keep abreast with the emerging environmental issues with the full support of government through two policy documents a) Education for a New Society (Ministry of Education, 1984), and b) the Environmental Management Plan (1990). The integration of EE was largely seen within Science and Social Science curriculum subjects (Martin, 2011). In 1994, the Ministry of Education decided to expand the concept of EE through a project that paved the way for students and teachers to engage in environmental learning and greening of school grounds, as well as environmental management practices in extra-curricular activities (Martin, 2007). Martin (*ibid*) further adds that the project included criterion in support of EE, "such as wide

participation in decision making, holistic approaches to curriculum, student-centred pedagogy, links between school and community, energy and water conservation, innovative waste management and beautification/naturalization of school grounds" (p. 3).

In 2000, an Environmental Education Unit was created under the Schools Division. An environmental education coordinator was appointed to oversee all environmental education programmes in schools, both in the formal and informal curricular (Martin, 2007). The environmental education coordinator was supported by an Environment Education Coordinating Committee (EECC), chaired by the special advisor to the Minister for Education and Culture at that time. The former committee worked on an Environmental Management policy to further strengthen the integration of Environmental Education within formal education, school environmental projects and clubs in the schools.

In 2000, the Ministry of Environment and Transport developed its second EMPS for 2000-2010, paving the way for a holistic view of EE/EfS across systems such as social, political, economic and biophysical areas. The plan emphasized that the government would develop and support programmes such as the Eco-School programme that makes linkages between these systems. As a result, EE/EfS in schools were treated as a continuing process to help students find ways of achieving social, economic and ecological sustainability. During that same period the Ministry of Education launched its second policy statement entitled Education for a Learning Society (Ministry of Education, 2000) supporting the EMPS (2000) through one of its principles on global participation. The principle states that:

Seychelles' contribution to the realization of two of mankind's most cherished aspirations, namely, the twin achievements of world peace and sustainable development will be enhanced through an education which promotes our tradition as a society sensitive to environmental issues and committed to policies emphasizing the social/human aspects of development. Our ability to pursue these policies in a climate of stability will depend on the extent to which education can help to consolidate a democratic ethos and a culture of human rights which draws its vitality from vigorous critical discourse, tempered by tolerance (Ministry of Education, 2000, p. 5).

This marked an evolution in the education system of Seychelles aimed at integrating Education for Sustainability to continue with what was already established in schools through Environmental Education. Later, during 2001, the curriculum was revised to enhance environmental learning through a cross-curricular approach in other subjects apart from science, for example, Personal and Social Education, and Technology Enterprise. The curriculum emphasized the development of values alongside knowledge and skills, and the interconnectedness of subject areas and the relationship of learning to real-life situations (Ministry of Education, 2001).

In 2003-2006 the European Union funded the *Appui Régional à la Promotion d'une Education pour la Gestion de l'Environnement* - known as the ARPERGE project coordinated by the IOC in regional countries like Madagascar and Mauritius. ARPERGE translated in English means 'Regional Support for the Promotion of Education for Environmental Management'. The project was piloted in nine state schools in Seychelles to enhance the realisation of EE/EfS in the daily operations of the school. The former was realised through teacher professional development sessions facilitated by technical officers from the Ministry of Education and the distribution of resource packs developed by a group of pedagogues through the network for teachers to use in support of the project. Through the professional development sessions and resource packs, teachers developed knowledge and skills to facilitate environmental learning and initiate environmental management projects at school. In addition, teachers also learned how to conduct an eco-audit with the help of information from the resource packs and make recommendations to respond to socio-ecological issues in schools. A network system was established between schools in the region for exchange of ideas and sharing practices arising from the ARPERGE project.

The Ministry of Education, through the Environmental Education Unit, and with the support of other partners, continued to promote the Eco-School concept through teacher development sessions, campaigns, competitions, and the development of educational resources (Martin, 2011). National campaigns, such as Save the Turtle (Photograph 2.1) and national competitions, established opportunities for the students and teachers to see how EE/EfS could be fun and interesting.

World environmental theme days were incorporated on the schools' calendar of activities as co-curricular activities. Organisations like the Seychelles Tourism Board, in partnership with the Ministry of Education and other partners, initiated a creative writing and art work competition to celebrate the Sub Indian Ocean Festival promoting marine sustainability. Amongst other national events, the annual horticultural show held during the national day celebrations from the 5th of June, provided a platform for schools to also promote sustainable gardening of local food in special containers made out of recycled or re-used materials (Photograph 2.2).

Photograph 2.1 shows students and adults participating in a street rally in support of Save the Turtle project



Ministry of Education, 2003

Photograph 2.2 shows a special needs school participating in the national horticultural show



Ministry of Education, 2004

After 2005, most schools in Seychelles were registered with the Eco-School programme (Emilie, 2013). This meant that through the Eco-School programme the environmental policies of the government would be supported through environmental learning and environmental management practices promoted by the schools, thus raising awareness amongst the future leaders to acquire knowledge and skills necessary to address socio-ecological issues affecting the sensitive environment of Seychelles (Emilie, 2013). Schools were encouraged to nominate a school environment leader, create their own EE/EfS policy or eco-code, and set up an Eco-School committee to discuss and take action on socio-ecological issues. This promoted team spirit and delegation of responsibilities for the development of the school. Martin (2007) noted that, as part of the education reform during 2006, the Ministry of Education requested a supplementary budget to provide a monthly allowance for all School Environment leaders. This is currently part of an inducement allowance of a recent education reform in Seychelles (Ministry of Education, 2010). This demonstrates the government's interest in supporting the Eco-School programme. Furthermore, the Ministry of Education as well as the Ministry of Environment and Energy

provide an annual budget for the implementation of the Eco-School programme. This is supported by external funds to support environmental projects and educational activities in schools, including the development of learning support materials² for teaching and learning. External funds from local sponsors include the Environment Trust Fund and the Children's Fund and international sponsors include the United Nations Development Programme and the Global Environment Fund (Martin, 2007).

2.2.3 An overview of organizations' participation in the Seychelles Eco-School programme

This section describes how some of the organizations as one group of stakeholders are participating and learning in the Seychelles Eco-School programme through some of their EE/EfS initiatives. This section draws on the contextual profile conducted by Emilie (2013). Some of the practices of the organizations include materials development, capacity building workshops, and environmental school clubs, amongst others. These are briefly discussed in this section.

2.2.3.1 EE/EfS initiatives related to solid waste management

Every year, the Landscape and Waste Management Agency within the Ministry of Environment and Energy organizes activities to commemorate the environmental theme day of Clean up the World for all organizations and institutions in Seychelles to participate (Emilie, 2012c). The campaign is aimed at cleaning public places and in residential areas to remove solid wastes that are hazards to the health of people and the environment. Schools in the Eco-School programme participate by cleaning school grounds or an area outside the school with the support of parents and other organizations in the community (Emilie, 2012c) as indicated in Photographs 2.3 and 2.4.

² Learning support materials used in this research refers to materials that can be used to "foster or support environmental learning" (Lotz-Sisitka & Russo, 2003, p. 1)

Photograph 2.3 shows parents helping to clean the area around one Eco-School in the Seychelles



Ministry of Education, 2010

Photograph 2.4 shows students and staff of Ministry of Environment and Energy cleaning the boundary around a river



Seychelles Nation, 2011

Moreover, schools are also supported by organizations with "some materials like books, and stickers and presentations that raise awareness of solid waste management issues" (Emilie, 2013, p. 19). Knowledge provided through the materials and presentations facilitate learning regarding the waste management practices of recycling, re-use, reduction and repair, and support the development of values that promote respect and care for the environment (Emilie, 2013).

2.2.3.2 EE/EfS initiatives related to energy management

In 2012, the Ministry of Environment and Energy launched a national Energy Efficiency campaign to support one of its energy-related goals in the Seychelles' Sustainable Development Strategy (2012-2020). The energy-related goal is based on the promotion of sustainable demand and supply of energy in Seychelles. The campaign includes capacity building workshops and training, materials development and educational activities on sustainable use of energy in buildings, construction work, hotels, industry and educational institutions, amongst others (Ministry of Environment and Energy, 2013). In 2012, the campaign started with the distribution of stickers showing special messages to save energy and a special video clip of a song composed by two young Seychellois artists providing tips on how to reduce consumption of energy. Eco-Schools received some of the materials to be used in teaching and learning.

In that same year, one government school received funds from the United Nation Development Programme (UNDP) and materials from a local businessman who imported solar energy technologies for a school project. This project entailed making use of renewable

energy from the sun to produce electricity to be used in the computer rooms (Eco-Schools Seychelles, 2012). According to Ritcher (2011), the consultant for projects funded by UNDP in Seychelles, a second Eco-School located on La Digue island (one of the 115 islands in Seychelles) would benefit from a UNDP/GEF funded project through energy efficiency equipment during 2013. Solar street lights and solar voltaic panels to produce electricity for the computer room, to name a few, are some of the energy efficiency equipment that were to be installed in the school (Ritcher, 2011).

The examples outlined above show how international organizations in collaboration with the government are supporting some of the schools to promote energy conservation practices. The practices help to reduce the carbon footprint and support schools to save money on electricity bills (Emilie, 2013).

2.2.3.3 EE/EfS initiatives related to water management

Activities are organised by organizations, namely, Sustainability for Seychelles, Public Utilities Cooperation, Ministry of Education and Ministry of Environment and Energy, to sensitize people about the different ways that water could be used sustainably. School exhibitions, media programmes, workshops and presentations have been conducted to raise awareness on some issues relating to water to promote sustainable practices of managing water. Larue (2010) states that learning support materials were also produced to provide information on how to conduct a water audit, tips to conserve water and the benefits of rainwater collection (see Appendix 5).

From 2010 to 2011 the Schools Rainwater Harvesting project was piloted in 10 Eco-Schools (Emilie, 2013). The success of the project led to its replication in five more Eco-Schools during the second half of 2012. During 2012, the project was recognized for its achievements and received a special award as part of the international Education Good Practice Awards for all Commonwealth member states (Commonwealth Secretariat, 2012). The project is currently under the coordination of the Environmental Education Section, Ministry of Environment and Energy and Environmental Education Unit within the Ministry of Education (Larue, 2010). The Ministry of Environment and Energy is funding the project in the five new schools and will be conducting presentations with teachers on the project during 2013.

2.2.3.4 EE/EfS initiatives for protection of marine species

One of the initiatives by organizations who specialize in marine education is developing materials, namely, resource books, activity books, posters and newsletters. The materials are used in schools to educate teachers and students on the endangered marine species and some of the issues that are affecting the marine ecosystem in Seychelles. Recently the Save our Seas Foundation, an international organisation, has been conducting educational presentations in schools for teachers and students on marine ecosystems (Photograph 2.5) and also donating learning support materials for use in teaching and learning (Eco-Schools Seychelles, 2012). The Ministry of Education in collaboration with the Ministry of Environment and Energy, Save Our Seas Foundation and Seychelles Tourism Board also organizes annual creative writing and art-work competitions for all schools. The event is accompanied by other national events to commemorate the Sub Indian Ocean Seychelles underwater festival such as film shows and a children's fun day through the combined efforts of local organizations.

Emilie (2013) added that a non-governmental organization specialising in marine education and research conducted a special Academy by the Sea course for a group of secondary students in 2012 (Photograph 2.6). The course is for students who are interested to take up a profession in the field of marine conservation. Moreover, the course also aimed at supporting the Seychelles' government policies on raising awareness about the protection of marine species. Some of the activities mentioned by Emilie (2013) are snorkelling in marine parks, cleaning beaches and discussions on issues affecting the marine ecosystem. Students were able to produce some art-work and other materials to raise awareness amongst members of the public. The course continued in 2013 (Emilie, 2013) so that other students could also benefit from it (see also Save Our Seas Foundation, 2013). Apart from this, there was also a Beach Cleanup campaign launched in year 2013 involving Eco-Schools and other organizations (Emilie, 2013).

Photograph 2.5 shows students participation in a presentation by Save our Seas Foundation



Seychelles Nation, 2012

Photograph 2.6 shows students from secondary schools in Seychelles who participated in the Academy by the Sea



Seychelles Nation, 2012

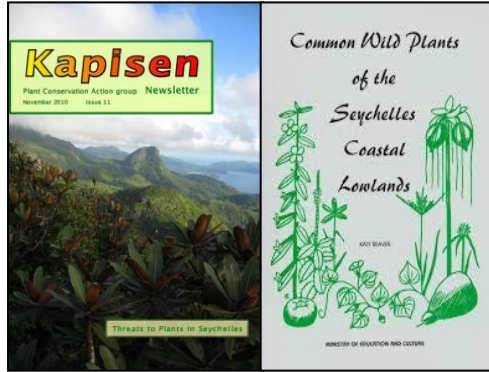
The educational programmes organized by organizations outlined above reinforce environmental policies on the protection of marine species such as turtles and sea cucumbers with the aim to establish sustainable partnerships between people and marine species. This is because marine species play an important role in maintaining a balance in the marine ecosystem, for example, the turtles help to graze the sea grass so that it does not become long (Emilie, 2013).

2.2.3.5 EE/EfS initiatives for protection of plant species

Seychelles has over 1000 plant species that are endemic and under threat (Ministry of Environment and Energy, 2012). Two non-governmental organizations working on protection of plants have produced learning support materials for Eco-Schools on the plants of Seychelles (Photograph 2.7). One of the non-governmental organizations produced resource books and activity books on plants in Seychelles for use in teaching and learning to support topics about plants in the curriculum. Another organization conducted presentations in some Eco-Schools to develop the capacity of teachers when teaching students about plants that are native, endangered or invasive to Seychelles.

Another non-governmental organization has established environmental clubs in some schools on one of the islands of Seychelles where one of UNESCO's Heritage Sites in Seychelles is located. Eco-Schools alongside these organizations have also been participating in community tree planting in line with the government's Tree Planting Campaign to plant more trees which are endemic or with medicinal value (Photograph 2.8), (Seychelles Nation, 2012).

Photograph 2.7 shows two materials produced by Plant Conservation Action group for use in teaching and learning



Emilie, 2012

Photograph 2.8 shows students planting seedlings to restore a mangrove site as an activity organized by Wildlife Clubs of Seychelles and Mangroves for the Future



Wildlife Clubs of Seychelles, 2012

2.2.3.6 EE/EfS initiatives to mitigate climate change

According to Martin and Carolus (2009), since 2008 organizations have been implementing extensive climate change education programmes and Eco-Schools have benefited from them. The Eco-Schools have benefited from the programmes with learning support materials, namely posters, resource books, magazines and stickers (see Appendix 6). From 2009 onwards, workshops have been organized by the Environmental Education Unit within the Ministry of Education to develop the knowledge of school environment leaders on climate change and its impacts on the sensitive environment of Seychelles. Technical officers from governmental organizations were invited as guest speakers to conduct presentations on different topics related to climate change, namely the impact of climate change on Seychelles' ecosystems, human well-being and health. Schools even benefited from presentations that are conducted by organizations like the Ministry of Environment and Energy Sustainability for Seychelles, the Ministry of Education and the Wildlife Clubs of Seychelles.

2.3 Situated learning in communities of practice

This section of the chapter is aimed at presenting the two theories which have relevance to understand learning and participation in the Eco-Schools programme. The two theories are situated learning theory (Lave & Wenger, 1991) and communities of practice (Lave & Wenger, 1991; Wenger, 1998). Lave and Wenger (1991) view learning as a social phenomenon that is not limited to only one context, such as schools and work-place, but which is "an integral part of generative social practice in the lived-in world" (p. 35). Lave

and Wenger (*ibid*) explain that learning is part of the every-day lives of people and happens when they actively participate within their communities - through what they describe as "legitimate peripheral participation" (p. 25). This form of social learning is grounded in a cultural and historical context where learners, treated as *tabula rasa* (individuals with the opportunity to learn from the experiences of others), are able to interact and learn with the more experienced members in the community. It is through this engagement that novices become part of the community as they move from the side-line (periphery) towards the centre where they become full participants in the socio-cultural practices of the community (*ibid*, p. 36). As explained by Lave and Wenger (*ibid*), "legitimate peripheral participation provides a way to speak about the relations between newcomers and old-timers, and about activities, identities, artefacts, and communities of knowledge and practice. It concerns the process by which newcomers become part of the community of practice" (p. 29).

The concept of situating learning in communities of practice has been chosen within this study to deepen understanding of the nature and processes of participation and learning and how stakeholders are learning in each Eco-School. The concept also deepens understanding on the nature of the forms of participation and how stakeholders are participating in each Eco-School. Moreover, it also enables the study to show the relationship that exists between stakeholders and how stakeholders are constructing their identities while they participate and learn in the Eco-School programme (Benzie, Mavers, Somekh & Cisneros-Cohernour, 2005).

2.3.1 Situated learning theory

Lave and Wenger (1991) explain that situated learning theory emphasizes the "... inherently socially negotiated quality of meaning and the interested, concerned character of the thought and action of persons engaged in activity" (p. 67). It exists as a "transitory concept" between the view that cognitive processes are primary to learning and the view that social practice is what facilitates learning (*ibid*, p. 34). Learning does not happen in isolation, but through interaction and collaboration between people while they are engaged in activities within the practices of a socio-cultural context (Lave, 1991, p. 67). Learning in this sense means that, to a great extent, what is learned is "specific to the situation in which it is learned" (Anderson, Reder & Herbert, 1996, p. 5). Hung (2002) further notes that situated learning does "not deal primarily with the relationship between entities as distinct, instead, it considers the system-context, persons, culture, language, inter-subjectivity as a whole

coexisting and jointly defining the construction of meanings" (p. 396). This statement shows how entities are interconnected within a system and the Eco-School programme in the daily running of schools is an example of such a system.

Hart (cited in Reid *et al.*, 2008) states that particular contexts such as schools, where learning is taking place, "can be thought of as networks or systems of activity or participation, where certain beliefs, ethics, values and assumptions are assumed and enacted" (p. 201). The American philosopher, Dewey (1916), says that the context where learning is taking place is "...truly educative in its effect in the degree in which an individual shares or participates in some conjoint activity" (p. 26). Learning is therefore not limited to the minds of people but within a "participatory framework" (Hung, 2002, p. 397). Individuals such as students and adults make meaning of the knowledge and skills from the lived experiences of other people who are historically grounded in the community. Lave and Wenger (1991) and the American philosopher, Dewey (*ibid*), explain that individuals also learn through social interactions, where they visualize (reflect) and imitate (reproduce) the practices in the community. Dewey (*ibid*) argues that when an individual participates in the activities of a community, he/she becomes familiar with the methods and subject matter of the activity. As a result of the participation in the activities, the individual acquires the needed skill and is able to immerse in the emotional condition created by the activities of the community. Two of several examples in the Eco-Schools context are when there are some particular activities, such as doing compost, that students may find more exciting and practical, while other activities, such as writing an essay on an environmental topic, that students may find not so interesting because they do not provide the opportunity to interact and be practical.

Lave and Wenger (1991) add that people temporarily learn from the knowledge of the community in the shared practices of the community and the primary goal of learning is for people to "learn to talk as a key to legitimate peripheral participation" (p. 109). One example of learning to talk is when students and adults continuously share experiences through the ongoing activities of the community (*ibid*). According to Vygotsky (1978) and Dewey (1958) language is one of the tools used by community practitioners to facilitate learning and for the individuals to make meaning of what they are learning through the activities of the community. Hung (2002) says that language is one of the vital tools to raise awareness of the "operative rules" (p. 397) specific to the social practices in a community. It is what

Wittgenstein and Anscombe (2001) refer to as a "language game", whereby people reflect on and make meaning of what exists in the social interaction of the community so that they can also learn to participate in that community. According to Habermas (1984), the role of language is to coordinate actions and to also enable members in the community to socialize. Hung (*ibid*) also adds that language should "be recognized as the instrument of social cooperation and mutual participation where the mind is seen to be a function of social interaction" (p. 400) that "brings forth a network of conversation and dialog" (Hung, 2002, p. 401).

Moreover, learning is seen as open-ended and an ongoing process, where people learn from other experienced people (also known as intellectuals/veterans/old-timers/experts) who are around them in a specific socio-cultural context (Hung, 2002). As a result students and adults develop the cognitive skills of the more experienced people and learn to master and utilize the skills within the community with the support and direction of the experienced people. It is what Vygostky (1978) describes through his concept of the 'zone of proximal development'. The 'zone of proximal development' is what Vygostky (1978) describes as the distance between what an individual already knows or is capable of knowing and what that individual could know with the assistance or support, through social interaction, of a more experienced or knowledgeable person. Polyani (in Hung, 2002) argues that "there is no precise prescription for unspecifiable craft or art, skills are learned by example" (p. 405) and "to learn by example is to submit to authority" (p. 405). Cross (1974) adds that "the pedagogue of action is less an instructor, and more often a coach, counsellor, or master, there to encourage guide and exemplify" (p. 20) (see also guided participation by Rogoff, 1994).

This form of participation within the discourse of Environmental Education/Education for Sustainability is aimed at transforming individuals to develop their capacities through meaningful participatory and learning experiences. Individuals participate and learn collaboratively from each other in activities in response to challenges and risks in socio-cultural contexts (Lotz-Sisitka & O'Donoghue, 2006). Cross (*ibid*) says that this is all about participation for action, where learners become engaged in the activities facilitated by more experienced people (known as pedagogues/instructors) in a particular environment. As a result, the learners learn from the activities as they reflect through the actions that they are engaged in and Cross (*ibid*) says this helps learners to "understand the tools, techniques and

instructions which shape their lives, and which they can use to shape their environment" (p. 20). This could be applied in the Eco-Schools context in different ways. One of them is when students and teachers engage in doing water or energy audits and use the results from the audits to solve the problem of increase in electricity or water bills through environmental projects of harvesting rainwater or using renewable energy to produce electricity for the school. Reid *et al.*, (2008) add that this approach to participation supports the development and sharing of knowledge, skills and experiences "that ideally lead to cognitive gains, action competence, and community building" (p. 2).

Lotz-Sisitka and O'Donoghue (cited in Reid *et al.*, 2008) argue that individuals are given the opportunity to engage in reflexive activities to learn the different ways that they can improve on their practice to respond to challenges within their socio-cultural context. Participation in this sense supports the open-ended learning process of empowering individuals to become agents of social change based on a shared interest to meet individual needs and the needs of others for a desirable future (O'Donoghue & Lotz-Sisitka, 2006). The end result includes transformation of individual doubts into understanding and understanding into actions (Henderson, Napan & Monteiro, 2004).

While the learners engage with the experienced people in activities, a relationship is established between them. The relationship established enables the learners and the experienced people to become dependent on each other as they work together to sustain the social structures and interactions within their community (Lave, 1991). The learners become active participants in the community they belong to based on what they have learnt and know (*ibid*). A learner applies what he/she has acquired as knowledge and skills because he/she is willing to do his/her part in the community. Polanyi (cited in Hung, 2002) states that "the act of personal knowing can sustain these relations only because the acting persons believe ... that he has not made them [what has been learnt and become known] but discovered them" (p. 405). In the light of the relationship that is established between the learners and experienced people, learners construct their identity in relation to the communities of practice where they are fully engaged as their level of interest increases (Lave & Wenger, 1991). Lave and Wenger (*ibid*) state that the learners move across "learning trajectories" (p. 36) to become full participants in the practices of the community. Lave (*ibid*) says that "the process of becoming a full practitioner in a community of practice involves two kinds of production: the production of continuity with, *and* the displacement of

the practice of old-timers [experienced people]" (p. 74). Lave and Wenger (*ibid*) explain that "one way to think of learning is as the historical production, transformation, and change of persons" (p. 51). Learning is seen here as an ongoing process as a learner contributes his/her experiences and knowledge in the practices of the community because he/she appreciates "its values and strives to act by its standards" (Hung, *ibid*, p. 405). Knowledge here is in relation to what learners have acquired through participation in the practices of the community, through "apprenticeship and coaching" and through their "experience in situations" in the community of practice (Jonaseen in Hung, *ibid*, p. 403. See also Rogoff, 1990 and 1994).

Fuller, Hodkinson, Hodkinson and Unwin (2005), through their work of exploring the strengths and weaknesses of situated learning theory within the context of workplace learning, argue that learners also contribute their life experiences in the practices of the community. Fuller *et al.* (2005) argue that this is essential to enhance learning in the community of practice. In the case of this research, the different groups of stakeholders share their lived experiences of knowledge and skills in the practices of the Eco-School programme at the school.

2.3.2 Communities of practice

As previously outlined in Section 2.3.1, learning is situated in the social practices of a community, which Lave and Wenger (1991) refer to as a community of practice. Wenger, McDermott and Snyder (2002) define a community of practice as a self-organizing system comprising a group of people "who share the same interest, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (p. 4). According to Wenger (1998a) "we all belong to communities of practice" (p. 6) either at school, at work or at home, amongst other contexts. Wenger *et al.* (2002) state that a community functions as a social learning system "where practitioners connect to solve problems, share ideas, set standards, build tools, and develop relationships with peers and stakeholders". Wenger (1998a) states that the focus within the community of practice is on learning and social participation, whereby the members in the community do not only engage in activities amongst each other but also become "active participants in the practices of social communities and constructing identities in relation to these communities" (p. 4). According to Wenger (1998b) communities of practice come in different forms, some

are small, some are at the core of a large group of people, and some are located in companies and organizations, amongst others.

Wenger (1998a & 2000) distinguishes communities of practice through three dimensions (see also Figure 2.1 below):

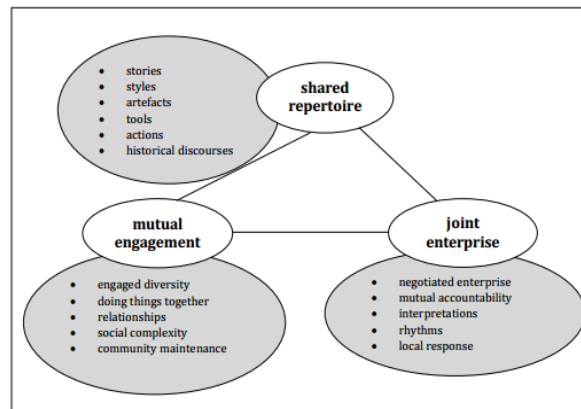


Figure 2.1 shows the dimensions of a community of practice (Wenger, 1998a, p. 73)

1) A *joint enterprise* that convenes members together in a social unit. The shared domain of interest creates the identity of the members and the members become committed to it. Members are able to construct their identity from the shared domain of interest.

2) *Mutual engagement* that exists between members in order to get involved in activities and discussions of the community they belong to. They have trust in each other and develop relationships that enable them to provide help to one another and share knowledge with each other. There is regular interaction that goes on in the community for them to contribute to the enterprise. The members also come to an agreement through decision making in order to respond to problems collectively. Wenger (1998) says that this involves a process of "negotiating meaning" where people try to interpret what is happening in the environment and take action in order to respond to the changes in the environment (p. 54).

3) *Shared repertoire*, also known as the practice developed amongst members in the community, relates to the language (words, symbols and gestures), routines, and ways of doing things, stories, tools, actions or concepts regarded as shared resources of the community of practice. Each member is aware of the practices of the community so as to contribute to its development.

In this research, the *joint enterprise* of the Seychelles Eco-School programme is to promote sustainability through Environmental Education in the daily running of the Eco-Schools. *Mutual engagement exists between* the teachers, students, parents and organizations referred to as stakeholders in the research. Some of the *shared repertoire* are within the six elements of school community such as leadership, management and administration of the programme, environmental teaching and learning, resource use and management through environmental projects and activities, management of physical surrounds of the school through environmental management projects and activities, to name a few (see Section 2.5 and Chapter 4 for a description).

According to Wenger (2000) the three dimensions are inter-linked. All members are accountable to the joint enterprise of the community of practice that they belong to. They interact regularly to contribute knowledge and experiences in the practices of the community (Wenger, in Illeris, 2009). Koliba and Gajda (2009) claim that in this process of social interaction members in a community do not only share knowledge but are also able to construct knowledge with the help of each other. Koliba and Gajda (*ibid*) add that "Communities of practice are said to exist at the intersection of intellectual and social capital - through which social networks serve as the basis of knowledge creation and transfer" (p. 100). Wenger (1998a) expresses that "what we dare consider knowledge is not just a matter of our own experiences of meaning or even our own regimes of competence. It is also a matter of the positions of our practices with respect to the broader historical, social and institutional discourses and styles" (p. 141). The community members engage in meaningful practices with access to resources within the community so as to develop their level of participation while they learn through "actions, discussions and reflections that make a difference to the communities that they value" (Wenger in Illeris, 2009, p. 215).

Participation in a community of practice therefore facilitates the process of collective learning and actions amongst community members. Community members have the opportunities to learn from each other's experiences and also contribute in different ways in the practices of the community. As a result of the former, participation within a community of practice has some kind of educational value and provides opportunities for people to participate at different levels through the practices of the community (see Section 2.7) in pursuit of the joint enterprise of the community. This could be seen in relation to Tilbury and Wortman's (2004) argument that participation can take different forms, from passive or

manipulation to a level where it is a shared course of actions and to a level where stakeholders are fully engaged in decision making and the end results. White (2000) states that the primary focus of participation is not only to enable individuals to participate "... but ensuring that they participate in the right ways" (p. 154). The 'right ways' implies that people are engaged in meaningful participatory processes that are in their best interests and the best interests of others. This could be seen in relation to Rahnema's (*ibid*) argument that participation could be strengthened, helping people to recover their inner freedom "... to learn to listen and to share, free from any fear or predefined conclusion, belief or judgement" (p. 128). Rahnema (*ibid*) adds that no one should be "robbed of their possibilities of relating and acting together" (p. 126), but rather given their rights and freedom to react and participate in any given situation without any form of manipulation (see also Lotz-Sisitka, 2004). Such freedom helps to empower people such as students and adults to succeed in life by using their own knowledge to solve problems and support other individuals who are also striving for a more desirable life.

2.4 The relationship between participation and learning

Based on the discussions above, the situated learning and community of practice theories have been identified to relate to Sfard's (1998) two metaphors for learning which are relevant to my research interest in discussing the participatory and learning processes in two Eco-Schools. On the one hand, situated learning theory and community of practice theory can be associated with the "participation metaphor". As previously discussed in Sections 2.3.1, learning does not happen in isolation but through a process of participating in the activities of a community. Learners are provided with the opportunity to participate and learn from the experiences of other community members who are facilitators of learning. The aim is to help learners to become active participants after they have learnt to master and apply what has been learnt through the activities of the community. In addition, it was discussed in Section 2.3.2 that learning is situated in the practices of a community which is comprised of people who are mutually engaged in the pursuit of a joint enterprise. The similar interest that the community members share enables them to work together and contribute to the practices of the community to sustain its learning agenda. Each theory, therefore, implies that participation enables people to learn by doing or engaging in some sort of activity situated in a socio-cultural context.

On the other hand, the two theories can also be associated with Sfard's (1998) "acquisition metaphor", which explains that individuals acquire knowledge like other commodities (such as skills) from the lived experiences of other people in order for them to apply, transfer and share what they have learnt with others. In other words, over time, as individuals participate in the practices of their community, they acquire knowledge from the experienced practitioners of the community who are facilitating the learning. Sfard (1998) explains that context "...is rich and multifarious, and its importance is pronounced by talk about situatedness, contextuality, culture embeddedness, and social mediation" (p. 6). Sfard (1998) argues that there is a danger of using only one metaphor of learning since the participation metaphor "serves as an eye opening device with respect to the acquisition metaphor" (p. 9). In other words, the acquisition metaphor is dependent on the participation metaphor for learning to take place.

2.5 Sustaining participation in a community through dialogue

Van de Fliert (2010) claims that participation is facilitated through a process of engaging individuals in dialogue which she regards as "participatory communication". Van de Fliert (*ibid*) adds that participatory communication "... requires open sharing of information and opinions in all directions, identifying areas of conflicting interests and collective assessment and testing of options that can fulfil needs while capitalising on opportunities and compromising on conflicts" (p. 97). Individuals have a voice or equal power in the process of dialogue and Van de Fliert (*ibid*) suggests that "understanding people's positions, interests and relations is required to design and employ the most suitable communication and engagement methods to raise interest in and initiate the dialogue" (p. 97). Tilbury and Wortman (2004) add that when people understand their own perceptions, values and concerns, these become the "... starting point for change" within the dialogue (p. 54). There are different methods that can stimulate dialogue and two of them are group discussions and participatory mapping (*ibid*).

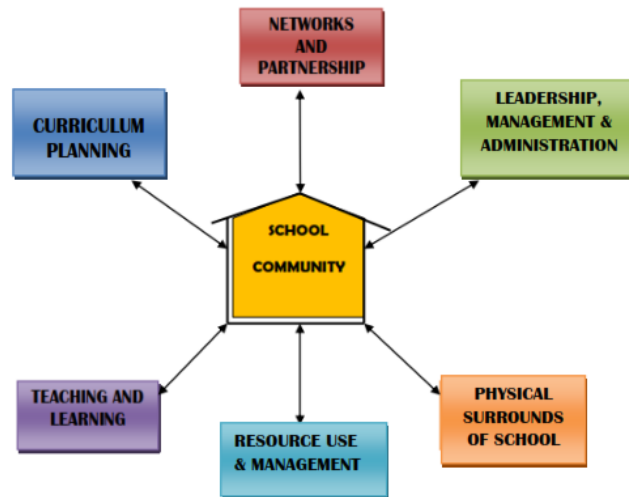
In the process of the dialogue, two groups are involved: the facilitators and the participants. Van de Fliert (*ibid*) suggests that facilitators should have a positive attitude with favourable communication skills. The role of the facilitators, as described by Læssøe (in Reid *et al.*, 2008) is to mobilise the participants and manage the dialogue referred to as the communicative practice in the Læssøe's (*ibid*) concept of 'mediation'. Læssøe (*ibid*) describes the concept of mediation as a process of connecting people together and involving

them in discussions/action-oriented processes that promote socio-cultural change and learning for sustainable development in a particular context. This could be seen as a form of social learning, described by Wals (2007) as learning that is taking place "... when divergent interests, norms, values and constructions of reality meet in an environment that is conducive to meaningful interaction" (p. 39). This learning as outlined by Wals (*ibid*) can take place across different levels such as in groups, and at the level of networks of stakeholders and actors. Keen, Brown and Dyball (cited in Wals, *ibid*) add that social learning involves "... the collective action and reflection that occurs among different individuals and groups as they work to improve the management of human and environmental interrelations" (p. 39). These provide opportunities for people to engage in meaningful participatory and learning processes that support open-ended learning processes and social change for sustainable development (Wals, *ibid*, see also Selby in Wals, 2009).

A level of awareness is required from the side of participants in order to achieve meaningful participation and learning in the dialogue. Such awareness as proposed by Van de Fliert (*ibid*) should include knowledge of the issues that are happening in context or at least the need or opportunity for change within the particular context. Van de Fliert (*ibid*) states that "this can range from an immediate problem that occurred or a general need to keep up with a changing world around us" (p. 97).

2.6 Participation and learning in the six elements of school community

As indicated in Section 1.1 in relation to Goal 1 of the research (in Section 1.6), stakeholder participation and learning will be explored and described within the six elements of school community in relation to the Eco-School programme. The groups of stakeholders are teachers, students, parents and local organizations. The six elements chosen to form the focus of Goal 1 of the research are curriculum planning; teaching and learning; resource use and management; management of physical surrounds of the school; leadership, management and administration; and networks and partnerships - represented in Figure 2.2 below.



*Figure 2.2 shows the six elements of school community
(Adapted from Ministry of Education, 2010 and Department of Environment and Heritage, 2005)*

The six elements are an amalgamation of the Seychelles Ministry of Education's handbook entitled 'Improving the Governance of Schools' (2010) and the Australian government's handbook entitled 'Education for a Sustainable Future' (Department of Environment & Heritage, 2005). These elements form part of the daily operations that make up the system in schools (Gough & Sharpley, 2005) with respect to existing policies that guide the development of schools. These six elements are elaborated in the text that follows.

The element of *curriculum planning* requires an understanding of the national curriculum in order for teachers with the support of other stakeholders (where the need arise) to meet and plan for the different subjects in school. It involves selecting the content of the national curriculum for each particular subject at primary and secondary school level and organizing the learning objectives from the national curriculum into a termly plan (Ministry of Education, 2010). Teachers also make use of the Calendar of Activities produced annually by the Ministry of Education when planning their termly plans. The Calendar of Activities consists of information about environmental theme days, Eco-School activities and other information pertaining to national events. In the context of the Eco-School programme, teachers integrate environmental topics that are from the National Curriculum to promote environmental learning (Emilie, 2011). Emilie (2011) states that "Eco-Schools provide a framework of learning" for students to understand how different issues are linked to each other, such as the connections between transport and pollution and climate change, amongst others (p. 4).

In line with the principle above, teachers are encouraged by the Ministry of Education (2010) to use their termly plan, as indicated above, to plan lessons with activities that are guided by appropriate methods and objectives for the development of knowledge, skills and values in students through the element of *teaching and learning* in schools. Teachers in Eco-Schools also make use of learning support materials that were received as donations from organizations to facilitate environmental learning as outlined in Section 2.2.3. One of the principles of teaching and learning in the Seychelles' education system emphasizes the importance on the development of values in learning processes:

Teaching and learning cannot be value-free. Schools, along with parents and the wider community, have a strong influence on children's values, which are developed through the curriculum as well as through the attitudes and behaviour that are demonstrated and encouraged in the schools (Ministry of Education, 2010, p.3)

Students are involved in teaching and learning when they participate in the discussions and activities planned and facilitated by the teachers promoting environmental learning within the context of the Eco-School programme. The Ministry of Education (2010) says that parents and the wider community should also be involved and collaborating with the teachers. The Ministry of Education (2010) points out that the input of the parents and the wider community are essential for the development of the school to become effective in providing the education that meets the needs of the students. Students must also be given the opportunity to reflect on their own learning and development whereby the schools must "listen to students' views and allow them to suggest ways in which they can contribute to the management and development of the school" (Ministry of Education, 2010, p. 22). In the context of the Eco-School programme, Emilie (2011) points out that, apart from teachers, the parents and the organizations also have a wealth of environmental knowledge to support teaching and learning in schools. Parents and organizations are invited by the teachers in Eco-Schools to facilitate learning on an environmental topic and also provide their support for outings organized by the teachers (Ministry of Education, 2010).

The element of *resource use and management* reflects an interest in the management of resources at school, namely, water, energy, and solid waste in the Eco-School context (Emilie, 2011). Emilie (*ibid*) adds that Eco-Schools engage in activities and projects to reduce the amount of resources they consume and to be responsible with the resources that

they use. For instance, Eco-Schools embark on recycling projects to "reduce the cost of buying materials to make different learning resources or even for craft work" (Emilie, *ibid*, p. 4). Apart from managing solid waste, Eco-Schools save money through energy and water conservation projects which the Department of Environment and Heritage (2005) and Emilie (*ibid*) claim make the schools become sustainable institutions. Emilie (*ibid*) states that Eco-Schools are providing learning opportunities for adults and students to engage in simple actions of switching off lights and other electrical appliances when leaving the rooms or harvesting rainwater as some examples of ways schools can save money. The Department of Environment and Heritage (2005) and the Ministry of Education (2010) point out that schools learn to save money for other initiatives, which in the case of the Eco-School programme are sustainability initiatives of other environmental projects at the school.

Furthermore, the *physical surrounds of school* element reflects the physical appearance, presentation and maintenance of the buildings and grounds in schools (Department of Environment and Heritage, 2005; Emilie, 2011). The Ministry of Education (2011) states that "School grounds must be free from hazards, well drained, include shady areas, kept clean and well-maintained at all times" (p. 39). The Department of Environment and Heritage (2005) states that teachers, students and parents work together for the "... sustainable management of grounds through activities such as habitat creation, mulching, vegetable gardening, landscaping ... and litter reduction" (p. 12). As a result of this, the appearance of the school grounds are naturalized, maintained for wildlife and used to the maximum by teachers and students for environmental learning (Department of Environment and Heritage, 2005; Emilie, *ibid*). Emilie (*ibid*) adds that apart from naturalization and maintenance of school grounds, the buildings are also maintained properly. For example, teachers and students work together to maintain the appearance of the classrooms by keeping them clean and attractive with potted plants and other decorations displayed inside and outside the classrooms (Emilie, *ibid*). Emilie (*ibid*) adds that such an approach to the maintenance of school grounds and buildings enables students and adults to develop a sense of responsibility for the physical surrounds of their Eco-School.

Networks and partnerships is the fifth element of school community. The school's partnership with parents and the wider community establishes a wide array of support such as donation of educational resources to support environmental learning, facilitating classroom activities or conducting presentations in Eco-schools, and funding for projects in

schools, to name a few (Department of Environment & Heritage, 2005). As a result of the partnerships, Eco-Schools gain access to resources that the school cannot provide or resources that are not available. The resources can be in the form of funds to support environmental projects and technical support for development and implementation of projects, amongst others (Emilie, 2013). This is also happening through other mechanisms in place in schools for networking and partnership such as Parents and Teachers Associations to communicate and request support of parents for the integration of the Eco-School programme in the schools, maintenance of the physical surrounds of the school or projects aimed at improving learning in schools (Ministry of Education, 2010). Emilie (2011) states that the "Eco-School programme is designed to involve as many people as possible, both inside and outside the school, to raise awareness of environmental issues and to improve the community spirit of an area" (p. 4). In addition, Eco-schools are encouraged to establish internal lines of communication with teachers and students and external lines of communication with parents and other partners to provide information pertaining to school life in relation to the Eco-School programme.

The element of *leadership, management and administration* is about the integration of the Eco-School programme in schools. In order for the Eco-School programme to be integrated in the school's daily running, the Eco-School committee is involved in the coordination of the programme based on its vision and goals (Emilie, 2011). According to Emilie (*ibid*) schools registered with the programme are encouraged to have teachers, students and parents as members on the Eco-School committee. They have responsibilities as representatives of their respective cycle or group to provide support to the school environment leader (chairperson of the committee) for the coordination of the programme at the school. The Eco-School committee meet regularly to plan, implement, monitor and evaluate the integration of activities and projects through communication, decision making and taking actions (Emilie, *ibid*).

The stakeholders' involvement in the Eco-School programme through the six elements of school community will not necessarily be at the same level. One group of stakeholders could be involved in the coordination of the programme while another group is involved in a more supportive role or a peripheral role. The next section sub-section describes different levels of participation within a community of practice in order to explore these different roles and degrees of involvement.

2.7 Levels of participation in a school community

Wenger, McDermott and Snyder's (2002) levels of participation were used to describe the level at which the teachers, students, parents and organizations are participating within the six elements of a school community as presented in Figure 2.3. Tilbury and Wortman (2004) explain that participation may take many forms with the involvement of stakeholders and varies from "consultation and consensus building to decision making, risk sharing and partnerships" (p. 51). Tilbury and Wortman (*ibid*) also add that some people "... view participation as simply a process where people have some level of involvement but no power to provide input or make decisions. In such cases, 'participation' may be little more than announcements telling people what's already been decided, providing no opportunity for dialogue or decision making" (p. 51). Rahnema (1992) and White (2000) made similar observations and recognize that participation has political implications. For example, the political nature of participation manifests when individuals are manipulated to contribute to the operation of a project or programme in a way that involves a top-down approach. Brown (1996) claims that such a top-down approach to participation exercises power relations that are in favour of the objectives set by the developers of a project or programme rather than including the ideas of the participants.

Tilbury and Wortman (2004) argue that apart from participation as a form of manipulation, the true form of participation involves a collective effort amongst individuals in action planning and taking decisions through interactions. Tilbury and Wortman (*ibid*) point out that in this form of participation individuals are consulted to provide ideas or solutions to solve problems. Van de Fliert (2010) explains that this involves an organized communication between groups of people and the final decision is made after analysing the views and recommendations put forward by individuals. In the case of this research, teachers consult other adults and students to provide ideas on possible activities in response to environmental problems. Within this process of consultation, knowledge plays a vital role to facilitate the process of learning and in decision making (Tilbury and Wortman, 2004). Tilbury and Wortman (*ibid*) state that adults such as teachers and parents are seen as facilitators helping students to provide solutions and take action while they participate in decision making processes. As a result, students do not only develop the knowledge required to solve problems, but also develop skills in leadership to take action and become active participants in their particular context (Tilbury and Wortman, *ibid*) (see also Lotz-Sisitka, 2004).

Wenger, McDermott and Snyder (2002) elucidate that not all members in a community (in the case of this research: teachers, students, parents and local organizations) participate in the same way. Some members participate because they see the value of being part of the community, and others for the private connection and to develop their knowledge and skills based on their level of interest (Wenger *et al.*, *ibid*). Wenger *et al.*, (*ibid*) add that in all communities there is someone who serves as a 'coordinator'. In the case of this research, the school environment leaders are the ones responsible for the coordination of the Seychelles Eco-School programme at their respective schools (see Section 2.2.1). There are other people in the community, such as teachers, students, parents or organizations, who also take up leadership roles in order to support the coordinator of that community (Wenger *et al.*, *ibid*).

Wenger *et al.*, (*ibid*) state that there are five levels at which members in the community participate and these are 'core', 'active', 'occasional' 'peripheral' and 'transactional' levels - presented in Figure 2.3 below.

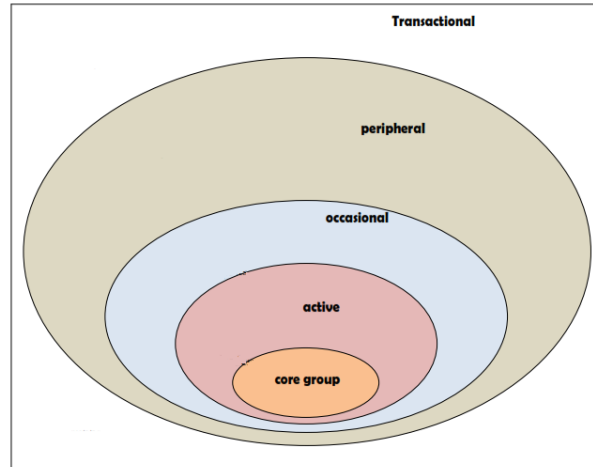


Figure 2.4 shows levels of participation in a community of practice, (Adapted from Wenger-Trayner, 2011).

The 'core group' is the smallest group comprising people with leadership roles who participate strongly in discussions and projects because of their devotion and commitment to energize and care for the community in support of the coordinator (Wenger *et al.*, *ibid*). Apart from this, the members in the core group also "identify topics for the community to address, and move the community along its learning agenda" (Wenger *et al.*, *ibid*, p. 56). The members in the 'active group' are usually practitioners who also participate regularly in

meetings or other activities but not often as the members in the core group (Wenger *et al.*, *ibid*). The number of members in the active group is also fairly small. The 'occasional group' comprise of members who only participate when a particular topic in the learning agenda of the community is of interest. They also participate when they have something to contribute to the community through activities or projects based on the domain of interest of the community.

The 'peripheral group' contains a large number of community members. The members in this group are passive participants as they usually observe the interaction taking place amongst members in the core and active group (Wenger *et al.*, *ibid*). They are usually less committed to the community because they are either new to the community or because they do not have much to contribute to the practice of the community. However, the members in this group are also learning even if they are passive participants and could become networks of the practice they have observed by using it in a different context outside the community (Wenger *et al.*, *ibid*). Lastly, as indicated in Figure 2.3, the 'transactional group' is located outside the four groups in the community because they are considered to be 'outsiders'. Their interest in the community is to interact with others within the community occasionally so as to gain access to resources such as art-work or tools produced by the community (Wenger *et al.*, *ibid*). They are usually interested in the community to obtain or provide services and also contribute resources.

Wenger *et al.*, (*ibid*) explain that some members in the core group can move across different levels because of a shift in topic in the community. In addition, some other reasons may be because members of the active group lose interest after a few months and decide to remain behind the scenes, whereas outsiders suddenly becomes fully involved because the community moves to topics that are of interest to them. The next section provides a review of some of the factors that enable and constrain the participation and learning of members in a community of practice.

2.8 Enablers and constrainers of participation and learning

Wenger-Trayner and Wenger-Trayner (2011) explain that communities are complex social systems sensitive to different factors. These factors may either impede or energize the level of participation and learning of members in a community of practice.

One of the first factors has to do with "identification" (Wenger-Trayner, 2011), which relates to members in a community who are able to identify themselves as participants belonging to a community based on a common interest. Wenger (1998a) states that members mutually recognize each other as belonging to a community who strive to engage in action to make contributions to their community. As a result members are committed to participate in the activities and social interactions of the community because they share a similar passion - interested to invest time, knowledge and skills in the practices of the community (Wenger, 1998a).

Leadership is another factor that drives the level of participation in a community (Wenger-Trayner, 2011). It has to do with the level of commitment and capabilities of people who take up leadership roles to commit themselves to a particular topic or domain. They are the ones who propose ideas and are actively involved so as to encourage others also to participate (Wenger-Trayner, *ibid*) whilst some other people cannot commit themselves in these roles because they do not have the time and capacity to take up the leadership roles.

Time is one of the other factors that could be a challenge for people to participate in a particular domain of interest. Wenger-Trayner (2011) specify that this is because they "have to handle competing priorities" instead of establishing a balance for the domain so as to remain on its learning agenda.

Ownership is another factor that Breiting (in Reid *et al.*, 2008) explains as a subjective feeling of individuals to be part of something in order to contribute to a domain. From this particular standpoint, people become involved in "issues and problems, in decisions, innovations and the sustainability interventions" referred to as 'mental ownership' (Breiting in Reid *et al.*, *ibid*, p. 165). It is influenced by the people's affective and intellectual background as the key to potentially contribute to a domain, having a sense of belongingness and pride (Breiting, *ibid*) without depending on the coordinator to do the work. According to Breiting (*ibid*), if people are given the recognition that they deserve based on their contributions to a domain and are regarded as equal stakeholders in the domain, it helps in the development of people having a sense of ownership.

The level of trust that exists amongst people is another factor that influences participation and learning for a particular domain (Wenger-Trayner, 2011 and Uemura, 1999). Trust is

essential to nurture participation and learning in a community and it is difficult to participate and learn if there is not trust amongst members in a community (Wenger, 2012). Some of the issues that contribute to mistrust in a community are false assumptions that people are all the same or are not able to participate in discussions or engage in practical activities or in cases where they are involved in discussions their ideas are not taken seriously. In addition, Uemura (1999) also adds that not all members in the community such as parents have the willingness to engage in activities at school. This is because "some have had negative schooling experiences themselves, some are illiterate and don't feel comfortable talking to teachers, and getting involved in any kind of school activities" (p. 10). Wenger (2012) claims that trust arises from mutual recognition - where participants make use of their experiences to make contributions that are relevant to the practice of a community. Wenger (*ibid*) claims that trust reflects partnerships that exist between members in a community who identify themselves to be capable to participate and learn in the community.

The focus on value is another factor enabling or constraining participation and learning as mentioned by Wenger *et al.*, (2002). People participate in activities, projects or discussions based on a shared interest that they value. Wenger *et al.*, (*ibid*) claims that, depending on how a community operates to create events, activities and relationships with each other, community people are likely to become aware of the value of the community. Wenger *et al.*, (*ibid*) state that when people are aware of the value of a community which is of interest to them, they are likely to participate in the practice of the community.

Situations that are familiar and exciting are another factor that arouse participation and learning in a community (Wenger *et al.*, 2002). The situations attract more people to engage in the practice of the community and develop the relationships "they need to be well connected as well as generate excitement they need to be fully engaged" (Wenger *et al.*, *ibid*, p. 62). Wenger *et al.*, (*ibid*) add that activities that are familiar "provide the stability for relationship-building connections" (p. 62) through regular organized activities that are exciting. This helps to "build on existing interactions and networks that already exist amongst people and strengthen these through more focused interactions" (Anon, 2011, p. 10).

2.9 Conclusion

In this chapter, I have presented a brief conceptual, historical and contextual background of the Seychelles Eco-School programme coordinated by the Ministry of Education. As my research revolves around stakeholder participation and learning in two schools of the Eco-School programme, I have drawn on two theories of learning: 1) situated learning (Lave & Wenger, 1991), and communities of practice (Wenger, 1998). Both theories have provided literature on the nature and processes involved in participation and learning. In addition, both theories also discussed how individuals construct knowledge and are able to construct identities in the practices of their community. On the one hand, it was explained that participation is a political issue whereby individuals are manipulated to reinforce the effectiveness of a project or programme that is run by a community of practice. On the other hand, participation is also a pedagogical issue whereby individuals work together to reflect, share ideas and take action in response to issues in context.

I also elaborated on the relationship between learning and participation and argued that learning takes place through a process of social participation. It was also outlined that engaging people in a dialogue helps to sustain participation in a community, whereby people with different interests and needs are able to come together to discuss and take action on issues within their particular socio-cultural context. Some of the participatory and learning processes in the six elements of school community within the context of the Eco-School programme were also discussed. The six elements have been argued as essential to support schools to become more sustainable in their daily operations and to provide the opportunity for stakeholders to participate and learn in the programme. The level of participation in a community of practice was also presented and literature shows that stakeholders can participate at different levels in a community of practice. In addition, some of the factors that can enable or constrain stakeholders' participation and learning were also outlined reflecting factors influenced either by personal issues or issues of context.

The conceptual review in this chapter contributed to the in depth discussions in chapter four, five and six of this thesis.

The next chapter presents the set of methods used to generate data and principles reinforced for the research. The choice of methods used to generate data in relation to stakeholder

learning and participation in the Eco-School programme have been influenced by the qualitative approach to the research.

CHAPTER 3

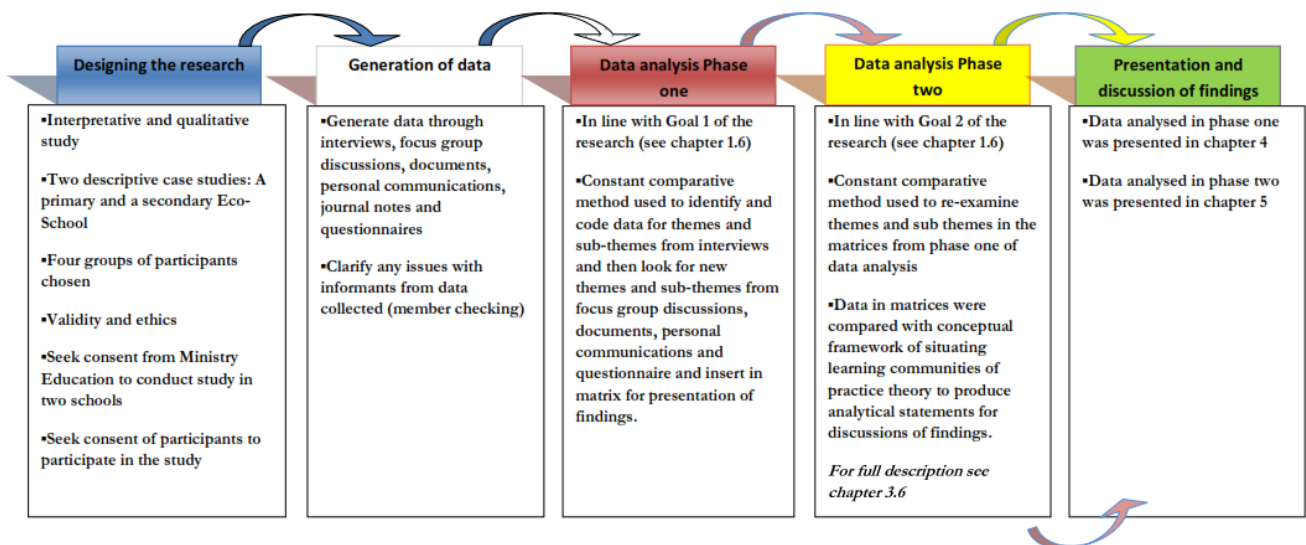
RESEARCH METHODOLOGY

"Research is a practice inherent to environmental education. Among environmental educators are many who research in order to understand and change situations-for whom the raison d'être is to challenge a state of affairs which seems blind to or at least ineffectively responding to what we perceive as urgent environmental issues" (O'Donoghue, 1986).

3.1 Introduction

This chapter discusses the process of data collection and analysis (see Figure 3.1) for the research questions and goals of this study (see Section 1.6). The discussion begins with the orientation of the research. Case study design has been used as a qualitative research approach in this study. The methods used to generate data for the research, followed by the steps taken to strengthen the validity of findings for the study and the ethical protocols undertaken, are also presented.

Figure 3.1 shows the steps taken for doing the research



3.2 Orientation of the research

The aim of this research was to conduct an in-depth investigation of stakeholder participation and learning in the Seychelles Eco-School programme and the study was approached from an interpretative standpoint. Walsham (2006) argues that the position of an interpretive researcher is that "our knowledge of reality, including the domain of human action, is a social construction by human actors" (p. 320). Orlikowski & Baroudi (1991) add that interpretive studies seek to understand "the phenomenon within cultural and contextual

situations; where the phenomenon of interest is examined in its natural setting and from the perspective of the participants" (p. 5). Lotz-Sisitka, Fein and Ketlhoilwe (2013) explain that the nature of reality within this research orientation is situated within the mind of people reflected in their experiences and understanding of the natural setting. Geertz (cited in Walsham, 2006) argues that this approach to conducting research enables a researcher to construct his/her own data of "...other people's constructions of what they and their compatriots are up to" (p. 320).

As a researcher it was important to avoid any prejudice in order to ensure transparency in the research. In other words the data generated from the two Eco-Schools was presented in its original form from the experiences of the research participants and other source of information without interfering in its content with my own opinions and experience as the national Eco-Schools coordinator. Orlikowski and Baroudi (1991) explain that this approach of doing an interpretative study draws the path for a researcher to understand the current situation in its natural settings and from the point of view of the participants. I was, therefore, able to construct the subjective knowledge and experiences of the participants in this study as the 'knowers' of their context by interacting with them and being attentive to their interpretations of reality.

A case study design was well suited to provide insights and a broad representation of the knowledge and experiences from the field to inform the research questions and goals in section 1.6. Yin in Bassegy (1999) explains that a case study is designed to make an empirical inquiry about a particular "phenomenon within its real-life context especially when the boundaries between phenomenon and context are not clearly evident" (p. 26). Stenhouse (in Bassegy, 1999) adds that a case study is a process of doing research involving the collection of data, recording the data and presenting the findings in one or more cases. In the case of this research, two descriptive case studies have been presented in Chapter 4 providing a detailed description of the phenomenon within two schools chosen for the study (Bassegy, 1999). Each case was informed by data generated from the research methods (see Section 3.4) and presented in the reality of the context "rather than to be largely interpreted evaluated or judged by the researcher" (Cohen, Manion & Morrison, 2011).

3.3 Selection of schools

Purposeful sampling (Patton, 1990) was used to select the two schools outlined in Section 1.2 for the study. Cohen, Manion and Morrison (2007) state that "in many cases purposive sampling is used in order to access 'knowledgeable people', that is those who have in-depth knowledge about particular issues, maybe by virtue of their professional role, power, access to networks, expertise or experience" (p. 115). The two schools (see Section 1.2) were chosen for several reasons; one of them was based on consultation with colleagues at the Ministry of Education and also my knowledge and experience of working with all the Eco-Schools in Seychelles. The schools' geographical location was also most convenient for the research and the fact that they have been registered for more than five years in the Eco-School programme integrating EE/EfS in their daily practices with support of stakeholders are two other reasons. Lastly, their contribution to the research was deemed to be worthwhile as well because they were amongst the eighteen schools which participated in the survey conducted by EEPAR (Martin, 2009) indicating the schools' challenge to involve more teachers, parents and organizations in the programme as outlined in Section 1.2.

3.4 The data generation methods

A total of six methods were used to generate data for this research (see Table 3.1): 1) focus group discussions, 2) semi-structured interviews 3) historical document analysis, 4) questionnaires, 5) personal communication, and 6) a research journal that was kept throughout the data collection process in both schools to record any information related to the research. Table 3.1 below summarises the types of data and their source indexed for confidentiality purposes.

Table 3.1 shows record of data generated from each Eco-School investigated

| <i>School 1 (Primary school)</i> | | | | |
|---|--|---------------------------|-------------------------|----------------------------------|
| Data generation method | Data source | Date | Recording Format | Index/code |
| Semi-structured interviews (I.1) | Teacher | 03/06/13 | Transcribed | I.1.1 |
| | Teacher | 11/06/13 | Transcribed | I.1.2 |
| | Parent | 3/06/13 | Transcribed | I.2.3 |
| | PTA Chairperson | 31/05/13 | Transcribed | I.2.4 |
| Focus group discussions (FC.1) | Eco-School committee | 12/06/13 | Transcribed | FC.1.1 |
| | Four students | 3/06/13 | Transcribed | FC.1.2 |
| Questionnaire (QU.1) | Organization | 18/07/13 | Electronic | QU.1.1 |
| Documents (D.1) | Eco-School portfolio | 23/05/13 | Photographs | D.1-ESP (2012) |
| | School Development plan (2009-2011 and | January, 2009 and January | Electronic | D.1-SDP (2009) D.1-SDP (2012) |

| | | | | |
|---|--|------------------------|--------------------------|--|
| | 2012-2014) | 2012 | | |
| | End of year report | 2011, 2012 | Hard-copy | D.1-ER (2011) D.1-ER (2012) |
| | General parents minutes of meeting | 14/03/13 | Hard-copy | D.1-PM (2013) |
| | Eco-School committee minutes of meeting | 2012 | Hard-copy | D.1-ESM (2012) |
| | School Improvement Programme minutes of meeting | 2012 | Hard-copy | D.1-SIP (2012) |
| | Parents and Teachers Association minutes of meeting | 2013 | Hard-copy | D.1-PTA (2013) |
| | Wildlife Clubs of Seychelles reports | 2010, 2011 | Electronic | Not applicable |
| Notes in research journal (JN.1) | Shane Emilie | 29/05/13 to 12/06/13 | Hard-copy | JN.1 (2013) |
| Personal communication | School environment leader | 3/09/2013 | Email | SEL.1 |
| School 2 (Secondary school) | | | | |
| Data generation method | Data source | Date | Format | Index/code |
| Semi-structured interviews (I.2) | Teacher | 22/05/13 | Transcribed | I.2.1 |
| | Teacher | 24/05/13 | Transcribed | I.2.2 |
| | Parent | 27/05/13 | Transcribed | I.2.3 |
| | PTA Chairperson | 28/05/13 | Transcribed | I.2.4 |
| Focus group discussions (FC.2) | Eco-School committee | 24/05/13 | Transcribed | FC.2.1 |
| | Four students | 27/05/13 | Transcribed | FC.2.2 |
| Questionnaires (QU.2) | Organization | 23/07/13 | Electronic | QU.2.1 |
| Documents (D.2) | Eco-School portfolio | 2010, 2011, 2012 | Electronic | D.2-ESP (2010) D.2-ESP (2011) D.2-ESP (2012) |
| | School Improvement Programme minutes of meetings | 2011, 2012 | Hard-copy | D.2-MM (2011) D.2 MM (2012) |
| | Eco-School minutes of meetings | 2011, 2012 | Electronic | D.2-ESM (2011) D.2-ESM (2012) |
| | Parents and Teachers Association minutes of meetings | 2012 | Hard-copy | D.2-PTAM (2012) |
| | School Development plan | 2011 | Electronic and hard-copy | D.2-SDP (2009-2011) |
| | Progress report | 2012 | Hard-copy | D.2-PR (2012) |
| | Professional Development Report | 2009, 2011, 2012 | Hard-copy | D.2-PDR (2009) D.2-PDR (2011) D.2-PDR (2012) |
| | Evaluation of the School's three year Development plan | 2011 | Hard-copy | D.2-ESD (2011) |
| Notes in research journal (JN.2) | Shane Emilie | 22/05/13 to 28/05/13 | Hard-copy | JN.2 (2013) |
| Personal communication | School Environment leader | 3/09/2013 6/09/2013 | Email | SEL .2 |

3.4.1 Semi-structured interviews

Data generation began with semi-structured interviews. According to Mears (in Arthur, Waring, Coe & Hedges, 2012) an interview is an interactive process whereby a researcher investigates and "learns what another person knows about a topic, to discover and record what that person has experienced, what he or she thinks and feels about it, and what significance or meaning it might have" (p. 170). Tuckman (cited in Cohen *et al.*, 2011) explains that the purpose of the interview is to provide a point of contact into a person's head in order to determine "what a person knows (knowledge or information), what a person likes or dislikes (values and preferences), and what a person thinks (attitudes and beliefs)" (p. 351). Cohen, Manion and Morrison (2011) state that this type of interview is structured with open ended questions whereby all interviewees answer similar questions. This helps the researcher to identify correlation in the data provided.

Photograph 3.1 The interviewer (on the left) and an interviewee (on the right)



An interview schedule with open ended questions was piloted several times before the data collection in the two schools mentioned in Section 1.1. At first it was piloted amongst colleagues at the Environmental Learning Research Centre, Education Department, Rhodes University, so as to identify enigmas and repetition in the questions for clarity, cohesion and other technical aspects (Cohen *et al.*, 2007). Colleagues provided important input to amend questions that were too long and offered advice on rephrasing questions, amongst others (see Appendix 6 for an example). Moreover, the interview questions were also piloted with one school environment leader from an Eco-School in Seychelles one week prior to data collection in the schools. Amendments were made to questions 12 and 14 from the piloted schedule. Two questions were combined to make one question inquiring how adults (teachers, parents and organizations) are involved in each of the six elements of school community.

Data generated was from eight semi-structured interviews: four interviewees per school (School 1 & School 2). For each Eco-School, one academic, one technical and vocational teacher, the chairperson of the Parents and Teachers Association and one parent supporting the programme were interviewed. The school environment leader from both schools provided support to inform all the participants selected for the interview by them and the head-teacher. This provided each participant with the time to prepare for the interview. At the beginning of each interview, I briefed the participants about the purpose and goals of the research so as to help the participants feel relaxed, thus creating an atmosphere for interaction (Tuckman in Cohen *et al.*, 2011). The participants were also requested to sign a consent form, giving their consent to participate in the interview and for the interview to be recorded and transcribed for data analysis (Arthur *et al.*, 2012) (see Appendix 9).

3.4.2 Focus group discussion

After the semi-structured interviews, data was generated from focus group discussions with two groups of people per school. Altogether four focus group discussions were conducted for the research. The focus group discussions were different to the semi-structured interviews because of the number of people who formed part of the data collection process during the discussion. Kitzinger (1995) explains that a focus group is an interaction amongst people in a group, whereby "people are encouraged to talk to one another: asking questions, exchanging anecdotes and commenting on each others' experiences and points of view" (p. 299). Kitzinger (1995) states that the discussion that goes on in a group can generate more critical comments compared to an interview. Gibbs (in Arthur *et al.*, 2012) argues that this supplements other methods of data collection. Gibbs (*ibid*) adds that the data from a focus group discussion is not only an amalgamation of ideas and concepts from participants but it also validates the data generated from other methods. Thus, the data generated from the focus group discussions was useful to substantiate data generated from the interviews.

The first group of people were four students (two girls and two boys) per school, so as to enable both genders to share how they, other students, teachers, parents and organizations are involved in the Eco-School programme. In the primary school (School 1), the students were ages 8-11 years old because at this age (based on my experience as a primary school teacher) they are able to communicate using words that make meaning of their experiences and of things they have observed. The Center for Development of Human Services (2002) supports this by stating that a child at this age "becomes increasingly logical and objective

when thinking" and has the ability to "refine conversational strategies and uses synonyms, jokes, metaphors to convey/reinforce meaning" (p. 77). In the secondary school (School 2), the four students who participated in the focus group discussion were from ages 12 to 15. The Eco-School committee was the second group of people who participated in the focus group discussion per school (School 1 and 2) because the members on the committee have knowledge and experience about the programme that will validate data from other sources. Kitzinger (1995) says that people in a focus group discussion should range between four and eight people, and that sitting in a circle is the most appropriate arrangement so as to "establish the right atmosphere" (p. 301).

Similar to the interviews, the focus group discussion questions were piloted amongst peers at the Environmental Learning Research Centre. Some questions had to be removed because they were more like interview questions and amendments were made accordingly with the support of peers (see Appendix 10 for an example). The questions were piloted again in an Eco-School in Seychelles and no amendments were made. See Appendix 11 for a copy of the questions for the focus group discussion with students and Appendix 12 for questions asked of adults. At the beginning of each focus group discussion, the participants were briefed verbally about the purpose and goals of the research and their consent requested for the discussion to be recorded and transcribed. The parents of the students who participated in the focus group discussion signed the consent form for their child, whilst the school environment leader signed the consent form on behalf of all the adults in the second group (see Appendix 13 and 14). There were instances where the data generated for some questions in the focus group discussion was contradictory to the interview responses and illustrated the importance of triangulation across data generation methods.

Photograph 3.2 Researcher interacting with students in a focus group discussion.



3.4.3 Document analysis

Document analysis was the third method used to generate data. McCulloch (in Arthur *et al.*, 2012) defines a document as a record of a process or an event produced by an individual or a group of people. McCulloch (*ibid*) explains that documents are presented in different forms. Some are personal, such as letters or diaries, whilst others are official or national documents such as "committee minutes, reports and memoranda" (*ibid*, p. 210). All the documents reviewed for this study were recorded in a document log for each Eco-School investigated (see Appendix 15). Documents included lesson plans, termly plans, minutes of Eco-School meetings, School Improvement team meetings, and Parents and Teachers Association meetings. These were analysed to identify the different ways that stakeholders participate in the Eco-School programme. Similarly, the Eco-School portfolio compiled by the Eco-School committee and school reports written by the school management team were analysed to identify the two schools' practices and recommendations regarding participation of stakeholders in the programme in relation to the six elements of school community. In addition, the three year development plans written by the management teams of both schools were also analysed to identify the opportunities provided for stakeholders to participate in the six elements of a school community in relation to the programme. McCulloch (cited in Arthur *et al.*, 2012) argues that documents provide "a fuller and more comprehensive account of specific themes" (p. 214). Data from documents was essential to triangulate with data generated from the field through interviews and focus group discussions.

3.4.4 Structured questionnaire

Apart from the interview schedule and focus group discussion tool, structured questionnaires was another data generation method (Tymms in Arthur *et al.*, 2012). The questionnaire was completed electronically by two organizations in Seychelles that support the Eco-School programme with a purpose to explore and investigate how the organizations are participating in the schools chosen for this study. The questionnaire was divided into two parts. *Part A* required the respondents to opt for yes or no for twenty five closed ended questions in the questionnaire and elaborate on their options by writing comments in the last column of the table. In *Part B* there were five open-ended questions that required the respondents to share other information such as the factors that enable and constrain their participation in the programme (see Appendix 16).

There were two reasons for collecting data from the organizations using a questionnaire. Firstly, the amount of time that I had to spend in Seychelles to collect data was not sufficient and getting the organizations to complete the questionnaire was most convenient. Secondly, there is a contextual profile (Emilie, 2013) of both organizations' engagement in the programme and I did not wish to take more of their time with an interview. Thus, I chose to give them a questionnaire to provide other information not covered in the contextual profile. The organizations had the opportunity to complete the questionnaire at a place and time that was most appropriate to them so as to contribute more to the research (Eiselen & Uys, 2005).

3.4.5 Research journal

A research journal was used to record information throughout the research process. Yinger and Clark (1981) state that a journal constitutes the "personal thoughts, feelings and reflections" (p. 10) of a person based on his/her experiences and knowledge about a particular situation or themselves. Cohen *et al.*, (2007) adds that a journal is also used to "record our progress and our reflections about two parallel sets of learning: our learnings about the practices we are studying ... and our learnings about the process of studying them" (p. 300). In the case of this research, the journal was used to take notes of observations from the field after analysing documents and conducting the interviews and focus group discussions to start preliminary data analysis. Personal reflections were also recorded in the journal about any issues encountered during the field and gaps identified in the data that needed clarification from the participants, keeping in mind the research questions and goals (See Appendix 17 for a sample of field notes). According to Boud (2001) writing reflections is a form of 'reflective practice' which "involves taking the unprocessed, raw material of experience and engaging with it to make sense of what has occurred" (p. 2). As outlined in Section 3.2, a reflexive standpoint was also taken to reflect on my strengths and weaknesses as a researcher to avoid causing harm to the participants and interfere with the data generated. Lietz, Langer and Furman (2006, p. 447) state that "this concept of standpoint and looking at the ways in which the researcher's position or social location can interfere with the research process is an important concept when studying 'others'".

3.4.6 Personal communication

Robertson (2013) claims that letters, memos, telephone conversations and electronic communications (like email) are some forms of personal communication. In the case of this

research personal communications were established through email with two school environment leaders from each of the schools that participated in the research. Communication was established with the school environment leaders to provide information that I needed for missing information for Chapter 4.

3.5 Data analysis

O'Leary (2004) argues that once a researcher has collected all the data from the field for his/her research, the next step is to analyse the data. According to Waring (cited in Arthur *et al.*) "data analysis is the process of bringing order, structure and meaning to the mass of collected data" (2012, p. 301). A researcher should, therefore, work in a systematic and creative manner so as to "cycle between the data and existing theory, and to follow the hunches that can lead to unexpected yet significant findings" (O'Leary, 2004, p. 184). During this process of moving in between the data based on the research project, O'Leary (2004) says that a researcher is constantly focussing on the "research questions, aims and objectives, theoretical underpinnings, and methodological constraints" (p. 185).

Figure 3.2 A reflexive analysis process, adapted from O'Leary (2004)

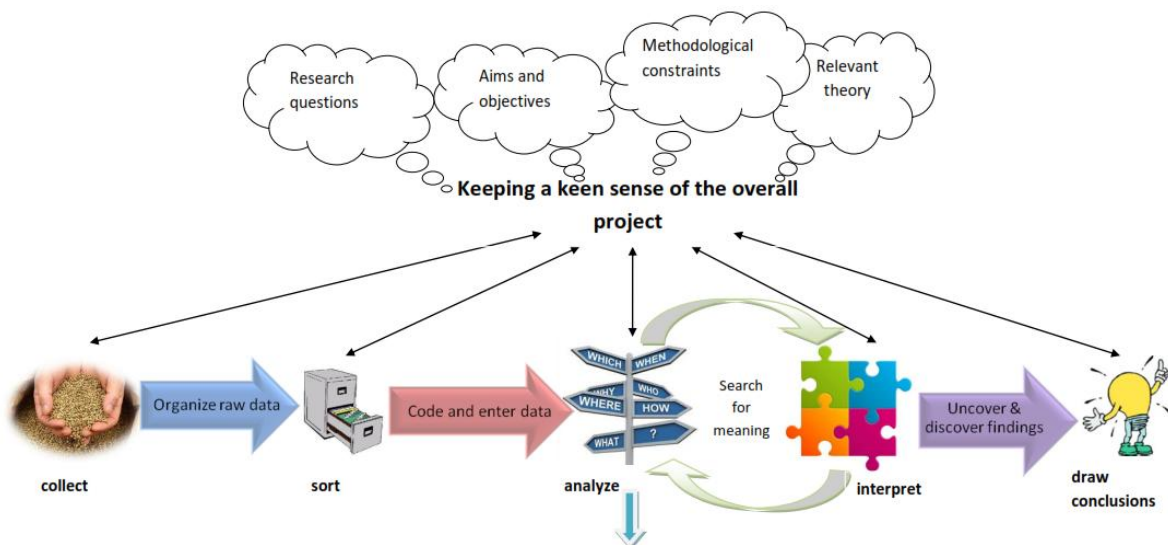


Figure 3.2 shows the approach undertaken for analysis by keeping close to data from the time it was collected in the field until conclusions were drawn from the findings keeping in mind the research questions, goals and theoretical frameworks. The raw data collected from the two schools was managed and organized separately in folders (hard-copy and electronic form). Then the data was coded and prepared for analysis so as to look for meaning and interpret the findings. Lastly, conclusions were made after analysing the findings for a last time.

The raw data for this research came from semi-structured interviews, focus group discussions, questionnaires, a research journal and documents analysed. The analysis was done separately for each Eco-School. As indicated in Section 3.4.5 observations and personal reflections were recorded in a research journal for each period of time spent in the schools. Some of the notes recorded in the research journal were summaries of a preliminary analysis conducted in the field based on the data collected. Ryan (2006) says that this approach to analysis enables a researcher to reflect and write the emerging issues that are already visible in the data. The preliminary analysis was useful to select what was considered to be important from the data collected in order to identify categories used in Phase One of data analysis. The next section provides a detailed description of the two phases of data analysis that informed the goals of the research.

3.5.1 Phase One

In Phase One, data generated from interviews was analysed first using the constant comparative method to inform goal one of the research (see Section 1.6). At first, I had to read across all interview transcripts to familiarize myself with the data in relation to the conceptual framework of the six elements of school community (Section 2.6). Thornberg (in Arthur *et al.*, 2012) explains that this "approach forces the researchers to verify and saturate their 'emerged' codes and minimises missing important codes or significant details in the data" (p. 87). Then each element of school community, including a new code in relation to stakeholder interests in the programme, was given a colour to be used when coding the data across the interview transcripts. Using the constant comparative method data was coded electronically in relation to the six elements of school community and the new code on stakeholders' interest in the programme. Similarities and differences across the data coded were identified and organized under categories in relation to the six elements of school community in a matrix, which facilitated the "coding and categorization process" (Schutt, 2012, p. 325). Schutt (*ibid*) explains that such a matrix "shows how different concepts are connected or perhaps what causes are linked with what effects" (p. 330). This was done separately for each Eco-School investigated, which means there were two matrices for Phase One of the analysis. Thornberg (*ibid*) states that the advantage of using the constant comparative method helps to sort out and group codes into new and more elaborated codes.

As Taylor and Bogdan (1984) elucidate:

in the constant comparative method the researcher simultaneously codes and analyses data in order to develop concepts; by continually comparing specific incidents in the data, the researcher refines these concepts, identifies their properties, explores their relationships to one another, and integrates them into a coherent explanatory model (p. 126).

After completing the matrix for the interviews, I repeated the same process with the focus group discussions, questionnaires, field notes and documents analysed to code the data in relation to the six elements of school community. I sorted and clustered the data in each matrix in order to provide evidence for each category as extracts from each set of data. Direct quotations from participants were used to provide a thick description of data (see Appendix 18 for a sample of the matrix).

Table 3.2 The primary categories from Phase One of data analysis

| Categories |
|--|
| Stakeholder interests in the programme |
| Leadership, management and administration |
| Curriculum planning and lesson planning |
| Teaching and learning |
| Management of physical surrounds of school |
| Resource use and management |
| Networks and partnerships |

3.5.2 Phase Two

In the second phase of analysis, data was re-examined using the constant comparative method outlined in Section 3.5.1. The constant comparative method was used to compare data with the conceptual framework of situating learning in communities of practice (Section 2.3). Data was analysed in order to deepen understanding of the processes involved for stakeholders to participate and learn in each Eco-School investigated (see Appendix 19). Thornberg (in Arthur *et al.*, 2012, p. 89) explains that this approach to analysis enables the researcher to make meaning and explain the data by providing an "integrative scope, broad pictures and a new perspective ... and specify possible relationships between categories ...

developed in ... focused coding". Focused coding here means the data coded and organized in Phase One of my analysis.

Four analytical statements were generated for both schools investigated through constant comparison of data and the conceptual framework of situating learning in communities of practice (Bassey, 1999). The statements were used in Chapter Five to deepen discussion on the participatory and learning processes (to meet goal two of the research), including the enablers and constrainers of stakeholder participation and learning (to meet goal three of the research) in the schools investigated. The discussion is structured across the two cases.

3.6 Ensuring validity

Whittemore, Chase and Mandle (2001) describe validity as the trustworthiness of findings "by which the quality of all research could be judged" (p. 523). There were different steps undertaken in order to strengthen the validity of the findings.

Methodological triangulation (Cohen *et al.*, 2007) was used to reduce the weaknesses and partiality that may emerge from using only one method of data collection. Triangulation is explained by Cohen, *et al.*, (2007) as an "attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint" (p. 141). Data from different generation methods was woven together so as to compare and contrast the issues emerging from one source with further sources.

Direct quotations were used as evidence to provide a thick description of what was happening in the two schools from the participants' knowledge, experiences and feelings (Cohen *et al.*, 2007). This was essential to provide a balance in the way data was presented for the case study and for the reader to read some of the raw data describing the issues and spontaneous social interactions taking place in the schools arising from the participants' thoughts (Cohen *et al.*, 2007).

Member checking was also used so that participants could clarify errors or issues identified in data and to provide the participants with the opportunity to add missing information. Lietz *et al.*, 2006) affirm that "Member checking, also known as respondent validation, allows participants to review findings from the data analysis in order to confirm or challenge the accuracy of the work" (p. 14).

3.7 Ethical protocols

Walsham (2006) states that there are four main areas which contribute to ethical issues, namely "harm to participants, lack of informed consent, invasion of privacy, and deception" (p. 327). One of the first measures taken for informed consent was to contact the Director General schools in Seychelles through the Principal Secretary of the Ministry of Education so as to seek her approval for the research in School 1 and School 2. Once the research was approved I personally met with the principals in both schools a few days after arriving in Seychelles to brief them on the research and request their support. Together, the Head-teacher and School Environment leader of each Eco-School and I established a list of participants in a schedule for the semi-structured interviews and the focus group discussion. On the same day, I produced a consent form signed and stamped by the Head-teacher for students identified as participants for the focus group discussion to be completed by their parents (see Appendix 14).

At the beginning of the interviews or focus group discussions I also requested the consent of the adults to participate in the research and for the conversations to be recorded and transcribed (see Appendix 9 & 13). I made sure that the School Environment leader of each Eco-School, after consultation with the members of the Eco-School committee, proposed a local organization that supports the programme at the school to also participate in the research by completing a questionnaire. The organization was contacted via telephone followed by an email with details of the purpose and goal of the research and the questionnaire was attached for them to complete digitally.

In order to avoid deception of participants, I explained the purpose of the study before conducting the interviews and focus group discussions and before distributing the questionnaires. This established a level of trust amongst the participants (Bassey, 1995).

In addition, the principal and School Environment leader of each Eco-School were requested to sign a letter of understanding for the participants to remain anonymous (Bassey, 1995) so as to ensure that their participation in the research remains confidential without invading their privacy and causing harm to them. Apart from the former mentioned, special effect was applied to faces of students and teachers in photographs inserted after each case in Chapter 4 for them to remain anonymous.

Furthermore, all the documents used in this research have been kept and samples have been attached in the Appendices, namely, letters of understanding between the school and the researcher, consent forms, parental consent, and notes from the journal.

3.8 Conclusion

In this chapter I have presented the orientation of this research to be interpretative and qualitative in approach. A case study was the methodology used to provide quality and in-depth information about the current situation of stakeholder participation in two schools in the Seychelles Eco-School programme. Semi-structured interviews, questionnaires, focus group discussions, historical document analysis, a research journal, and personal communications were six data collection methods used to provide information for the case study. I explained that before presenting and discussing the findings, the data had to be analyzed through two phases to code and categorize data using the constant comparative method. Phase One organized data in relation to the conceptual framework of six elements of school community for presentation of findings in Chapter 4. Phase Two focused on deepening the participatory and learning processes across each case in relation to the conceptual framework of situating learning in communities of practice for Chapter 5. Last, but not least, the procedures used to ensure validity in the research were discussed, followed by ethical protocols reinforced so as not to cause harm and deceive participants in the research.

The next chapter of this research presents the main findings of stakeholder participation in the Seychelles Eco-School programme within the context of School 1 and School 2. The six data sources outlined in Chapter 3 have formed the basis of Chapter 4.

CHAPTER 4

STAKEHOLDER PARTICIPATION AND LEARNING IN THE ECO-SCHOOL PROGRAMME

Whole school approaches can shape our interaction with the environment in an intellectual, material, spatial, social and emotional sense to achieve a lasting/sustainable quality of life for all ... by integrating learning with the social/organisational and technical/economic aspects of school life (Shallcross & Robinson in Reid et al, 2008, p. 300).

4. 1 Introduction

This chapter presents findings from Phase One of the data analysis describing how stakeholders are participating and learning guided by the six elements of school community (see Section 2.6) in relation to the Eco-School programme. Six out of seven categories were developed in relation to the conceptual framework of the six elements of school community and are outlined below:

- Stakeholder participation and learning in the element of leadership, management and administration
- Stakeholder participation and learning in the element of curriculum planning
- Stakeholder participation and learning in the element of teaching and learning
- Stakeholder participation and learning in the element of physical surrounds of school
- Stakeholder participation and learning in the element of resource use and management
- Stakeholder participation and learning in the element of networks and partnerships.

The other category which is based on stakeholder interest in the programme was developed because there were several questions that were asked in the interviews and focus group discussions to investigate the different reasons why stakeholders are participating in the programme. In addition, this category was also developed so as to investigate similar evidence from research participants from each Eco-School that suggest the joint enterprise of the community of practice in each Eco-School. Findings for each category outlined above are presented in two separate case studies with samples of photographs at the end of each case.

Case study one: Stakeholder participation and learning within a primary school context

4.2.1 Introduction

Data presented in this case study is generated from semi-structured interviews, focus group discussions, documents analysed, questionnaires, personal communications and notes from a research journal.

School 1 is a medium sized primary school with a population of 399 students and 47 staff (D.1-SDP, 2012) and is located in the northern side on the island of Mahe (D.1-SDP, 2012). The vision of the school is "to ensure that all staff are committed to work as a strong team and involve strong parental participation and community link so as to help our pupils to develop to their full potential" (D.1-SDP, 2012, p. 1).

The primary school has been a registered member of the Seychelles Eco-School programme for more than five years. General findings generated from the school show that there are many teachers and students participating in the programme. Learning is taking place inside and outside the classroom while the students and teachers interact in discussions, activities and projects. Most of the achievements in the school are a result of teachers and students' interest to participate and learn in the programme with support from a minority of parents and organizations. In general there is a good relationship amongst the teachers and students who are regularly involved in the programme. Two interviewees and one teacher from the Eco-School committee made a remark that students show respect for the teachers (I.1.1, I.1.2 & FC.1.1). They also expressed that teachers get along well with the parents who participate in the activities at school in relation to the programme. Interviewee 2 stated that the teachers at the school are committed to help the students to develop the qualities needed to take care of their environment. She added that the collaboration between the teachers and students with occasional involvement of a minority of parents and organizations contributed to the school's success of receiving several awards in the annual Eco-School competition.

4.2.2 Stakeholder interests in the programme

Data analysed showed that stakeholders have different interests that influence their participation and learning in the programme at the school. One of the first interests is to reinforce the effectiveness of the programme within the school context with the aim to meet

the national criteria of the programme, said Interviewee 4, who is the Parent Teacher Association chairperson at the school. He (*ibid*) stated that the teachers and students are working together to score points so that the school is recognized for its achievements at national level for the annual Eco-School competition. One of the conversations in the focus group discussion with the Eco-School committee also supported the interviewee above. "What's the use for you to participate in something when you know you have not put all the effort and all the other things in it and then you are going to participate for you to lose?" said another participant from the focus group discussion (FC.1.1). One participant in the committee (*ibid*) mentioned that, apart from teachers and students, a small group of parents are also involved to help the school win the competition.

One interviewee argued that teachers and students are participating in the activities organized in the programme so as to address some of the environmental and sustainability issues in the school (I.1.4). A total of three interviewees and one focus group member added that the intention is to develop the school towards more sustainability practices for the school to become conducive to learning. One student from the focus group discussion shared her experience that the programme "helps children not to throw rubbish everywhere and also I have seen a lot of things in the activities that can help the school to survive..." (FC.1.2). It is the passion that students have for the environment that makes them participate in the programme said one student from the focus group discussion. The student noted, "I like when we go outside and also when we plant new plants in the school and also help the school to come much healthier and not littering everywhere" (FC.1.2).

Preparing students for the future is another interest of stakeholders' involvement in the programme expressed by most research participants. Three interviewees stated that this is happening through environmental learning whereby knowledge alongside skills is developed in the students (I.1.1, I.1.2 & I.1.4). Interviewee 2 added that this develops the level of awareness about the environment so as to encourage students at an early age "... to take care and to beautify their environment so that it will be a place that they will enjoy themselves to live" (I.1.2). Interviewee 1 said that currently it is mostly the teachers and some parents that are preparing the students for the future as leaders and caretakers of the sensitive environment of Seychelles (I.1.1).

One parent explained further why he is interested to help out in the programme so as to prepare students for the future:

I think deep in their mind they have this environmental consciousness, so whether when they grow up to become who they want to be in the field of study or when they go out there to work. I mean when they join the work force, probably it will ring a bell. This is my aim to at least get them at a very early age, to put something in their mind and, you know, bring some good values out of them to take care of nature (I.1.4).

Personal benefit is another interest of stakeholder involvement in the programme at the school. Interviewee 1 who is a teacher stated that the programme is helping her to develop some knowledge and skills that could be applied in every-day life within a different context such as at home (I.1.1). Interviewee 4 added that in his opinion "it's the same people [teachers], even the helpers [assistant teachers]- they're not really trained people but they are interested in helping, to learn, have fun and discover" (I.1.4). However, he (*ibid*) felt that even if the activities organized are interesting for teachers to participate, there still needs to be an improvement in how the activities are organized and communicated with other adults such as parents to also participate.

One of the students in the focus group discussion spoke about students who are participating in the programme so as to be recognized for their individual potential and efforts. Some of the students participate in the programme because it is fun and they are rewarded for their participation in environmental activities and competitions. One student from the focus group discussion elaborated on the reward:

The teacher encourage them [students] to participate in the environmental activities and the children thinks after the activities they will get a reward, that's why they participate in a lot of things. They see children from other schools and also from here; getting rewards like just the two kids from P1-P2 [Primary 1- Primary 2] they got a reward for a poster competition (FC.1.2).

4.2.3 Leadership, management and administration

Many of the participants stated that there is a structure in place for the programme to be integrated into the daily running of the school. That is the Eco-School committee and it currently has six members: the school environment leader who is also a teacher and the chairperson of the committee, followed by three more teachers who represent their respective cycle³, one librarian and a member from the management team of the school. One committee member explained, "We have a representative from each cycle to represent the group of teachers. It's the teachers who bring points discussed to other teachers at their cycle and come back to us to tell us what they have discussed with other teachers" (I.1.3). One participant from a focus group discussion added that it is not always that a member of the school's management team is present for the Eco-School committee meetings "due to constraints of other things that comes up or they don't just make the effort to come" (FC.1.1).

The committee meets on a regular basis about once a month or more than that based on pertinent issues that arise in the programme. Most of the interviewees mentioned that the agendas during the meetings are based on environmental activities, projects, upcoming environmental theme days, and environmental related issues in the school. Some of the minutes of meetings of the Eco-School committee reviewed showed that most of the time they do discuss the above mentioned points. The meetings are usually informal, conducted mostly during lunch time and not all members are present at times because they have other responsibilities during lunch time, such as monitoring students in dining halls and supervision of school grounds during recreational time, amongst others. One member from the Eco-School committee added that at times their lunch hour is taken up by the meetings and they do not have enough time to eat or they do not eat at all (FC.1.1). Another member of the committee (*ibid*) suggested that the Eco-School committee should work like the School Improvement Programme (SIP) team with a special time allocated for them to meet and discuss the programme. The SIP team usually meets once a week within a more formal setting to discuss and take action on the school's three year development

³ A cycle is described in the Seychelles National Curriculum Framework as the progression of learning that students need to go through in order to complete the eleven compulsory years of schooling. Altogether there are five cycles (Ministry of Education, 2001). Starting at primary level there is cycle one from crèche to year 2, cycle two from year 3 to year 4, and cycle three from year 5 to 6. At secondary level there is cycle four which is from year 7 to year 8 and year 9 to 10 is cycle five.

plan, comprising of mainly teachers and members from the school's management team (D.1-SDP, 2012).

The majority of the interviewees and the discussion I had with both focus groups mentioned that the Eco-School committee does not meet only to discuss any issues but also meets to take decisions and plan for the coordination of the Eco-School programme. "The Eco-School committee is influential when it comes to the types of activities and decisions that are made sometime at the school, because it comes from us the committee members and then it moves through the other teachers and then it is implemented" (FC.1.1).

One member of the committee and three interviewees added that other teachers are also consulted at school and the teachers also communicate with other students. However, most of the time, it is the teachers who are reflecting and negotiating for environmental activities and projects in relation to the programme.

...when we propose something we go back to the teachers in morning briefing, we put it across they have their input as well, if there is a need to change according to what most teachers agree - we learn to agree and to disagree. For example, when we can come up with something if we have not talked about other possibilities and when they [teachers] come up with something, we do have to consider. It is not our interest to impose on them that they have to do whatever the committee decides on. We go back to them [teachers] they have their input they agree and then we go ahead (FC.1.1).

Rarely are students consulted to provide ideas for the programme after the teachers have presented the ideas for an environmental activity or project (I.1.1, I.1.2 & FC.1.2). One student from the focus group discussion stated that there is a group of students who are members of an environmental club who meet to discuss and share ideas for any activity related to the programme facilitated by a group of teachers. According to one interviewee who is a teacher, the students were once given the opportunity to provide ideas for a project in relation to the physical surrounds of the school, "I recall sometimes back, for the medicinal garden, the students were involved in its design - they drew a plan and decided where they would like the benches to be" (I.1.2). The discussion I had with the group of students who are also members of the Wildlife Club mentioned that "... they [students]

have to think and discuss and write down all the things in groups" (FC.1.2), which is then taken up by the teachers facilitating the discussion during the Eco-School committee meetings. One member from the Eco-School committee also added that another group of students who sit on the student council also discuss and provide ideas for any matters in relation to the programme. However, I have not seen any evidence of the minutes of meetings for the student council.

The Eco-School committee also meets to discuss and act upon circular memos that are sent by the Environmental Education Unit from the Ministry of Education. Once more the other teachers are made aware of the information from the circular memos during meetings for all staff or communicated by cycle representatives who sit on the Eco-School committee. One interviewee argued that this provides the opportunity for the teachers to make suggestions and provide support for any activities communicated through the circular memo from the Ministry of Education (I.1.3).

According to one interviewee who is also a teacher and Eco-School committee member, each member on the committee is given the responsibility to monitor how the programme is integrated in the daily practices of the school, such as teaching and learning and also the management of the physical surrounds of the school (I.1.2). Any issues observed are reported during the Eco-School committee meeting and brought forward during the morning briefings organized once a week for all staff or communicated by the teacher who sits on the committee to teachers at her respective cycle (*ibid*).

One participant from the Eco-School committee spoke about an environmental policy, also referred to as Eco-code, that is enforced by the committee members with support from other teachers to promote sustainable environmental management practices. Statements from the Eco-code (D.1-ESP, 2012) are outlined below:

- Engage with environmental issues nationally and at school
- Recycle/re-use materials
- Keep our school grounds clean
- Keep our school grounds litter free
- Make good use of garbage bins
- Manage existing plants: shrubs/trees

- Make good use/explore our school surroundings/environment for out-door lessons and activities.

The leadership, management and administration of the programme is also supported by a small group of parents, especially from the side of the PTA chairperson. The PTA chairperson (I.1.4) noted that whenever he can he helps out with the programme:

Well as the PTA chairperson, of course now it becomes a bit more of a responsibility. Before I was doing it for fun, now I have to get it right... So the first thing with regards to administration, of course to push the head of school or the administrators of the programme, especially when it's a bit stagnant, I would say. Things which suppose to happen in one term, takes a few years, I would say, there is a very slow progress - whether this is not a priority for schools? This is my main question.

Furthermore, all interviewees and focus groups admitted that there is a communication system in place at the school to disseminate information amongst stakeholders for the programme. Three interviewees of which two are teachers and one is a parent declared that communication is more amongst teachers and students (I.1.1, I.1.2 & I.1.3). The interviewees and the Eco-School committee stated that teachers communicate with students during the general assembly organized once every week and also during the fifteen minutes in the morning before class starts at 8:00 am (Photograph 4.1).

One interviewee (I.1.2) who is a member of the Eco-School committee made a remark that communication starts from the committee first. This is taken up by the cycle representatives after they have attended the meeting with other teachers. The same interviewee (I.1.2) and another interviewee (I.1.1), including a member of the Eco-School committee (FC.1.1), added that when circular memos are received from the Ministry of Education the information is communicated to all teachers during morning briefings. The morning briefings are usually once a week and the teachers communicate the information to other students sometime during the week. "But lately the School Environment leader, herself after meeting with the committee, she calls for a meeting with all teachers and other staff to communicate information about the programme" (I.1.2). Information varies from upcoming activities to commemorate theme days, national competitions, issues pertaining to the physical surrounds of school, amongst others (I.1.2, I.1.3, I.1.4 & FC.1.1).

4.2.4 Curriculum planning and lesson planning

There are three terms per year for students to go to school. At the beginning of each term, the teachers go through the curriculum to choose topics and write down objectives for their respective subjects. Most interviewees and one document reviewed (D.1-ER, 2011) stated that usually it is only teachers involved in this practice. The teachers present all the topics and objectives in a termly plan that will serve as a guide throughout the term when they are planning lessons (see Appendix 20 for sample of termly plan and lesson plan). They integrate topics and objectives that promote environmental learning as an annual requirement put forward by the Eco-School committee of the school with support of the management team of the school (I.1.2, I.1.3 & D.1-ESP, 2012). One member from the Eco-School committee spoke about objectives that do not only focus on knowledge, but also skills and values:

At the beginning of each term teachers are reminded to include topics on their termly plans related to the environment. When I say environment we don't only speak about the environment itself, we also emphasize on the other skills such as social skills and know the different values for them to be able to pass it to the environment (FC.1.1).

After the teachers have completed their termly plans for their respective subjects with objectives and topics promoting environmental learning, they translate the objectives into specific objectives and prepare lessons.

The PTA chairperson (I.1.4) also note that environmental learning is integrated across subjects:

Something which has struck me, the Eco-School Programme is not only a Science thing. It also comes up in Social Sciences, or Languages. I'm not sure with regards to French as a Language. But I've seen it happen a few times with teachers. They do have some environmental elements in what they are teaching (I.1.4).

One interviewee said that teachers are even preparing resources on their own when planning the lessons and in a few instances the students bring materials for the teachers to use (I.1.2). Some research participants mentioned that teachers conduct their own research on the internet, from books and also from colleagues when planning for the lessons and

activities (I.1.1, FC.1.1 & FC.1.2). Interviewee 1 and 2 stated that some of the knowledge they are sharing in the programme is what has been passed to them from their parents, especially on the heritage practices.

4.2.5 Teaching and learning

Once teachers are done with lesson planning and preparation of resources, they are there to facilitate teaching and learning through classroom and field-work interactions. Three interviewees stated that teachers use different activities and learning support materials to consolidate environmental learning in the classroom and field work interactions (I.1.1, I.1.2 & I.1.3). One interviewee stated that the variation in activities and materials is influenced by the teachers' choice of teaching methods to make the lessons and activities fun and more practical (I.1.4). Some of the learning support materials in schools were produced and donated by Wildlife Clubs of Seychelles to support environmental learning such as posters, the Birds are Brilliant textbook, and magazines on some socio-ecological issues, amongst others (QU.1.1 & D.1-ESP, 2012) (see Appendix 21 for samples). However, the respondent (QU.1.1) expressed his disappointment that some of the schools are not making good use of the materials produced because they are either misplaced or cannot be relocated but did not specify if this was happening in School 1.

Most interviewees and one focus group member added that there are occasions when the teachers invite organizations to facilitate learning on a particular topic from the curriculum as guest speakers. For example, one organization who specializes in marine education conducted presentations and activities with students for a topic on marine ecosystems (FC.1.1). The respondent mentioned that he had been conducting presentations at the school on some of the endangered species found in Seychelles (QU.1.1 & D.1-ESP, 2012). A member of the Eco-School committee stated that even the teachers learn from the presentations facilitated by the organizations while they are there with the students (FC.1.1).

In addition, some of the interviewees stated that in a few instances some parents facilitate learning and referred to the PTA chairperson as an example (I.1.1, I.1.2, I.1.3 & FC.1.1). The PTA chairperson shared his experience:

Actually, my background is Biology and then my post graduate training is Pollution Control and Environment Engineering. So most of the activities that fall under the Eco-School Programme, I'm able to help, even to help in composting, setting up a garden and adopting part of nature. Field trips of course to the beach, in the forest to discover a bit of nature. So I've used most of my experience within my degree... So I was able to help them, but sometimes I do encourage them to go there and seek advice from others, otherwise it becomes monotonous just me speaking all the time (I.1.4).

He (*ibid*) gave another example where he did water sampling with the students at one of the rivers that runs next to the school. The samples of water collected were brought to the lab and students were able to learn from the results and used the findings to set up an exhibition in school. Another parent shared her experience of facilitating learning in the programme: "I teach about how to recycle, about animals in their environment because I have animals at home and I also share knowledge about making use of resources" (I.1.3).

Three research participants mentioned that a group of older parents from the Senior Citizen group in the community outside school contributed heritage knowledge to students and teachers in lessons and activities to commemorate theme days (I.1.1, I.1.2 & FC.1.1).

Furthermore, two research participants argued that students are treated as learners and participants in the learning interactions (I.1.2 & FC.1.2). The students respond to instructions and complete given tasks as indicated by one student in the focus group discussion (FC.1.2) (Photograph 4.2). Interviewee 3 stated that some of the tasks completed by students are to produce posters and poems based on topics facilitated by the teacher in the lesson. One student from the focus group discussion also spoke about the teachers giving them the opportunity to reflect during the lessons on a topic, for example, they are asked what actions can be taken to protect the different living things in the eco-systems. "Well sometimes the teacher when we [students] are doing a lesson based on the environment they [teacher] ask us how we can protect the plants [and] the living creatures" (FC.1.2).

Interviewee 4 shared one example of classroom interaction facilitated by the teacher:

Say for example a teacher wants to show the difference between floating and sinking. I mean they can use the environment. They can go out there and just ask them to collect seeds and they just differentiate which one sinks and which one floats and it's just a concept they're learning and they can go in the environment. (I.1.4).

Interviewee 4 and a student from the focus group (FC.1.2) mentioned that students are learning through visits and field trips. One student from the focus group mentioned that students enjoy learning outside school and that "... the children think that they are going on a field trip just for fun but they are going for working, for discovering" (FC.1.2). Another student from the focus group shared her experience of what she learnt from a field trip:

Mostly in lessons they [organizations] come to tell us [students] about the endangered species, like when we went to visit the Biodiversity centre, we discovered a lot of plants that are being extinct or endangered and we also found a lot of plants that has naturally grown here we call that the native plants.

Interviewee 4 added that the field trip consolidates the learning interaction in the classroom,

I mean most of the resources are out there in nature ... Just go out there and they can see the elements of a river or even a sea shore. You don't have to invent anything, just have fifteen minutes for field trip and then you're good. Just go, take some pictures, collect specimens, come back to the class and get the lesson done. The resources are readily available (I.1.4).

Most of the teachers at the school are actively involved to motivate students to participate and learn in the activities organized (FC.1.1 & FC.1.2). One participant from the Eco-School committee explained:

The pupils become enthusiastic, because the teachers are very enthusiastic in regards to this type of programme in the school-you see so they sort of go out get their parents to come. All the parents can come. They themselves the pupils - they are very energetic when it comes to environmental activities - that's our success (FC.1.1).

Interviewee 2 who is a teacher added, "I impart my knowledge to the pupils ... because in the past some pupils have tried this [recycling materials] at home and by doing so I think I'm passing on the knowledge that I have to the pupils whereby they themselves they can do this later on." In addition, one teacher from the Eco-School committee explained teachers are a source of knowledge for the students through their time spent at the school:

The students they acquire knowledge from us [teachers] guided by the curriculum then they translate the knowledge to their everyday life. They translate it with their peers and they translate it with their parents at home, because sometimes the parents learn things from their pupils and whatever is being passed on at home it is what they've acquired here at school (FC.1.1).

Interviewee 4 who is a parent stated that some parents are learning from the teachers and that it also includes him (I.1.4). He (*ibid*) mentioned that a minority of parents pass on the knowledge to other parents in the community on what they have learnt from the teachers. Interviewee 4 also claimed that in previous years parents were asked to exchange their knowledge in school but it has stopped and nowadays it is mostly teachers involved, but a small group.

Below is some of the content of learning that emerged from the data generated from interviews and focus group discussions:

- Sustainable management of resources
- Flora and fauna of Seychelles
- Socio-ecological issues affecting the sensitive environment of Seychelles.

Most research participants stated that teachers are facilitating learning on sustainable management of resources. Students are learning what the 4 R's (Reduce, Re-use, Repair

and Recycle) mean and are engaged in activities that promote each of them. Secondly, the students are learning different ways of conserving water and its importance. Interviewee 4 stated that teachers are facilitating learning about some of the heritage practices of water in lessons for their particular subject and provided an example: "... like for Social Science they [teachers] want to show society and environment or maybe cultural aspects of conservation that what people use to do in the past to conserve water and so on".

Apart from sustainable management of resources, two interviewees (I.1.2 & I.1.4) and the Eco-School committee (FC.1.1) spoke about protection of the ecosystems. The students from the focus group discussion (FC.1.2) and one interviewee (I.1.4) stated that the school has adopted a small mangrove forest that runs through its compound. There are different activities that have been conducted by the Wildlife Club at the school for students to learn about the living things that co-exist in this habitat. For example, a group of students and teachers shared their project of managing the small mangrove forest within the national Science Fair Competition in 2012, entitled 'Protecting and sustaining the mangrove for future generation' (D.1-ESP, 2012).

Moreover, the students are also learning about the flora and fauna of Seychelles (I.1.1, FC.1.1 & FC.1.2). One member from the Eco-School committee talked about the medicinal garden project as one example of how students were able to learn about the flora of Seychelles (FC.1.1). "For example, when we started working on the medicinal garden project it was across the board, the pupils learnt something new about the medicinal plants ..." (*ibid*). One student from the focus group added, "... we learnt about different kinds of plants: what do they do, how can they help us and how we should protect them" (FC.1.2) (Photograph 4.3). Another student from the focus group shared her experience of visiting a Biodiversity Centre and what she had learnt, "...we went to see the different kinds of plants of Seychelles, especially the ones that are extinct and endangered and how we can protect them since some of them are used for the health of humans" (*ibid*). Another student made reference to his experience of not only learning about plants but also animals: "It was interesting when the teacher told us about some animals and plants and how they were found and how we should protect them" (*ibid*).

One student from the focus group discussion mentioned that through the programme they are learning about the environment and some of the socio-ecological issues that are affecting it

and how best they can get involved alongside the adults to respond to the issues. One student in the focus group said "I love the Eco-School programme because it makes you discover more about environment and the parts of your school" (FC.1.2).

4.2.6 Management of physical surrounds of the school

Apart from teaching and learning, the management of the physical surrounds of the school is also one of the practices of the programme. All research participants commented that teachers are actively involved in the management of the physical surrounds of the school. However, not all teachers are involved compared to the element of teaching and learning. There is also a group of students and some parents who are working with the group of teachers in projects that aim at beautifying and maintaining school grounds (Photograph 4.4). Part of the school grounds are naturalised with different kinds of plants such as fruit trees and shrubs and there are also some seating facilities made out of recycled materials for students to use during recreational time (Photographs 4.5, 4.6 & 4.7). Interviewee 1 made a remark that there are some cleaners who are support staff at the school who have the responsibility to keep the school grounds clean so as to reduce the potential for pests to breed (I.1.1).

As part of an ongoing project to beautify the school grounds (Photograph 4.8), Interviewee 2 stated that some students had been given the responsibility by the teachers to water the plants in front of the class.

... for example when we've got our beautification of the environment in front of our classroom, we've got the plants. They do the watering. When we need the containers they are the ones to bring. Of course I do my part to give them the model for the modelling then they do it themselves (I.1.2).

The same interviewee above and one student from the focus group discussion stated that students are also encouraged to bring in resources such as containers to be used for planting and beautifying in front of their classrooms with support from teachers showing them how to do it (I.1.2 and FC.1.2). Two interviewees (I.1.1 & I.1.2) shared one of the school's projects, namely a group of students who are assigned leadership responsibility as 'Green wardens', to monitor and make sure that other students make good use of the school

grounds during recreational time such as disposing their litter in bins. Interviewee three elaborated:

Yes, there is a committee of children that wears an orange t-shirt. Every afternoon the children go out to see if there is nothing in the environment and collect to put in the bin. On Monday in the assembly the children report the other children who littered the school grounds.

Apart from this, teachers, students, a few parents and organizations also donate materials to improve the physical surrounds of school such as manure, plants and paints as indicated by three interviewees and both focus groups. One interviewee (I.1.1) and the respondent (QU.1.1) added that Wildlife Clubs of Seychelles and Mangroves for the Future have also funded projects aimed at beautifying school grounds with murals promoting environmental protection. For example, a group of teachers, students and some parents were involved in murals done on school walls for the Mangroves are a Must project (Martin & Vel, 2011) (Photograph 4.9).

Since 2009, the students and teachers who are members of the Wildlife Club at the school have been involved in a project of maintaining a small mangrove forest that is part of the physical surrounds of the school. It is considered to be a living laboratory for students to learn about wetlands preserved as a wildlife habitat (Photograph 4.10). One teacher from the Eco-School committee who runs the club said a few parents are also involved in the project (FC.1.1). The project is funded by Mangroves for the Future and Wildlife Clubs of Seychelles (Martin & Vel, 2011). A group of teachers and students participated with the project in the national Science Fair Competition in 2012 and received an award (Photograph. 4.11). In preparation for the competition the group of students conducted a survey to collect information on wetlands from people in the community outside the school (D.1- ESP, 2012).

In addition, one parent spoke about his experience of making sure that students learn to keep the environment clean:

I [parent] get irritated by just seeing something which should not be out there in nature, be it a piece of paper or plastic. So, once in a while I do pick on children and

say, 'Okay! Even if it's not your rubbish, pick it up because I don't like it'. So I just try getting them to think and not do too much damage to the environment (I.1.4).

One teacher from the Eco-School committee added that students learn to show respect for the environment:

... it is the general value because you need to learn to respect others but you have to apply it also in the environment, whereby they need to respect things that are in their environment for their own benefit and for the long term benefit, also for the others who come and the country and so on (FC.1.1).

4.2.7 Resource use and management

This practice involves proper use and management of resources such as waste, water and energy in school. Two interviewees and the Eco-School committee added that the above mentioned materialise through projects and activities that take place inside and outside the classroom. The Eco-School committee (FC.1.1) and the document reviewed (D.1-ESP, 2012) talked about an environmental policy reinforced by a group of teachers for proper use of resources by students and other teachers. Outlined below are the statements:

- *For energy conservation*

All light and fans should be switched off when not using;

Switch off air conditioning when not in use;

Keep door shut when air conditioning is running in a room;

All electrical appliances should be switched off after use.

- *For water conservation*

Tap should be kept closed when not using;

Broken pipes should be reported immediately to the office for repair;

Use rainwater to water plants and clean outside.

One interviewee said that "...whenever the students leave the classroom they switch off the fan and the same applies for the lights" (I.1.2). The same interviewee added that students

are also advised to make sure that the taps are closed properly to avoid continuous dripping of water.

Two interviewees commented that most teachers are also recycling as part of sustainable use and management of waste to reduce costs of new materials (I.1.1 & I.1.2). The resources produced out of the recycled materials are used by teachers to support teaching and learning. Three interviewees added that some students are bringing materials to the school for the teachers to use in class (I.1.1, I.1.3 & I.1.4). The PTA chairperson (I.1.4) said that as a result students learn the importance of managing waste and using eco-friendly materials, "I [PTA Chairperson] mean students participate and bring resources to school, and the teacher can have the opportunity just to explain what is meant by recycling, what can be recycled, what cannot". Two interviewees and one member of the Eco-School committee stated that students learn how to make use of the recycled materials to produce artefacts by observing and listening to the teacher (I.1.1, I.1.3 & FC.1.1). Students learn that not all materials should be treated as waste and interact with the teacher to produce something new out of the materials (FC.1.1). For example, in the lesson for the subject of Technology Enterprise, students produce flower pots, pencil holders and mats from recycled materials (Photograph 4.12).

There is a group of students who are members of environmental clubs meeting once a week after school hours for Extra Curricular Activities (ECA). The students engage in practical activities that promote environmental learning such as recycling materials facilitated by the teacher (I.1.2 & FC.1.1) (Photograph 4.13). One teacher from the Eco-School committee elaborated:

... if we are talking about recycling we got a special group for the ECA that I am in charge. We use anything, let's say papers from the office or paper that we have used in the classroom, we just recycle this to do other things like animals, fruits and vegetables and with plastic bottles we make lampshades, little things for candle holders... moreover ice cake sticks-we use to make pencil holders and all of these-they are aware of how to use these things (FC.1.1).

Apart from management of waste, teachers also promote proper management of water. Interviewee 1, who is a teacher, shared her experience of working with a group of students

to produce posters on how to make good use of water which was later displayed on school walls (I.1.1). "Moreover, how to use water properly, it can be water from rivers, rain water, how can we use water in the kitchen after washing their plates instead of throwing away water-they can use it to water plants" said another teacher based on her experience of facilitating a lesson on water (I.1.2). The school has also embarked on a rainwater harvesting project funded by the Ministry of Environment and Energy. Two interviewees stated that some of the materials are already there but have not yet been assembled to start collecting rainwater (I.1.1 & I.1.2).

Some students are also seen as role models in the use and management of resources. Two interviewees (I.1.1 & I.1.2) and one member of the Eco-School committee (FC.1.1) mentioned that the students encourage peers to make good use of resources such as water facilities to conserve water and switching off the lights and fans to conserve energy. Another member of the Eco-School committee made a comment that the students are also moving with this knowledge and habit within their home contexts:

And when you meet parents or even they call at school and say you know my child is giving me a headache with the electricity bill or with the water. Things like that. These are knowledge that they have acquired at school and they tend to pass this on at home and the parents has no other choice but to do what the children are saying (FC.1.1).

All research participants stressed the importance of values such as respect and responsibility for the physical surrounds of the school (such as the infrastructure and habitat) and the environment outside the school (I.1.1, I.1.2, I.1.3, I.1.4, FC.1.1, FC.1.2 & QU.1.1). Interviewee two and the students from the focus group spoke about the students being given the opportunity to reflect on the risks of some unwanted objects in the environment such as plastic bottles and learn how to make use of them to create new things. One teacher from the Eco-School committee explains:

For example, the same thing apply to the jars, we've got jars-what will happen if we all throw away the empty jars everywhere ... what will be the disadvantage of having jars everywhere that are broken or even though it's not broken in our environment,

what will become of the environment with all jars and plastic bottles and all these and then from that we use these things to create new things (FC.1.1).

4.2.8 Networking and partnership amongst stakeholders

Most of the interviewees (I.1.1., I.1.2 & I.1.4) and one respondent (QU.1.1) spoke about the school's partnership with the Parents and Teachers Association and some organizations for activities or campaigns. Most of the activities are to commemorate environmental theme days, whereby students participate in national creative writing and art-work competitions initiated by organizations such as the Ministry of Environment and Energy. Most of the interviewees stated that the students who willingly volunteer to participate in the competitions are supported at home by their parents when they produce what is required for the competition. One interviewee noted that not all the time the students are willing to participate in the competitions.

One parent expressed his gratitude for the partnership that exists between the school and other organizations for other activities such as annual events:

For example, I [parent] always saw them participate in the annual events, say, Earth day or Bio-Diversity day, or SUBIOS. So it shows that they are part of a larger group and they get the chance to learn from others and to stay up there amongst the groups who are interested in environment education (I.1.4).

The school is also implementing projects such as Endangered Species and Spaces project dated since June in the year 2011, funded by Wildlife Clubs of Seychelles (Martin & Vel, 2012). In partnership with Wildlife Clubs of Seychelles, Barclays Bank and some parents from the community, a group of teachers and students built a nursery to grow medicinal and native plants (Martin & Vel, 2012) (Photograph 4.14). One teacher from the Eco-School committee explained that the Senior Citizens group was also involved in the project:

... we get a lot of help from Senior Citizens, whenever we have projects. For example, I remember when we did about the medicinal plants, we gave out some questionnaires

and some of the Senior Citizens came to speak with the children. Some of them they came to help with the medicinal garden to plant (FC.1.1).

Apart from partnerships, the school is also occasionally networking with organizations to facilitate lessons for students and also professional development session for teachers. Two interviewees (I.1.1 & I.1.2) who shared the above stated that some of the organizations are Wildlife Clubs of Seychelles and Save our Seas Foundation (Photograph 4.15). There are instances when students interact with people in the community outside school to collect information for school projects. Interviewee 4 shared his experience of a group of students' interaction with the adults in the community:

Because I know for a fact that recently [2013] there was something about water conservation. The students had to go out there and talk to different people in the community-be it the farmer, fishermen, the house wife or others who stay at home. Just to ask them very basic questions on water conservation, and also about traditional aspects of like the way people use to collect or get water and what they do with it.

Apart from that, most interviewees stated that if there is a need to inform parents and organizations about any activities or to request financial support, the school communicates with them via letters or telephone calls. In case there are letters to be sent to parents, the students deliver the letters to their parents by hand as indicated by a few research participants (I.1.4, QU.1.1 & FC.1.2). The two parents admitted that they do receive letters from the school with regard to activities in relation to the programme to provide their support (I.1.3 & I.1.4). One member from the Eco-School committee said that most of the time letters are sent to some parents to sponsor resources and educational trips. In addition, there are instances when the parents are also requested to provide consent for their child to participate in visits or field trips. Three interviewees added that in cases when things need to be done promptly, telephone calls are made instead of sending letters (I.1.1, I.1.2 & I.1.3).

Parents also receive information about the programme during general parents' meetings organized once every term, which is a total of three meetings annually. Information is also communicated during open days. In some of the documents reviewed I noticed one in particular whereby the PTA chairperson presented some of the hazards on school grounds and

the need for the school to address them with the support of the parents and other partners (D.1-PM, 2013). As previously noted, communication occurs more frequently amongst teachers and students as indicated by three interviewees (I.1.1, I.1.2 & I.1.3). One of the interviewees from that group explained that there is less communication between the teachers and parents because "I will say they [parents] are a bit reluctant, but I don't know if it's our [teachers] will doing things or if it's in them, the response is not that good. There are times they promise themselves to help, but then we never see them, we just see a few stepping forward" (I.1.2).

One of the parents argued that not all parents in the community know about the Eco-School programme (I.1.4). He (*ibid*) expressed that there is a need for the school to raise awareness of the programme through an improved communication system. Nevertheless, one member from the Eco-School committee argued that at times information is not communicated in advance to the teachers and students because circular memos from the Ministry of Education do not arrive on time (FC.1.1). As a result of this the school does not have enough time to prepare the students for any activities outside school or to participate in the national competitions.

Interviewee 2 suggested that some teachers need to improve on the way they approach parents. This is because "there are times when they [parents] come then they go for good ... we as teachers we fail, we should have given them something of interest for them to come again, make them feel that they are welcome, just sometimes there's a lack I will say" (I.1.2). She (*ibid*) claimed that some teachers' behaviour scares the parents away and was reluctant to elaborate in detail.

Moreover, the PTA chairperson claimed that he is trying to provide support to the teachers in the programme (I.1.4). Requesting materials from other organizations for teaching and learning and even spending money from his own pocket are two examples of how he is involved in the programme. He (*ibid*) stated "... if you don't give them the materials, you can't have the posters, if you don't give coloured crayons there won't be any painting" (I.1.4). He (*ibid*) added that "... if I have to hire a truck just to get them across, because if you don't facilitate that, the kids are stuck and if there are no parents helping, so you have to step in and try to make it happen, you know".

The PTA chairperson added that he is concerned with the involvement of parents in the programme and this is why he is trying to help out the teachers to establish partnerships with other parents and stated "... because at the school they are always looking for support" (I.1.4). One teacher from the Eco-School committee provided an example of one reason why parents are not involved:

Sometimes it is difficult for the parents to get involved, because whatever theme days we are celebrating for example last week it was environment day it was during working hours it is difficult for them [parents] to be there, but they do it in other ways like they send whatever we need, whatever they can contribute (FC.1.1).

However, Interviewee 2 added that even if the activities are organized during the weekend the parents are still not involved. The PTA chairperson shared another reason why he thinks parents are not involved:

There is always something more important, whether that more important means relaxing or not doing anything. You know, this is where it's a bit discouraging because I'm pretty sure, people have time but they don't want to go out of their way. Because maybe they feel if they start helping, they will be relied on, you know (I.1.4).

He also referred to organizations from his experience of requesting support from them for the programme: "... with the cost of living, organizations look at things and the value of money - the economic cost of participating. Even if they have left overs or they have spare time, or that's a 'rainy day', they never try to integrate this programme in their budget" (I.1.4). "They don't say okay, I need to do something for the school this year and I need to give a few minutes or few hours, not even half a day or so, this is what is missing" (*ibid*).

Lastly, the Parents and Teachers Association minutes of meetings reviewed indicated that no mention is made of the programme and rarely the PTA discusses issues related to environmental education/education for sustainability in the school (D.1-PTA, 2011 & 2012). It was noted that mostly teachers are members of the Association and there is no consistency in the meetings (JN.1, 2013). Two end of year school reports (D.1-ER, 2011 & 2012) were analysed in line with the school's three year development plan (D.1-SDP, 2009 & 2012); it was evident that only a small group of parents were helping out the

school. The recommendation made in both reports is that there should be a need to look at some new strategies to involve more parents in school life in general and not specifically in the programme D.1-ER (2011 & 2012).

Patella 1



Photograph 4.1 shows students and teachers in the school's general assembly



Photograph 4.2 shows some of the students' completing a classroom interaction task as a group



Photograph 4.3 shows a teacher using the medicinal plants on school ground for learning



Photograph 4.4 shows a group of students cleaning the school compound



Photograph 4.5 shows beautification of one compound at the school



Photograph 4.6 shows beautification of another school compound with murals on school walls

Patella 2



Photograph 4.7 shows seating facilities made out of re-used off-cuts for students to use during recreational time



Photograph 4.8 shows some students organizing plants in recycled containers to beautify in front of the classroom with guidance of the teacher



Photograph 4.9 shows a group of students, teachers and parents doing murals on school walls



Photograph 4.10 shows students using the mangrove forest that runs through the school for learning



Photograph 4.11 shows one of the school's project on Protection of Mangroves in the Science Fair Competition, 2012



Photograph 4.12 shows a group of students making photo frames out of some recycled materials in Art and Craft lesson

Patella 3



Photograph 4.13 shows a group of students of a recycling club using recycled paper to mould and make 3D objects



Photograph 4.14 shows some parents, students and Barclays bank staff setting up the medicinal garden



Photograph 4.15 shows a marine educator from Save Our Seas Foundation conducting a presentation with students



Photograph 4.16 shows the Wildlife Club of the school explaining their exhibition on medicinal plants to members of the community

Case study two: Stakeholder participation and learning within a secondary school context

4.3.1 Introduction

Data presented in this case study is from semi-structured interviews, focus group discussions, documents analysed, questionnaires, personal communications and a research journal.

The second school is a large school with a population of 614 students and 69 staff (D.2-SDP, 2012) and it is also situated in the northern part on the island of Mahe. The vision of the school is to work in partnership with the wider community striving to "stimulate a learning environment through technological orientation across the whole curriculum, in hope to maximize individual potential and ensure that the students are well equipped spiritually, morally, intellectually, physically, socially and emotionally to face the challenges of life, irrespective of their abilities" (D.2-SDP, 2012, p. 3).

Similar to the primary school in case one, the secondary school has been a registered member of the Seychelles Eco-School programme for more than five years. In general, findings generated from the school shows that teachers are actively involved in the programme with support from students in some of the practices of the programme. Learning is taking place inside and outside the classroom while the students and teachers interact in discussions, activities and projects.

There is a good relationship between stakeholders in the programme (I.2.1, I.2.2. I.2.4 & JN.2, 2013). One parent stated, "I think that generally when I'm not in all the time but I get the sense that the teachers are happy to work there with them [students and parents], there's a good team there in terms of just the school environment there in terms of Eco-School programme" (I.2.4). The school has received awards within the annual Eco-School competition based on its achievements of integrating environmental education in its daily practices (I.2.2 & I.2.4). Most of the achievements in the school are a result of teachers and students' interest to participate and learn in the programme with support from a minority of parents and organizations.

4.3.2 Stakeholder interest in the programme

Research participants have provided some of their reasons for participating in the programme. Interviewee 4 expressed that her interest is to help the school to become environmentally friendly through sustainability practices. She (*ibid*) said that this helps to make the school safe and conducive for learning with support of the stakeholders.

A total of three interviewees expressed their interest of empowering students to learn about the environment so that they could take care of it (I.2.2, I.2.3 & I.2.4). Interviewee 2 who is a teacher elaborated, "My main interest is giving out the knowledge, the importance of the purpose of protecting this environment that we have maybe physical and human or social-just giving out the knowledge and the good attitude to students." The other two interviewees who are parents emphasized that the use of particular methods are important for learning to be meaningful for the students. Interviewee 4 explained:

I mean Eco-School programme can help in that way, and then of course I believe that kids are learning in an active and participatory way and really engaging with the issues that are going round and round. That is what environment education is all about. They get a better education, so if we look at it in a holistic way I think making education a better experience for the kids, so that in the school it is more meaningful or lively and colourful (I.2.4).

Another interviewee who is currently a teacher says that she has a passion for the environment and this is why she is involved in the programme (I.2.1). Her passion is what motivates her to help students to learn to have a positive attitude towards the environment and also protect it.

4.3.3 Leadership, management and administration

A total of three interviewees claimed that there is a structure for the coordination of the Eco-School programme in the secondary school similar to the school in case one (I.2.1, I.2.3 & I.2.4). The research participants referred to it as the Eco-School committee, also known as the Environmental committee (see also D.2-ESM, 2010, 2011 & 2012). It is mostly teachers who are members of the committee and some of them are representatives of their respective department and cycle. To name a few, there is the Language department, the Mathematics and Science department and the Technology and Enterprise department (D.2-SDP, 2012). Two parents and one representative of the school's management team also sit on the committee.

The school environment leader who is also a teacher by profession is the chairperson of the committee. One interviewee explained, "But the reality is that the main person who knows about Eco-School programme what's going on, what the school should be trying to do, what they need to do to apply, is that teacher, the Eco-school representative [school environment leader]" (I.2.4).

The committee meets informally once or twice a month to discuss activities or projects related to the programme (I.2.1, FC.2.2, D.2-ESM, 2011 & 2012). Both research participants mentioned that the committee also meets to discuss issues or upcoming environmental theme days that need urgent attention.

On the committee we discuss everything that has to do with the school's environment, also, the sort of activities that we can plan to better enhance the environment of the school. We also, discuss the various theme days and activities. We delegate duties to various committee members and see how we can get help from community stakeholders (SEL.2, personal communication, September 3, 2013).

The committee is also there to make sure that there is proper use of water, energy and other resources on school grounds (I.2.4). One member from the Eco-School committee added that one of their responsibilities is also to promote the integration of environmental education across subjects and also for the coordination of national competitions and activities in line with national events (FC.2.2).

Interview 2 and documents reviewed in the Eco-School portfolio (I.2.2, D.2-ESP, 2011 & 2012) provided evidence of some activities organized by the Eco-School committee to commemorate environmental theme days, namely, an inter-house quiz competition, educational visits, exhibitions and special presentations in general assemblies, amongst others (Photographs 4.17 & 4.18). For instance, in 2011 the Eco-School committee organized several activities such as a quiz competition and an exhibition to commemorate World Water day, celebrated on the 22nd of March annually (D.2-ESP, 2011). Interviewee 2 stated that, however, "... you don't get the maximum participation but if it's for one day - a particular time you will get but if it's something continuous the participation is limited and usually you will find the same person participating".

Usually discussions on any issues in relation to the programme start with the committee. The chairperson always consults all members on the committee before taking any decisions (I.2.1 & I.2.4). There are cases when the teachers representing their respective department/cycle consult other teachers and report back in the committee meetings. Three interviewees argued that currently there is only a specific group of teachers who are reflecting and negotiating on environmental activities and projects in the programme (I.2.2, I.2.3 & I.2.4). Three research participants (I.2.2, I.2.4 & FC.2.1) mentioned that there are instances when the management team of the school intervenes in the reflections and decisions to be taken in the programme. "The main structure is through the committee and then we discuss it at departmental meetings, the head teacher takes it up to the management meeting, they discuss it and they decide if it's something that is good" affirmed Interviewee 1 who is also a member of the Eco-School committee (I.2.2).

"I don't think there is a lot of reflecting and negotiating that takes place from the parent side or probably from the organisation side they are not involved really in the planning of anything" said Interviewee 4 who is currently the PTA chairperson at the school. However, three other interviewees added that some parents, especially the ones who are members of the PTA, contribute ideas in the programme (I.2.1, I.2.2 and I.2.3). Interviewee 2 (I.2.2) also noted that "Parents are involved to decide on something on particular activities or projects, also other parents are involved especially those who are interested of their child development."

According to field notes (JN.2, 2013) and two research participants (I.2.2 and FC.2.1) students are not involved at all in the leadership, management and administration of the programme. One student from the focus group provided an example:

No, because most of the time when the teachers say that there should be more benches put around in the school, the head teacher won't give the money to build those things and the students don't have a say, even the head-boy and head-girl doesn't have a say (FC.2.1).

One member from the Eco-School committee stated that there is an environmental policy that the committee members are enforcing in the daily running of the school. The environmental policy reviewed provides more detail of the roles of teachers, students and parents in the programme with the procedures for its implementation (D.2-ESP, 2012). The policy also

presented the vision and mission of the programme at the school. The mission is focused on producing individuals "who are concerned about the environment" and to "bring about a positive change in people to love and respect nature using a sustainable approach" (D.2-ESP, 2012).

Below are the statements of intent of the policy:

At all times the staff, pupils and community will try to:

- Engage with environmental issues for more meaningful learning in a healthy and happy school
- Manage resources more wisely
- Minimise wastage
- Minimise water and electricity use
- Improve our school grounds and environment
- Share ideas, improve co-operation throughout the school community
- Network with other schools, institutions and organizations (D.2-ESP, 2012).

Moreover, one interviewee stated that there is good communication amongst the teachers, students and parents in the programme. The communication system for the secondary school is similar to the primary school in case one: 'top-down approach'. After the Eco-School committee has met, information is communicated by the department/cycle representatives to other teachers. There are instances when the Head of Department communicates information received by the representative from the Eco-School committee to the teachers in the departmental meetings (I.2.1). Interviewee 2 shared her knowledge on how the communication system works:

Actually like let's say the committee is deciding on something, like what they do is that they draw out a plan, they communicate with the management, they meet the head-teacher, and the head-teacher communicates with the teachers through the briefing the teachers then communicate with the students in class. To add on to that, then the head teacher through assembly communicates it again and even send out letters to parents (I.2.2).

Lastly, Interviewees 1 and 4 added that it is the school environment leader, in other words, the chairperson of the Eco-School committee who personally meets with the Head-teacher of the school to brief her on the discussions, namely upcoming activities or issues (I.2.1 & I.2.4).

4.3.4 Curriculum planning and lesson planning

Most interviewees stated that it is only teachers who meet and plan for their subject at the beginning of the term in their respective departments.

... all departments meet as a group during the first week of the term to discuss/prepare the termly plan. Most of the time, this is how it is done. But you may find that in certain departments, after they have met as a group, individuals will be given specific sections to develop individually (SEL.2, personal communication, September 6, 2013).

Teachers use the learning objectives from the curriculum when planning at the beginning of the term and include some other objectives in support of environmental learning (I.2.3 & I.2.4). At the beginning of each year the school also receives a calendar of activities from the Ministry of Education, outlining the tentative activities for national celebration of environmental theme days. Teachers make use of the calendar to include the theme days in their termly plans during the week of its commemoration. Interviewee 1 who is a teacher from the Social Science department shared her experience:

At the beginning of the term the teachers meet together to plan before teaching for the term. I know that the Social Science department and the Science department plan from their curriculum, whereby they also include the theme days especially the Water Day and the Wetland Day (I.2.1).

Interviewee 1 added, "If the school gives us the calendar of activities early we are able to know for example like if it is Population Week. Meteorological Week you know we are able to put something - it's not always something that is continuous it has its limitations and it's to some extent if you plan it" (I.2.1).

During the planning for the term, teachers communicate amongst each other in their respective departments to share ideas when incorporating environmental education in their subjects (I.2.2). "Like in my case if I want to do a particular activity for a particular subject I

can do it, I can just write it down and involve other teachers to decide whether they wish to do it also at my department" (I.2.2). Interviewee 1 who is a teacher from the Technology and Enterprise department shares her experience, "For the curriculum at times particular teachers do call me in to show me their plan or for me to give them ideas. I try to put my view and if maybe I can help with outsiders or a guest speaker to guide us to the trip".

After the teachers have completed their termly plan, they use it as a guide to plan lessons for each week of the term. Two interviewees (I.2.1 and I.2.2) stated that when teachers plan lessons that are promoting environmental learning the objectives are aimed at developing the knowledge, skills and values of students also known from Bloom's taxonomy as cognitive, psychomotor and affective domains. Interviewee two noted that values are essential in teaching and learning:

...we have this Living Values project at the school - we are a Living Value based school, whereby we have to include development of values into our teaching and learning and every week different departments have to come up with different activities that they've done during the week about living values, how living values has [have] been incorporated in the class and show case on the living value board (I.2.2)

One teacher from the Eco-School committee added:

It goes to the point of values here because we are a values based school. So any teacher you could ask around they would emphasize this that even throughout the year in the different departments, the students themselves are reinforcing the values. Then everything is interconnected with the values (FC.2.2).

Most teachers are able to use knowledge developed from modules on environmental education during their years of training to be a teacher at the National Institute of Education to plan for lessons incorporating environmental learning (I.2.2). The same interviewee (*ibid*) argued that it was at times limited to different strategies or approaches that they could use to integrate environmental education in their lessons. Interviewee 4 claimed that there are good teachers at the school who benefited from the modules and they have the knowledge to make things work in the programme (I.2.4).

4.3.5 Teaching and learning

Once teachers are done with lesson planning and preparation of resources, they are there to facilitate teaching and learning through classroom and field-work interactions. Most teachers vary in the methods they use when facilitating lessons about the environment. Most interviewees said that some teachers organize visits outside the school to consolidate what the students were learning in the classroom (I.2.1, I.2.2 & I.2.4). In some cases the teachers also make use of the physical surrounds of the school in some subjects such as Social Science and Technology and Enterprise (I.2.2 and FC.2.1). One teacher from the Eco-School committee added that most teachers are indeed integrating environmental education in their subjects:

I think teachers are there to sensitise the students, like Miss has mentioned. The programme is a body, so we're more or less act like a cell, each individual cell according to each subject area, they [teachers] find ideas to integrate in their lessons and at the same time they sensitize the students continuously about the environment and to take care of the school (FC.2.1).

There are a few organizations providing services and materials to support learning in the programme. Two research participants mentioned that the organizations provide services as guest speakers to facilitate learning on environmental topics when invited by the teacher and some of them are parents (I.2.1 & FC.2.1). Interviewee one said that "For teaching and learning, if we invite the organizations they would come, maybe the talks or if out there on the field, the field trip they are there to explain to guide us" (I.2.1). For example, Interviewee one stated that the Wildlife Clubs of Seychelles work alongside a group of teachers when they go for visits or field trips to facilitate an activity but it is not regular (Photograph 4.19). In addition, some of the organizations donate some learning support materials, namely posters and books (QU.2.1, I.2.1 & I.2.4).

Apart from adults, students are involved in different ways in the practice of teaching and learning. Two interviewees commented that students are learners and participants during the teaching and learning process (I.2.1 & I.2.2). One student from the focus group discussion (FC.2.1) and two interviewees (I.2.1 & I.2.4) confirmed that most of the time students are there responding to instructions from the teachers and participating in the activities. "Well in teaching and learning the kids when they are asked to participate in the lessons, all we see they have to make are posters and do whatever that the teachers ask them to do and participate

in any projects or field trips that are going on" (I.2.4). One teacher from the Eco-School committee added, "So through the process of teachers as a facilitator, the students observe and listen to this knowledge and this helps them to become active in the sense of entering in debates or either some of them transfer this knowledge through art, poetries and essays". But there are instances when some students at cycle four (ages 12 to 14) help the teachers to prepare resources (I.2.1, I.2.4 & FC.2.1). This is because the teachers are encouraging the students to become more responsible (FC.2.1 & JN.2, 2013). One member from the Eco-School committee argued that there are instances where students are able to reflect and provide ideas in the classroom when they are participating in activities on a given topic (FC.2.2).

Interviewee 2 and one student from the focus group discussion affirmed that learning is also taking place through class discussions and activities organized by teachers across subjects (I.2.2 & FC.2.1). One teacher shared her experience, "For instance, on the Geography of Seychelles, when we talk about the forest of Seychelles, we talk about the primary forest/the secondary forest - we try to describe it to the students and if we can use our school area as an example of a secondary forest" (I.2.2)

One teacher from the Eco-School committee shared another example:

...even through subjects in the classroom, when students are doing debate or role plays will see how enthusiastic they are when they become passionate about [the environment]. If they are doing for one side you can see that their level of thinking is quite high in relation to environmental subjects (FC.2.2).

One student from the focus group discussion added that they also learn through activities outside the school, "We went on a visit last term or last year for measuring the slope of beaches and the erosion happening on the beaches and everything else. I've seen two or three other classes doing the same thing so I think yes they are doing" (FC.2.1). One teacher from the Eco-School committee stated that there are occasions when teachers assign leadership responsibilities to students in activities that are taking place inside or outside the classroom. "If we are doing some practical activities outside we can delegate duties with them and they are the ones who take responsibility that the action is being taken" (FC.2.2). Interviewee 4 conveyed her wish for the students to be given more opportunity to facilitate learning because

of their age and knowledge that they have and referred to her son who goes at the school as an example (I.2.4):

No I think teachers are more engaged not the students, because there are students again my son is a case. He knows so much about nature and wildlife and environmental stuffs, but he is not used or drawn upon at all by the school. That's a kid that obviously they should be using to the max [maximum] (I.2.4).

Moreover, Interviewee 2 argued that two constraints faced by teachers to facilitate learning in the programme are resources and time (I.2.2). She (*ibid*) said that time is not enough for students to go for field work and added:

... there is a lack of resources and for my subject three periods with the students is not enough to implement the curriculum and try to incorporate environmental education. We have to negotiate with another teacher to take the students out to do some sight seeing something like that.

Interviewee 4 and one participant from the Eco-School committee argued that this is why teachers are doing their utmost to address the issue of materials. Teachers are recycling materials so as to produce visual aids and other resources to support teaching and learning.

One student from the focus group discussion stated that from her experience parents are not involved to facilitate learning in the programme:

Because teachers always try to motivate the students to do things to conserve the environment at school and most of the time parents are not involved in environmental related things at school, even in academic things they do not bother to intervene and it's the teachers and students that do it at school (FC.2.1).

Interviewee 1 and one teacher from the Eco-School committee claimed that parents are facilitators of learning but more within the home context (I.2.1 & FC.2.2). Interviewee 1 provided an example:

Indirectly even though they [parents] are not there on the scene when we [teachers] are working, but they [parents] do contribute because they help to sensitize the students to bring their own bottle of water, avoid using plastic bags and using a box to bring food at school.

Below is some of the learning content described during interviews and the focus group discussions:

- Sustainable management of resources
- Protection of ecosystems
- Healthy eating

Most research participants spoke about both teachers and students learning different ways to manage waste such as recycling materials to produce new things (I.2.1, I.2.2, FC.2.1 & FC.2.2). One technical and vocational teacher from the Eco-School committee provided an example that in her class students are learning how to recycle by using materials to do collage (Photograph 4.20). Another teacher from the committee noted that it is a good learning experience for the low ability students:

We have a special programme here at the school for the technical and vocational subjects. Teachers include things on the environment, such as they [students] can do constructions-where they can repair most of those chairs that can be thrown out, so they can recycle those chairs, those tables. Some of the chairs you see along the school environment most of these sitting places are done by low ability students even some with the academic students. They [students] can do gardening; they can go and plant, to start a nursery... (FC.2.2).

Students are also learning how to show respect for living things in the environment so as to protect them (I.2.1, I.2.2 and FC.2.1). Interviewee 2 elaborated that "students learn about the protection of the environment through various activities-class activities or outside class

activities and it can also be academically oriented, vocationally oriented or just being part of a group" (I.2.2).

Interviewee 2 provided another example on healthy eating:

Maybe like some of them will tell you that nowadays instead of at home they are more aware of the importance of eating healthily, they are even advising the parents to use the vegetables, to make compost and even the single things and even themselves when you see them changing their lifestyles instead of always taking different snacks you know the different 'gonaz' [junk food] (I.2.2).

4.3.6 Management of physical surrounds of the school

The physical surrounds of the school have been one of the school's achievements during the past three years with the involvement of a group of teachers and students (I.2.2, FC.2.2, D.2-ESP, 2012). There are some seating facilities on the school compound made out of recycled materials by a group of students from the Technical and Vocational subject (Photograph 4.21). One member from the Eco-School committee stated that there is a reduction in the amount of litter on school grounds and this is reinforced by the group of students who are environmental officers and by teachers during assemblies and class briefings. The environmental officers are given the responsibility to monitor how other students make use of the school compound during recreational time (I.2.1 & FC.2.1). One student from the focus group discussion who is an environmental officer explained that:

At lunch time and break time if we see a student littering the school compound or not like they do they throw their rubbish in the bin but actually it falls near the bin, we tell them to pick it up and put it in the bin or if they are just putting their things there on the table where they are eating we tell them to go and put it in the bin (FC.2.1).

According to one document reviewed this is a project that started last year [2012] and is currently ongoing (D.2-ESP, 2012). Evidence from a document reviewed also shows that in that same year [2012] sessions were organized for the group of students volunteering to be environmental officers (D.2-ESP, 2012).

Two interviewees added that there are instances where some parents and organizations also help out with the cleaning and beautification of the school grounds (I.2.1 and I.2.2). They come when the Eco-School committee invites them for the activities to commemorate an environmental theme day such as Clean Up the World Campaign (I.2.1). Some organizations such as the Wildlife Clubs of Seychelles are donating materials like gloves and spades for the beautification and maintenance of school grounds (I.2.1, I.2.4 & FC.2.1). One parent stated that the knowledge she learnt from her parents is what enabled her to help with the school beautification, "... like my parents pass on to me, how to beautify your home you know not formal training, not formal knowledge, but acquired and pass on to me by my parents" (I.2.3).

Across different subjects and environmental clubs a group of teachers and students have also been able to contribute to the management of the physical surrounds of the school (FC.2.2 and D.2-ESP, 2012). Interviewee 2 provides an example of how she is working with a group of students to help out with the physical surrounds of the school:

For example I am the club coordinator for the heritage club - I try to sensitize students about the importance of our heritage ... through the club I am able to share my skills. For example I may help the students how to clean an area by working on a plan for students to take turn and even help out with beautification of physical surrounds of school (I.2.2).

A teacher shared her experience from a previous school that has influenced her choice of working with a group of students in her subject to improve the school ground:

Before I came to this school, the other school I was before for ten years, I was an active member and what I have learnt from my previous school I bring it to my new school. For example, the beautification of the school compound. I was helping another teacher with the compost there. We did the compost and then the nursery and now I wanted to try with a group of students. Also here at my new school we are not doing anything on coastal management and I intend to introduce it (I.2.1).

Moreover, a group of teachers and students were involved in doing murals with environmental messages on school walls and planting flowers and shrubs in front of the

classrooms (Photograph 4.22 & 4.23). A group of students from the Technical and Vocational subject constructed a nursery with seedlings that were then used to beautify the school grounds and in the community tree planting activities were undertaken (FC.2.2 & D.2-ESP, 2012) (Photograph 4.24). One teacher from the Eco-School committee and Interviewee two mentioned that the Eco-School programme has managed to motivate them to find ways of including activities that cater for students' needs. Interviewee two stated that, "The teachers and students are involved in the activities, but the projects are more teacher-oriented. It is related to certain students." Interviewee two added that a particular group of students are benefiting from the activities that are facilitated by the teacher (I.2.2). She (*ibid*) explained that some the students are not academically good and they are able to participate in the activities because they have the skill. One teacher from the Eco-School committee argued that "... some are very good in working with hands like planting, site cleaning and some of them even develop these skills as they grow up" (FC.2.2) (Photograph 4.25).

Over the past two years, the school has observed an improvement in students' behaviour *vis-à-vis* the physical surrounds of the school. Some research participants have noted that there is a reduction in the level of vandalism on the school compound such as people showing more respect for furniture and school walls. The research participants claimed that this is a result of the Living Values project which is in support of other programmes at the school and the Eco-School programme is one of them (I.2.1, FC.2.1, FC.2.2, D.2-ESD, 2011). "Respect the environment. That's one. Then to take responsibilities for your actions which can be in many things towards the physical surrounds of school," said one student from the focus group discussion (FC.2.1). Another student stated that some of the values are displayed on the school ground for students to read and familiarise themselves with them. "For example, the chairs that are broken or tables, students use it to build sign boards as we are a living values based school, we put some sign boards on values every-where the students can follow and be encouraged to try what is on the boards" (FC.2.1).

In addition, Interviewee 1 and documents reviewed (D.2-ESD, 2011 & D.2-SDP, 2009-2011) outlined that there is a Living Values garden, "We have the Living Values committee that work very close with the environment, as you can see we maintain it by doing our values garden that is the work of the students and the teachers" (I.2.1). There are different sign boards with some values such as respect, responsibility and humility displayed in the garden to educate students on some of them (Photograph 4.26 & 4.27). The garden is situated

opposite the administration block of the school with seating facilities and a variety of plants and is an attraction for visitors (Photograph 4.28).

Two interviewees expressed the view that the values are not only limited to students towards their surrounding environment but also to establish a good relationship amongst adults and students (I.2.1 and I.2.2). They (*ibid*) emphasized that values enable teachers and students to work together for the management of the physical surrounds of the school. Interviewee 3 stressed the importance that adults play as the main actors/role models for the development of values in students.

Lastly, a group of teachers and students were also involved in setting up an environmental education room at the school since 2010 (Photograph 4.29). The room consists of a corner with information and achievements of the programme annually based on environmental projects and theme days, amongst others (D.2-ESP, 2010) (Photograph 4.30). Some learning support materials such as magazines, board games, activity books compiled during the past five years received as donations from organizations are also available for teachers to use. The room is also used for environmental club meetings.

4.3.7 Resource use and management

In terms of resources, the teachers are also actively involved in promoting sustainability practices of managing waste, water and energy at the school. One participant from the Eco-School committee mentioned that teachers are sensitizing students in class and provided an example:

In terms of resources for example like energy saving, I think that there's lots of emphasis on energy saving. For example, we cannot leave a fan on in the class for a whole day without the class having student in it. They have to switch it off-the fan, the tube-light, so we have to switch off to save electricity (FC.2.2).

Apart from sustainable use of energy, two interviewees stated that some teachers mostly from the Technology and Enterprise department are promoting sustainable waste management practices (I.2.1 & I.2.2). One teacher from the Eco-School committee and Interviewee 4 added that teachers are recycling so that students can also learn different things that they could make out of the materials. "In Technical and Vocational subjects we use what we have

by recycling and we teach the students how to recycle a material, reuse the material or reduce to certain things that could affect our environment," said Interviewee 1 (I.2.1).

Since 2011 the school has been implementing a Rainwater Harvesting project to minimise dependency on treated water (D.2-ESP, 2011) (Photograph 4.31). Interviewee 1 provided an example of how the rainwater is used, "We do the rainwater harvesting and we use the water harvested to water the flowers. Even the students wash their feet during and after the PE [Physical Education] sessions" (I.2.1). Last year [2012] the school was selected to be part of the national Schools Rainwater Harvesting project coordinated by the Ministry of Environment and Energy in partnership with the Ministry of Education. The school has received 2 x 2000 litres plastic tank and some other materials as Phase Two of the project. The Eco-School committee organizes the mounting of the materials donated and continues to raise awareness on the importance of conserving water (D.2-ESP, 2012).

Two research participants made a remark that there is a group of students that help the teachers with the projects on resource use and management (I.2.1 and FC.2.2). They (*ibid*) stated that the group of students are also role models to other students to make sure that they are using water and energy properly. One teacher from the Eco-School committee provided an example:

... even outside the classroom you will see them encouraging others to keep the school ground clean, not to litter. And whenever they go to use water they will tell others that they need to close the tap and things like that. They are passing on the knowledge to their friends (FC.2.2).

4.3.8 Networking and partnership amongst stakeholders

Networking and partnership is more of the responsibility of the group of teachers who are members of the Eco-School committee (I.2.2 & I.2.3). The teachers liaise with either parents or organizations to participate in activities and projects in relation to the programme at the school. Interviewee 2 expressed that there is still a need for improvement;

Like if you take one stakeholder, the organizations - I believe they are limited to participate, I don't know if it's the school that are limiting them or other issues are limited them, but I feel that they should considerably be involved at the school. Like don't

just wait for the school to involve them. Especially the PTA [Parents and Teachers Association]- the parents also they should be more involved-at least every week come at the school- they can come during lunch time.

As previously mentioned in the practice of *Resource use and management* it is only a few organizations that are funding projects in the school, such as the Rainwater Harvesting project. But they are not actively involved when the project is implemented at the school and the same applies for parents (I.2.4). Interviewee four argued that it is mostly the same group of teachers and some students involved in the implementation of the projects. One teacher from the Eco-School committee added that it is only when the organizations have initiated a competition or an activity that the school will hear from them. For example, if there are special activities organized at national level by organizations to commemorate an environmental theme day, schools are encouraged to also participate (I.2.1). One teacher from the Eco-School committee openly expressed his gratitude to some of the organizations that provide money for the environmental projects at the school. However, he suggested that there are times when the committee does not feel at ease to go back to the same sponsors for other projects. He proposed that the Ministry of Education should provide a budget for the Eco-School programme since it is making a positive impact in the school and the community.

Apart from the above, the organizations at times facilitate professional development sessions for teachers at the school. Some organizations namely Wildlife Clubs of Seychelles and Sustainability for Seychelles have been conducting presentations on rainwater harvesting and climate change, amongst others (I.2.4, FC.2.2, QU.2.1, D.2-PDR, 2009, 2012 & JN.2, 2013) (see Photograph 4.32 & 4.33). Interviewee 1 provided another example, "There was a session last year that we used to look at the risks and hazards on school compound. This year we are going to look at the littering how we use the dust bin, the importance of how we can organise the different dust bins to classify waste" (I.2.1).

One teacher from the Eco-School committee added that the school also networks with organizations for competitions and activities that they have initiated (FC.2.2). The teacher provided an example, "There's a calendar of activities in the school. This is a routine like last year we know that this year there will be the same activities. So the teachers know that the Ministry of Education will request the participation of the school. The students and teachers gets involved" (*ibid*). Another teacher from the Eco-School committee stated that the school

environment leader also participates in meetings organized by the Environmental Education Unit from the Ministry of Education based on upcoming environmental competitions, campaigns and also discuss any issues, amongst others (*ibid*).

Interviewee 4 claimed that there are cases when parents are not invited to participate in the activities in relation to the programme. "I don't think they are using others and parents now either, because we are never invited to participate in anything like, for instance, the school will organise a tree planting and mural painting and they never invite parents not even the PTA to come and join them" (I.2.4). She (*ibid*) also pointed out that some students do not want their parents to come to school or to participate in a trip because they consider themselves old enough.

The students' contribution in networking and partnership is to volunteer and participate in activities or competitions after the teachers have shared information with them (I.2.2, FC.2.1 & FC.2.2). Interviewee 2 provided an example, "... some of the students participate in various environmentally oriented activities organized by organizations, for example essay writing, through drawing and public speaking" (I.2.2).

Some of the students at the school have won prizes in national and international competitions organized by local or international organizations (D.2-ESP, 2012 & D.2-PTA, 2012). Some of the competitions are public speaking, essay writing, art-work and poems, amongst others. One teacher from the Eco-School committee stated that the reason some of the students from the school are winning most of the prizes in the secondary category is due to the efforts of teachers integrating environmental education in their lessons and also the support that they get from parents at times.

I would say that learning do take place amongst students, like in the competitions- what they produce in the competitions, like drawing and public speaking. You feel that they have learnt a lot and the teachers are transmitting the knowledge and students win prizes. There is also an increase in awareness by others when they have this reward and it is even on the media... (FC.2.2).

Furthermore, information based on the programme is communicated within departmental meetings and morning briefings with all teachers organized once a week (I.2.1, I.2.2 & I.2.4).

The teachers pass on the information to the students in class during the fifteen minutes in the morning before class starts and the students then share the information with their parents verbally (FC.2.1 & FC.2.2). All interviewees made a remark that communication to parents is not only done verbally but also through letters distributed by the students to their parents (I.2.1, I.2.2, I.2.3 & I.2.4). The school usually sends letters to request the parents' consent for their child to go on a field trip or for their support for activities. Interviewee 3 who is a parent stated that "...if ever I get some message it is through phone calls and letters from my son for any activities or support they need in regards to the programme" (I.2.3).

Parents also receive information about the programme during the general parents' meeting organized once a term for each cycle separately (I.2.1 & I.2.4). Information shared is based on projects or activities on the action plan written by the Eco-School committee (I.2.1 & I.2.4) (see Appendix 22 for a sample of the action plan). The PTA chairperson noted her appreciation for this form of communication by the Head-teacher and staff:

The kids [students] at different levels are also there with the parents, when they are all there. It's held in the Community centre and they [teachers] share the results of academic, sports, environment and any achievements. Parents are invited to ask questions that are actually a really good form. They break it up into level because otherwise it will be too many parents. A lot of parents don't come but it's a good structure (I.2.4).

Information is also communicated by the Head-teacher during PTA and school council meetings (I.2.1). Some of the minutes of meetings I reviewed show that the Head-teacher does share information about some of the achievements of the programme, but does not refer specifically to the Eco-School programme (D.2-PTAM, 2012).

The PTA chairperson pointed out that, even if the programme is also given a slot in a school's newsletter for the parents to learn what is happening in the programme at the school, the number of newsletters printed is not enough for all parents (I.2.4). As a result not all parents are able to buy one. A parent suggested the school needs to be consistent when requesting the support of parents and stated that "there should be a lot of publicity for parents to come forward because at times I am not aware of the activities" (I.2.3).

One student from the focus group also made the same suggestion:

I think it's the teachers, because they are around all the time but I don't blame the parents, because I think it rely on the teachers and the students to inform the parents that this is happening at school. They can't just guess that there's a programme at school they need to be informed about it (FC.2.1).

The PTA chairperson also made a similar comment and argued that the communication system at the school needs improvement (I.2.4). She (*ibid*) noted that this is one reason why most of the achievements in the programme are a result of the efforts of a group of teachers and some students. She (*ibid*) added that it would be good to see more parents and that time and resources may be another two factors hindering their involvement in the programme. Interviewee 4 added that even if the Head-teacher has a close relationship with her staff, the school needs to find new ways of networking with parents to support the programme.

Patella 4



Photograph 4.17 shows a quiz competition organized by a group of teachers to commemorate Clean up the World campaign



Photograph 4.18 shows an exhibition of students' work to commemorate World Meteorological day



Photograph 4.19 shows a group of students and teachers on a field trip in a nature reserve



Photograph 4.20 shows students engaging with recycled materials in Technical and Vocational class interactions



Photograph 4.21 shows one compound on school with sitting facilities for students during recreational time



Photograph 4.22 shows a group of students and teachers from the Wildlife Club planting in-front of the class

Patella 5



Photograph 4.23 shows students and teachers visiting a water treatment plant as part of a lesson topic



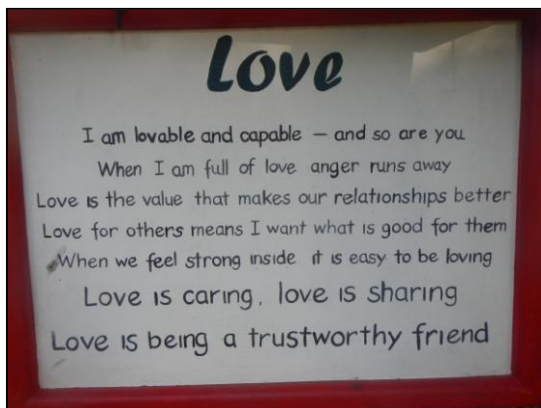
Photograph 4.24 shows the nursery with seedlings



Photograph 4.25 shows a group of students cleaning a school compound



Photograph 4.26 shows the living value of 'togetherness' on a re-used tyre displayed in the school garden



Photograph 4.27 shows another value written on a re-used piece of wood displayed in the school garden



Photograph 4.28 shows the Living Values garden created by a group of teachers and students

Patella 6



Photograph 4.29 shows the environment education room



Photograph 4.30 shows notice board used to display some school projects and activities organized to commemorate theme days



Photograph 4.31 Phase One of the Rainwater Harvesting project



Photograph 4.32 shows a staff member of a non-governmental organization facilitating a session with a group of teachers



Photograph 4.33 shows a representative from a non-governmental organization facilitating a teacher professional development session on rainwater harvesting

4.4 Conclusion

This chapter presented data from both schools investigated as Phase One of the analysis. It provided a descriptive background of how stakeholders are participating and learning in the two schools in relation to the Seychelles Eco-School programme.

Findings from each case presented some of the ways that stakeholders are participating and learning in the programme. Stakeholders are involved at different levels in the six elements of the school community that does not only provide an opportunity for stakeholders to participate in the programme but also learn in the process of participating in the elements. The six elements provide the opportunities for stakeholders to engage meaningfully with socio-ecological issues and learn to take action through environmental activities and projects.

It is evident that teachers are actively involved in all six elements with occasional support from a minority of parents and organizations. There is an active involvement of students in some of the elements of school community, namely, teaching and learning, resource use and management, management of and physical surrounds of the school. Learning in the programme is limited not only to teachers and students (two active group of stakeholders in the programme) while they interact together in classroom and field work interactions but also to a minority of parents who are learning in the programme as well. There are instances where a minority of parents are also facilitating learning in the programme when they interact with other teachers and students in activities, projects and to facilitate an environmental topic in classroom interactions as guest speakers. Organizations are also facilitators of learning in the programme and occasionally conduct presentations in class or facilitate teacher professional development session as guest speakers.

In the next chapter I will be deepening discussions on the participatory and learning processes in the programme and some of the factors that have enabled and constrained stakeholder participation and learning. The conceptual framework of situating learning in communities of practice outlined in Section 2.3 has been used to generate analytical statements for the discussion of findings.

CHAPTER 5
STAKEHOLDER LEARNING AS A PROCESS OF SOCIAL
PARTICIPATION IN THE SEYCHELLES ECO-SCHOOL PROGRAMME

When parents, teachers, students and others view one another as partners in education, a caring community forms around students and begins its work (Department of Environment and Heritage, 2005).

5.1 Introduction

This chapter provides an in depth discussion across the two schools investigated through the presentation of four analytical statements. The conceptual framework of situating learning in communities of practice was used to provide a better understanding of the nature of the participatory and learning processes. In addition the contributions from stakeholders and relationships between them have also been discussed, followed by some of the factors that are enabling and constraining participation and learning in the Eco-School community.

5.2 Practices offer opportunities for participation and learning in Eco-Schools

Analytical statement 1: Different elements/practices within the Eco-School community provide opportunities for participation and learning

As previously presented in Chapter 4 there are six elements undertaken by the community in each Eco-School. These elements were also identified as practices in each of the Eco-School communities investigated as outlined in Section 2.3.2. For the purpose of this discussion I will be using the word ‘practices’ throughout this chapter. Evidence in Chapter 4 suggests that the six practices provide opportunity for stakeholders to participate and learn while they interact with each other in each Eco-School community. As Lave (1991) explains, learning does not happen in isolation, but through interaction and collaboration between people while they are engaged in activities within the practices of a community (Section 2.3.1). Findings from Chapter 4 for each case suggest that stakeholders are participating and learning as they interact across these six practices through several learning situations, namely, 1) administrative planning and discussions in Eco-School committee meetings; 2) curriculum and lesson planning; 3) learning from the formal curriculum of academic subjects in classroom and field work interactions; 4) teacher professional development sessions; 5) teacher morning briefings; 6) co-

curricular⁴ activities, namely, those happening in environmental clubs and the science fair, field trips and visits to commemorate theme days, competitions and campaigns initiated by organizations, and other activities organized at school level to commemorate theme days; and 7) environmental projects. The nature of the participatory and learning processes in each of the learning situations mentioned above is discussed in detail below.

5.2.1 Learning through administrative planning and discussions of the programme

In each Eco-School it is only a group of teachers who are involved in the management and administration of the programme. The group of teachers meet to plan and discuss the programme through informal meetings. The meetings are considered to be informal because the group of teachers meet during lunch time while they have other competing priorities as teachers at the school as indicated by members of the Eco-School committee (Sections 4.2.3 & 4.3.3). The group of teachers provide the opportunity for other teachers at the school to contribute ideas for activities and projects in relation to the Eco-School programme as indicated by members from the Eco-School committee in Sections 4.2.3 and 4.3.3. Several examples were expressed by teachers in each Eco-School and some of them were based on teachers consulted individually by other teachers who sit on the committee at cycle/department level (Sections 4.2.3 & 4.3.3). Another example was based on teachers who are consulted for proposed activities by the committee during morning briefings as described by one teacher in case 1 (Section 4.2.3). One member from the Eco-School committee in case 1 stated that the discussions amongst teachers provide the opportunities for them to learn about what is happening in the programme and to also share ideas for activities and projects (Section 4.2.3). The joint discussion amongst teachers can be viewed in relation to Wenger's (1998a – Section 2.3.2) argument which illustrates how a mutual understanding can develop between members in a community of practice, enabling mutual agreement and collective sharing of ideas in response to issues in context.

There are fewer opportunities for other groups of stakeholders to participate in the planning and discussions of the programme. In case 1, some interviewees and one student from the focus group discussions expressed that it is not often that students are

⁴ Relates to activities contributing to curriculum learning; especially activities that provide students with opportunities to learn and at the same time develop skills through active participation (Purdue University, 2013).

given the opportunity to contribute ideas in the programme. One interviewee and one student from the focus group discussions in case 1 provided an example of a small group of students who were consulted for a medicinal garden project. However, it is not clear whether this was regular practice because most minutes of the Eco-School meetings did not present evidence of regular input from students and parents in the programme. In addition, in each Eco-School only a small group of parents were recognized to be contributing ideas for the programme but it is not clear how often this was taking place. In case 1 only one example was provided by a parent who has been involved in the programme for some years as the chairperson of the Parent Teacher Association. The parent explained that he encourages the Eco-School committee to be consistent in their efforts for the programme to operate in the daily running of the school. Similarly in case 2, the parents who are providing ideas for the programme are members of the Parent Teacher Association. However, there is no evidence in documents reviewed to suggest how often this is taking place and how the ideas of parents have been used in the programme.

5.2.2 Learning from the organization of the curriculum

Most interviewees and documents reviewed pointed out that environmental education is promoted across most subjects such as Social Science, Science and Languages in case 1 (Section 4.2.4) and across most subjects such as Geography, Science and Technology and Enterprise in case 2 (4.3.4 & 4.3.5). Teachers are making use of topics and objectives from the Ministry of Education's national curriculum when planning for lessons to promote environmental learning in their respective subjects (4.2.4 & 4.3.4). In case 1 information reported by two interviewees and one document reviewed pointed out that the Eco-School committee and the school management team are encouraging the teachers to consider incorporating environmental topics and objectives when planning lessons for their academic or technical and vocational subjects (4.2.4).

Teachers are also conducting research and consulting peers as indicated in case 1 by two interviewees and participants from both focus group discussions (Section 4.2.4). In both Eco-Schools teachers consult each other for ideas to integrate in lessons on environmental topics, promotion of environmental theme days and to clarify concepts for an environmental topic. Wenger (1998a – Section 2.3.2) explains that when members in a community of practice have trust amongst each other they are able to develop

relationships that enable them to provide help to one another and share knowledge with each other.

Teachers are regarded by two interviewees to have the competencies as planners and facilitators of learning at school to incorporate environmental education in teaching and learning (Section 4.3.4). One teacher pointed out that the teachers are applying what they have acquired as knowledge and skills from modules with regards to the integration of environmental education in teaching and learning from their pre-service teacher training (Section 4.3.4). Martin's (2007) research on the pre-service teacher training in Seychelles explained that the modules were designed "to help student teachers understand the rationale and methodology of environmental education, familiarize them with existing resources and give them opportunities to participate in hands-on learning and engage in action as well as practice strategies for incorporating EE into various subject areas" (p. 6).

5.2.3 Learning emerging from the formal curriculum through interactions in class and field work

Students and adults are learning through classroom and field work interactions based on environmental topics and objectives prescribed in the formal curriculum. The learning interactions are facilitated mostly by teachers with occasional support from parents and environmental organizations as indicated by most research participants in Sections 4.2.5 and 4.3.5. Evidence in each Eco-School implies that the formal curriculum provides opportunities for the construction of both scientific and every-day knowledge with support from the learning support materials and methods used by teachers when facilitating learning. Some of the scientific knowledge illustrated in Sections 4.2.5 and 4.3.5 is knowledge on the flora and fauna of Seychelles, the sustainable use of waste, water and energy and also socio-ecological issues such as climate change. On the other hand, the sharing of every-day knowledge was taking place in the formal learning interaction in class discussions between the teachers and students (Sections 4.2.5 & 4.3.5). Some of the every-day knowledge was about the materials that teachers use in classroom interactions, the name of living things in a habitat, and the materials in the environment that are considered as waste, amongst others.

Occasionally organizations conduct presentations in class to facilitate learning on environmental topics prescribed in the formal curriculum, namely, marine ecosystems, climate change and endangered species in Seychelles (Sections 4.2.5, 4.3.5, 2.2.3.3, 2.2.3.4, 2.2.3.6, 4.2.8 & 4.3.8). In case 2, one interviewee added that the Wildlife Club of Seychelles which is one of the non-governmental organizations working with the school does not only facilitate learning in class but also on field trips alongside teachers (Section 4.3.5). Teachers are also learning from the presentations conducted by the organizations as indicated by one member from the Eco-School committee in case 1 (Section 4.2.5) and one teacher from case 2 (Section 4.3.5). Environmental organizations such as the Wildlife Club of Seychelles have also donated learning support materials to support environmental learning in schools as indicated by research participants in Sections 4.2.5 and 4.3.5.

Findings in case 1 from some interviewees and one teacher from the Eco-School committee added that some parents are also facilitating environmental learning. One of several examples was in relation to a parent who facilitated learning on a field trip for a lesson on rivers and brought samples of water collected at the river to be tested at the laboratory for any signs of contamination. The findings from the water tested was then compiled by the students with support of their teacher and presented in a school exhibition (Section 4.2.5).

Across case 1 and case 2, the methods that teachers use influence the way that students participate and learn in environmental learning. Some of the methods indicated in case 2 such as role plays and debates create excitement amongst students to apply knowledge (Section 4.3.5). Both methods also encourage discussion more than other methods, and some of the methods such as field trips and educational visits build on or consolidate what has been discussed in class on an environmental topic (Sections 4.2.5 & 4.3.5). Even if the methods provide students with the opportunity to participate and learn in the lessons facilitated by the teachers there are other methods such as peer learning that the teachers could potentially consider. This is because one parent from case 2 argued that from her experience she is not aware of the school providing opportunities for students to facilitate learning with other students (Section 4.3.5). Moreover, most research participants in cases 1 and 2 pointed out that students are mostly participants and learners

in the formal learning interactions and there is no evidence that suggest their involvement as facilitators of learning amongst peers (Sections 4.2.5 & 4.3.5).

In each school, evidence suggests that students are developing knowledge while they interact with peers and teachers on an environmental topic in class such as through class discussions (Section 4.2.5 & 4.3.5). There are several examples in each case that provide evidence of students developing knowledge in the learning interactions and three of them are discussed below. One of the students from case 1 shared her experience of developing knowledge on the plants that are endangered, extinct and native in Seychelles (Section 4.2.5). Another student from case 1 shared her experience of how the programme has provided her with the opportunity to discover the things that exist in the environment (Section 4.2.5). The third example was outlined by a teacher from case 2 who pointed out that she noticed a change in the students' eating habits at school, namely a reduction of the amount of junk food eaten during break/lunch time (Section 4.3.5). In addition, students were then given the opportunity to engage in activities such as poems to apply what they have learnt on an environmental topic from the classroom interactions (Section 4.2.5 & 4.3.5).

In case 1, there are instances when some parents have learnt from the teachers while they have attended lessons at school covering an environmental topic (Section 4.2.5). One interviewee in Section 4.2.5 pointed out that the parents share what they have learnt from the teachers with other parents in the community outside school.

In the process of adults facilitating learning on environmental topics, students and adults such as teachers learn how they can live sustainably in nature, identify and respond to socio-ecological issues in school grounds and in their community outside school and manage resources, amongst others (Sections 4.2.5 & 4.3.5). One of several examples that have been mentioned by most research participants in each school is in relation to students and teachers learning how to produce new things out of recycled materials as one way to sustainably manage materials that are regarded as waste in the environment (Sections 4.2.5 & 4.3.5). One student from the focus group discussion expressed her gratitude towards the programme and outlined that the Eco-School programme provides the opportunity for her to learn about the environment of the school (Section 4.2.5).

The learning situations above illustrate that students are learning from the experiences of the teachers who are predominantly the facilitators of environmental learning within the school context. This relates to Hung's (2002 – Section 2.3.1) argument that learning is not limited to the minds of the learners but occurs through a process of social participation, where the learners participate in an activity and learn from the experienced people within a specific socio-cultural context.

5.2.4 Learning through interactions in environmental management projects

Compared to formal learning inside and outside the classroom, only a small group of students and adults are actively involved in the implementation of the projects supported by parents and organizations through donations of materials (Sections 4.2.6 & 4.3.6). The projects are implemented across subjects and complement environmental learning, for example, through co-curricular activities in environmental clubs.

Across subjects, several projects are used by teachers to facilitate environmental learning at school. One of the projects related to the adoption and maintenance of a mangrove forest that runs through the school and is used by teachers in case 1 to facilitate environmental learning (Section 4.2.6). Similarly in case 2, two research participants pointed out that the teachers are making use of school projects to facilitate environmental learning for subjects such as Technology and Enterprise and Geography (Section 4.3.5). This approach by teachers to use the school projects serves as an aid to support learning on environmental topics such as wetlands and forest and to also help students develop a relationship with the environment around them (Sections 4.2.6 & 4.3.6). Two adult research participants explained that through projects that emphasize proper management of the school environment, students learn to take responsibility for keeping the environment clean (Section 4.2.6). The Living Value Project discussed in case 2 is also supporting the Eco-School programme - influencing the behaviour of students towards their school environment. Two teachers in case 1 stated that students are learning to value the physical part of the school that has led to a reduction in vandalism at the school (Section 4.3.6). This suggests that students are learning to value their school environment and to also become agents of promoting care towards the environment in support of the Eco-School framework discussed in Section 2.2.1.

Students are also learning from peers and taking responsibilities to manage projects in the school. This was explicitly illustrated in two projects. One was presented in both Eco-Schools based on a group of students who were assigned responsibilities to monitor how students make use of bins and other school facilities during break and lunch time (Sections 4.2.6 & 4.3.6). The other project (from case 1) was based on students who were involved in watering and monitoring the growth of plants planted in recycled materials (Section 4.2.6). It was not clear from the findings if the first project is ongoing and how it is contributing to the management of school grounds. Nonetheless, evidence in Sections 4.2.6 and 4.3.6 suggests that students who do not make use of bins during break and lunch time are reminded by the group of students to do so. The students who fail to respond to advice given by the group of students are then reported in the school's general assembly as a lesson for other students to learn to keep school grounds clean.

In case 2, a group of students and teachers across Technical and Vocational subjects and environmental clubs have engaged in school projects aimed at school beautification (Section 4.3.6). One teacher stated that students' active participation in school projects ensures that individual needs are met (Section 4.3.6). This approach by teachers in school provides opportunity for students with different needs to collaborate in school projects and learn from each other.

There are several other projects promoting sustainable management of resources, namely water, electricity and solid waste (Sections 4.2.7 & 4.3.7). The projects are providing opportunities for stakeholders to work together and take action in response to socio-ecological issues in school. These projects can support Eco-Schools to become sustainable in their operations and could be considered as beneficial in terms of educating students and adults on sustainability practices that can save money (Emilie, 2011 & Department of Environment and Heritage, 2005 - Section 2.6). This was evident in some of the research participants' description of teachers and students learning how to avoid wasting electricity by engaging in simple actions such as switching off electrical appliances, teachers and students learning to harvest rainwater to reduce dependency on treated water, and students learning how to manipulate recycled materials with the help of the teacher in classroom activities especially for Technical and Vocational subjects (Sections 4.2.7 & 4.3.7). Polyani in Hung (2002 – Section 2.3.1) states that skills are learned by example and in this line the teacher who is more experienced is facilitating

the development of skills for students to learn how to handle the recycled materials. There are two benefits of teaching students how to sustainably manage waste. Firstly, to sensitize students that not all used materials should be regarded as waste but could have other purposes. Secondly, proper management of waste so as not to create any risks for the well-being of all that co-exist in the environment (Sections 4.2.7 & 4.3.7).

In case 1, one Eco-School committee member explained that there are some students who are sharing what they are learning at school about sustainable management of resources such as water and electricity with their parents at home (Section 4.2.7). In case 2 evidence suggests that students are learning from peers to be conscious of using water wisely by closing the tap properly and also making use of rainwater collected from the school's Rainwater Harvesting project to water plants (Section 4.3.7).

One project also provided opportunities for stakeholders to share and construct knowledge on heritage practices. This was evident in Case 2 outlined by one parent who described her experience of sharing knowledge acquired from her parent with other teachers and students while they were working together to beautify the school grounds (Section 4.3.6).

5.2.5 Learning through partnership

Partnerships exist between each Eco-School and different environmental organizations in order to facilitate campaigns, competitions and projects with environmental foci. The campaigns and competitions are providing opportunities for stakeholders to come together and learn from each other (Sections 2.2.3.1, 4.2.8 & 4.3.8). One interviewee from case 1 explained that the campaigns encourage teachers and students to meet with representatives of environmental organizations and learn from their experiences regarding environmental topics (Section 4.2.8). In addition, the campaigns enable stakeholders to come together and participate in activities that promote learning in response to socio-ecological issues in context. For example, in Section 2.2.3.3, the Energy Efficiency campaign provides opportunities for schools to engage in energy conservation activities with the use of learning support materials. This is one example of reflexive activities (Lotz-Sisitka & O'Donoghue in Reid, *et al.*, 2008 – Section 2.3.1) which provide opportunity for individuals to learn how they can improve on their practice in response to challenges in context. This influences individuals to become

agent of social change and in this research students and adults learn to respond to the challenge of land pollution caused by improper disposal of waste for a clean environment (*ibid*).

Apart from campaigns and competitions the schools are also working in partnership with environmental organizations namely the Wildlife Club of Seychelles and the Ministry of Environment and Energy for projects (Sections 4.2.7, 4.2.8, 4.3.7 & 4.3.8). Several of the projects provide opportunity for learning on the flora and fauna of Seychelles through the Endangered Species project and water management practices through the Rainwater Harvesting project (Sections 2.2.3.3, 4.2.7, 4.2.8, 4.3.7 & 4.3.8).

Both Eco-Schools (cases 1 and 2) are also working in partnership with the Parent Teacher Association to request the support of parents for environmental activities and projects organized at the schools. However, the association in neither school is encouraging other parents to provide their support in the programme. The PTA chairperson added that parents and organizations that he has contacted are not showing interest to support the programme at the school (Section 4.2.8). One teacher from the Eco-School committee in case 1 pointed out that it is difficult for parents to be involved in the programme at the school because most of the activities and projects are taking place during their working hours (Section 4.2.8). In both schools, documents reviewed indicated that even during Parent Teacher Association meetings the programme is not discussed regularly (Section 4.2.8). In my opinion the former is one of the reasons why teachers are playing a dominant role in the programme. As evidence suggests in case 2, the chairperson of the Parent Teacher Association is depending on the teachers at the school to communicate with the parents about any activities and projects in relation to the programme (Section 4.3.8).

In each Eco-School, parents are learning more about organisational issues and activities when they attend annual meetings organized by the school. Evidence suggests that parents learn from the information shared by some of the staff of each Eco-School about the programme, namely, its achievements, upcoming environmental activities, current environmental projects and issues in school context (Sections 4.2.8 & 4.3.8).

5.3 Stakeholder involvement and contributions in the practices of each Eco-School community

Table 6.1 shows a summary of stakeholders' contributions in the practices of each Eco-School community. Out of the five levels of participation as represented by Wenger *et al.*, (2002 – Section 2.7), only four were recognized in this study. These were, namely, core group, active group, occasional group and transactional group. The peripheral group has not been included in the discussion because data from Chapter 4 does not provide evidence of groups of stakeholders that are passive participants. This group of members in a community is described by Wenger *et al.* (*ibid*) as members who usually observe the interaction taking place amongst other members who are operating in the active and core group of the community (Section 2.7). Each of the four levels is differentiated by colour as presented in Figure 6.1:

- 1) The light orange circle represents the core group of people who are described by Wenger *et al.*, (*ibid*) in Section 2.7 as the smallest group of people assigned leadership roles in the community of practice and participate strongly in discussions and projects;
- 2) The light pink circle represents the active group of people who participate regularly in the activities and projects organized in a community;
- 3) The light blue circle represents the occasional group of people who are only involved when there is a topic of interest to them in the activities or projects of the community; and
- 4) The purple area outside the four circles represents the transactional group of people who are described to be occasionally involved providing or requesting service in the community

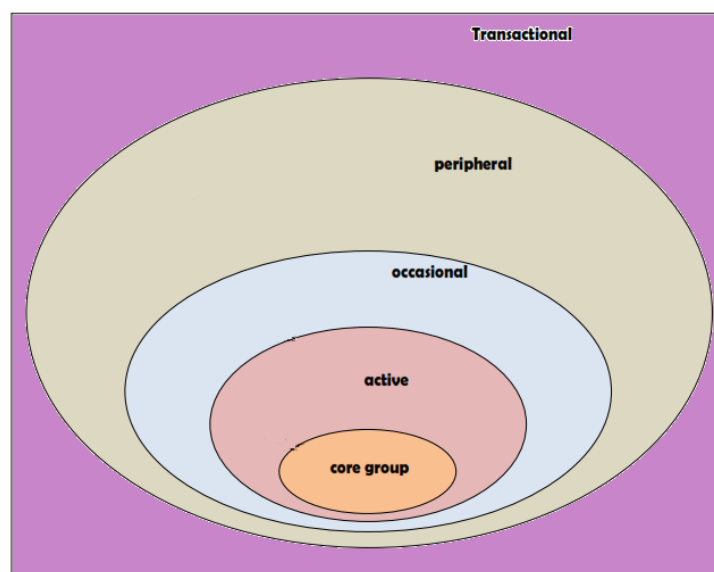


Figure 6.1 Levels of participation in a community of practice (Wenger-Trayner, 2011 - Section 2.7)

The colours from Figure 6.1 are used in Table 6.1 to indicate the level at which each stakeholder is operating in different practices of the Eco-School community.

Table 6.1 Summary of stakeholder involvement/contributions in the practices of the Eco-School community

| Practices | Stakeholder involvement/contributions in each of the practice | | | | | |
|---|--|---|---|--|--|---|
| | Teachers | | Students | | Parents | Organizations |
| Leadership, management and administration | A group of less than ten teachers as the core group to support the integration of the programme in the school and also regarded as decision makers and leaders in the Eco-School community | | Not involved | | Only one parent is contributing ideas and seen as a leader to seek funding for projects and materials in support of environmental learning at the school | The other parents are not involved Not involved |
| Organizing curriculum | Most teachers consider integrating environmental topics and objectives from the curriculum when planning lessons for each term | | Not involved | | Not involved | Not involved |
| Teaching and learning | Most teachers are involved as facilitators of learning after preparing lessons, activities, and resources | | Most of the students are treated as learners and participants in this practice | | Some are involved as guest speakers | Some facilitate learning as guest speakers Some donate learning support material |
| Managing physical surrounds of school | A group of teachers are leaders and facilitators | A group of teachers occasionally involved as participants | A group of students are involved as participants and learners | | Some are involved as participants upon invitation from teachers | Some fund projects or donate materials |
| Management of resources | Most teachers are involved as facilitators and enforcers of the Eco-code | | Most of the students are involved as participants to manage resources at school | Some of the students are sharing what they have from teachers with peers and parents | Not involved | Some fund projects |

| | | | | | |
|-------------------------|--|--|---|---|--|
| Network and partnership | A group of teachers are involved to liaise with parents and organizations to provide support for the programme | A group of teachers participate in the activities and campaigns organized by environmental organizations | Voluntarily participate in events and conduct research or consult peers and other adults for competitions organized by organizations after receiving communication from teacher | Some are involved through the Parent Teacher Association donating materials and facilitating environmental learning as guest speakers | Some initiate activities and campaigns and requires the participation of the school. In addition they also provide services as guest speakers and donate materials |
|-------------------------|--|--|---|---|--|

Table 6.1 shows a summary of the levels at which each group of stakeholders is involved in the practices (in the first column) of each Eco-School community. The involvement/contributions (four columns starting from the right of the first column) of each group of stakeholders in each practice is also highlighted.

Analytical statement 2: Stakeholders are participating and learning through different practices at different levels in the Eco-School community

As presented in Table 6.1 above, each group of stakeholders is making different contributions at different levels in the practices of the Eco-School community. The subsections below discuss the contributions made by different stakeholders across these different practices and also highlight the groups of stakeholders that are operating at different levels within a particular practice.

5.3.1 Teachers as leaders, planners, enforcers, facilitators of environmental learning and facilitators of their own learning

The group of less than ten teachers as indicated in Table 6.1 are actively involved to manage and administer the Eco-School programme in each Eco-School. This was evident in Sections 4.2.3 and 4.3.3 with regards to the group of teachers' regular planning and discussions for the programme to integrate in the daily running of the two Eco-Schools. Because of this key leadership role, the group of teachers have been regarded as the core group of members in each Eco-School community investigated. Wenger *et al.*, (2002 – Section 2.7) explain that in a community of practice members who are part of the core group are regarded as leaders, essential to keep the community on its learning agenda. As evidence states (Sections 4.2.3 & 4.3.3) the core group of teachers are dedicating their lunch time to meet and discuss the

Eco-School programme and, as one teacher in case 1 expressed, it is not always easy for them to meet but they still find time to ensure that the programme is operating in the school.

As indicated in Table 6.1, most of the teachers in each Eco-School who are involved in organizing the curriculum and planning lessons promoting environmental learning are also considered to be in the core group of members. The teachers are in the core group because they are also taking leadership roles in the Eco-School community by selecting environmental topics from the formal curriculum for academic subjects, conducting research on the topics and planning lessons on the topics (Sections 4.2.4 & 4.3.4). Similarly, for the practice of teaching and learning, teachers are regarded to be in the core group of members. This is because the teachers are predominantly facilitators of environmental learning in the Eco-School community, managing the learning interactions with the group of students that are in their care at the school. Most of the teachers are facilitating environmental learning for their particular curriculum subjects, environmental clubs and in interactions outside class such as in field work (Section 5.2). Cross (1974 – Section 2.3.1) says that this is the role of teachers as the experienced people in a community, who are there to encourage, guide, and set examples in the learning process.

For the practice of management of the physical surrounds of the school, teachers are operating on two levels. There is a group of teachers operating in the core group for this practice because of their leadership role to manage activities and projects that support the management of the schools grounds. The other group of teachers are operating in the occasional group because they are only involved when the activities and projects are of interest to them and are mostly participants supporting the core group of teachers mentioned.

In each Eco-School, teachers are also involved as enforcers of the Eco-code promoting mostly sustainable management of resources (Sections 4.2.3, 4.3.3 & 4.2.7). There are several ways that teachers are enforcing the Eco-Code such as through communication with students to switch off electrical appliances to save electricity, through practical activities organized in class and also through projects (Sections 4.2.7 & 4.3.7).

Lastly, evidence in Sections 4.2.8 and 4.3.8 suggest that there is a group of teachers within the core group who are responsible for networking and establishing partnerships with parents and organizations. In each Eco-School, the effort of the group of teachers to network

with the parents and organizations has helped each Eco-School to benefit from learning support materials and resources such as funding to support environmental learning in classroom interactions and projects (Sections 4.2.8 & 4.3.8). Moreover, partnerships established between the school and environmental organizations also provide opportunity for a group of teachers and students who participate in the activities and campaigns organized by environmental organizations. This group of teachers alongside a group of students are regarded to be in the active group of members.

5.3.2 Students as learners and facilitators of their own learning

Students as another group of stakeholders are at the centre of learning in the programme and are regarded predominantly as part of the active group as they learn and participate regularly in the activities and projects with adults. This is reflected in the joint enterprise of the community of practice in each Eco-School as outlined in Section 5.4. Most of the students in each Eco-School are involved in only four of the practices of each Eco-School community as indicated in Table 6.1.

The students are not involved at all in the administration and management of the programme and this implies that they do not have any input into the planning and discussions that are taken up only by teachers as discussed in Sections 5.2.1 and 5.3.1. Moreover, evidence by research participants in cases 1 and 2 also suggest that students are not facilitating environmental learning in activities and projects organized at each Eco-School (Sections 4.2.5, 4.2.6, 4.2.7, 4.3.5, 4.3.6 & 4.3.7).

In the practice of management of physical surrounds and management of resources, there is a group of students who are actively involved as participants alongside a group of adults, who are mostly responding to instructions and learning from the experiences of teachers. Evidence in Sections 4.2.7 and 4.3.7 suggest that there is a group of students who are promoting what they are learning from teachers with peers at school and parents at home for the practice of management of resources. It is not clear how often the students are doing this. It is for this reason that this particular group of students in case 1 have been regarded to be part of the occasional group of that practice.

Students are also sometimes facilitators of their own learning and this has placed them into the occasional group of members in the practice of network and partnership because they

only participate when a topic is of interest to them. Several examples of how students are occasionally involved as facilitators of their own learning relates to students' application of scientific knowledge from classroom interactions to prepare for the Science Fair project in case 1 (Section 4.2.6). Consulting adults or doing their own research in preparation for competitions initiated by environmental organizations is another example of students being facilitators of their own learning (Sections 4.2.8 & 4.3.8). The advantage of sharing of knowledge amongst students and adults is argued by Reid *et al.*, (2002 – Section 2.3.1) to support the development of knowledge amongst people and lead to cognitive gains and development of a community.

5.3.3 Parents as facilitators of environmental learning and resource providers

Compared to teachers and students, it was noted that fairly a small group of parents is involved in the programme based on findings from Chapter 4 for each Eco-School. As indicated in Table 6.1, the parents are operating in the occasional group across four of the practices of each Eco-School community. Their occasional involvement is a result of teachers who invite them to school to either facilitate environmental learning as guest speakers or participate in environmental activities and projects in the school. It was only evident in case 1 as indicated in Table 6.1 that one parent who is the PTA chairperson is sharing ideas in the administration of the programme and acts as a leader in seeking funding for projects and materials to support environmental learning at the school. For the other practices, a minority of parents are also operating in the occasional group - contributing materials, and participating in the projects once informed by the teachers.

5.3.4 Environmental organizations as facilitators of environmental learning, leaders, initiators and resource providers

Fairly similar to parents, only some organizations are involved in the programme based upon invitation from the core group of the community or through their own EE/EfS initiatives (Sections 2.2.3 and 4.2.8 & 4.3.8). As indicated in Table 6.1 the environmental organizations are suggested by evidence to be in the 'transactional group' across four practices: teaching and learning, management of physical surrounds of the school, and management of resources, networks and partnerships. As indicated in Table 6.1, some environmental organizations are operating in the occasional group for the practice of teaching and learning. This is because the environmental organizations are involved occasionally as guest speakers to facilitate learning on an environmental topic based on their

field of specialisation (Sections 4.2.5, 4.2.8, 4.3.5 & 4.3.8). Even if the environmental organizations could be seen as a leader facilitating environment learning, they do not meet the criteria of the core group, because of two reasons. One is because they are not regularly facilitating environmental learning at the school based on evidence in Sections 4.2.5 and 4.3.5. The other reason is because they do not participate strongly in discussions and other projects at the school like other members who are in the core group.

In addition, the environmental organizations operating in the transactional group are providing services to both Eco-Schools and requesting their participation in activities, competitions and campaigns. The organizations are providing services to the two Eco-Schools, namely by facilitating environmental learning upon request from teachers, facilitating teacher professional development sessions, donating learning support materials and funding environmental projects (Sections 2.2.3.2, 2.2.3.3, 2.2.3.4, 2.2.3.5, 2.2.3.6, 4.2.5, 4.2.6, 4.2.8, 4.3.5, 4.3.6 & 4.3.8). The organizations are also requesting the participation of the two Eco-Schools, namely through the campaigns, activities and competitions that they initiate in line with their educational action plans in response to socio-ecological issues in Seychelles (Sections 2.2.3.1, 2.2.3.2, 2.2.3.4, 2.2.3.5, 4.2.8 & 4.3.8). In the process of providing the above mentioned services to both schools, the organizations are providing support for environmental learning and projects in both Eco-Schools.

5.4 Contextual variables as enablers and constrainers of participation

According to Wenger-Trayner and Wenger-Trayner (2011 – Section 2.8) communities of practice are complex social learning systems sensitive to different factors. Some of these factors either enable participation and learning or constrain participation and learning. Wenger-Trayner and Wenger-Trayner (*ibid*) claim that some factors enable a community of practice to develop and become a success and other factors contribute to regress and stagnation in the community of practice. The factors discussed in this section were generated from the findings in Chapter 4.

Analytical statement 3: A variety of contextual variables enable the participation and learning of stakeholders in the programme

As evidence suggests in Sections 4.2.2 and 4.3.2 most of the adults and students are participating and learning in the Eco-School community based on a joint enterprise of providing opportunities for students to engage in learning that promotes care for the

environment. This interest suggests that the adults are conscious that the environment of Seychelles needs to be taken care of and believe that by providing students with the opportunities to engage in environmental learning they can learn to take care of the environment. This was evident in several examples presented by teachers and parents in each case and one of them as described by a teacher in case 2 was about her interest to share 'knowledge and good attitude to students' that stress the importance of protecting the environment of Seychelles (Section 4.3.2).

Apart from the above, evidence from two interviewees in case 1 indicated that a particular group of teachers in the school are participating in the programme so as to receive national recognition in the annual Eco-School award ceremony. This was evident in Section 4.2.2 in one of the teacher's argument that she is involved alongside other teachers so as to aim to receive an award for most outstanding Eco-School in Seychelles.

Two research participants from each Eco-School also expressed that the enthusiasm that they have for the environment is what enables them to participate and learn in the programme. This was evident in one of the student's elaboration that students' involvement in the programme is because they are passionate about the environment. She added that this influences the students to contribute to the management of the school environment (Section 4.2.2). Moreover, a teacher from case 2 pointed out that her enthusiasm motivates her to participate as a facilitator of environmental learning in the programme so as to help students learn to value the environment (Section 4.3.2). These two former examples could be regarded in relation to Wenger's (1998a – Section 2.8) argument that when members in a community of practice share similar enthusiasm they invest time and work collaboratively in activities based on a topic of interest.

Another factor enabling stakeholder participation and learning in the programme is a result of the core group of teachers in each Eco-School who are devoted to keep the Eco-School community on its learning agenda. There are several examples that reflect the commitment of the Eco-School committee in each Eco-School presented in Sections 4.2.3 and 4.3.3. One of them is time that the Eco-School committee invests during lunch time to meet and discuss the programme against other competing priorities as teachers. In addition, the committee also invests time for the planning of activities and projects that promote environmental learning in the daily operation of the school. Another example of the committee's devotion

was also evident in their effort to communicate information about the programme to stakeholders and to encourage teachers to incorporate environmental education across their subjects at the beginning of each term. As a result of this, opportunities are provided for other stakeholders to participate and learn in the practices of the Eco-School community in support of the Seychelles Eco-School programme.

Furthermore, the activities and methods used in the programme are known to be fun by one interviewee in case 1 (Section 4.2.5). This is another factor that over the years has created the opportunity for students and adults to learn and contribute towards the joint enterprise of the programme.

Two research participants from case 2 provided an example that there are 'good' qualified teachers at the school, competent to facilitate environmental learning in the school and make things work in the programme (Section 4.3.4). Another example of teachers' teaching capacity was evident in Sections 4.2.5, 4.2.8 and 4.3.8 where teachers were described as actively involved in motivating students to participate in the activities at school or in national competitions initiated by organizations. Apart from teachers, parents were also recognized to be able to participate because of their intellectual capacity. One of several examples in case 1 was based on a parent involvement as a facilitator of learning in the school. One of the reasons that enabled the parent to facilitate learning with students was, firstly, his professional experience in the field of environment and, secondly, his knowledge on some environmental topics such as composting and water pollution evident in Section 4.2.5. These examples also reflect a sense of ownership by teachers and the parents who recognize themselves as having the knowledge and experience to facilitate learning. Breiting (in Reid *et al.*, 2008 – Section 2.8) argues that an individual's sense of ownership enables him/her to contribute to a shared interest in a community without depending on others to do the work. The individual recognizes that he/she has the intellectual capacity that will benefit other people in the community (*ibid*).

In case 1, students reported that they decided to participate in the activities because they wished to demonstrate their potential as learners and participants (Section 4.2.8). In addition, the students were also aware that when they participated in the activities they would be rewarded for their efforts (4.2.2).

There is a good relationship that exists between stakeholders evident through their collaboration and engagement in the practices of the community in each Eco-School (Sections 4.2.1, 4.3.1, 4.2.8 & 4.3.8). Wenger *et al.*, (2002 – Section 2.3.2) describe the relationship that exists between community members as a network system where people have trust in each other and regularly interact based on a joint enterprise.

Another factor enabling stakeholders to participate and learn is the efficient way in which information is disseminated in each Eco-School community. This is referred to by the Ministry of Education (2010 – Section 2.6) as lines of communication that are established between teachers, students and the wider community. In the case of this research, information about the programme is circulated through meetings, assemblies and morning briefings from the Eco-School committee, to teachers, students, parents and organizations (Sections 4.2.8 & 4.3.8).

Analytical statement 4: A variety of contextual variables constrain the participation and learning of stakeholders in the programme

While most teachers and students are involved in one way or another in the programme, only some parents and organizations are involved as discussed in Section 5.3. This could be explained by evidence presented in Sections 4.2.8 and 4.3.8 that some are not aware of all that is happening in the school in relation to the programme. One parent (Section 4.3.8) pointed out that the communication between the school and the parents should improve because she assumed that this is one reason why most parents are not involved.

Sections 4.2.8 and 4.3.8 reported that even if there is a Parent Teacher Association (PTA) in each Eco-School the programme is not discussed during the meetings by teachers who are aware of it. It is mostly teachers who are members of the PTA and there wasn't evidence from findings to elaborate on reasons for the former. The Eco-School programme alongside other structures at school is mostly the teachers' responsibility. It is understandable that it works better this way because teachers are there most of the time, but at times teachers cannot commit themselves more towards the programme since they have other responsibilities as teachers and employees of the Ministry of Education. For instance, one teacher from case 1 reported that some of the teachers who are members of the core group cannot at times participate in Eco-School committee meetings during lunch time because

they are conducting ground supervision (Section 4.2.3). In line with the former constraint, Wenger-Trayner and Wenger-Trayner (2011 – Section 2.8) state that this is a challenge for members in the community who are trying to contribute to the joint enterprise and cannot do so because they have other competing priorities to handle.

One parent from case 1 argued that teachers are trying to seek the support of parents but the parents are still not showing any interest. However, one teacher from the same school suggested that some teachers need to improve on their approach to parents because parents do not feel at ease to relate with the teachers. Uemura (1999 – Section 2.8) argues that this is one factor why members in the community such as parents are not involved because of negative experiences with other people such as teachers in the community. Uemura (*ibid*) also claims that for this reason parents are not comfortable to interact with other teachers or participate in the activities organized in the community.

A parent from case 1 added that the organization of activities in the school is mostly during the weekdays and most parents are working at that time (Section 4.2.8). Another parent claimed that, even if the teachers are organizing activities and encouraging parents to participate, the students claim they are independent enough and do not wish to see their parents engaged in the programme (Section 4.3.8).

Another constraining factor noted by the core group in each Eco-School is the lack of funds to support the programme at the school. The Eco-School committee explained that they need money for some of the activities and projects that will encourage more people to participate and learn. One parent in case 1 pointed out that it is difficult to receive sponsorship from organizations because they fail to see the value of the Eco-School programme in the school (Section 4.2.8).

5.5 Concluding summary

This chapter provided insights into how stakeholders are participating and learning in the community of practice in each Eco-School. The conceptual framework of situating learning in communities of practice theory was used to provide a better understanding of the contributions from stakeholders in each Eco-School and some examples of how they relate to each other. Some of the learning and participation taking place in each Eco-School community was also discussed. Findings in this chapter demonstrate that the practices and

the levels at which each group of stakeholders are learning and participating in the programme are not the same. Teachers involved in the programme at each Eco-School are taking up most of the leadership roles and also facilitating learning. Only a few parents are involved in the programme and evidence suggests that this is because of several factors such as the time the activities are organized at school, parents' lack of interest to be involved in school life, and lines of communication between parents and the school. Environmental organizations are occasionally providing services to both Eco-Schools and requesting the two Eco-Schools to participate in the activities, competitions and campaigns. Students, who are at the centre of learning in the programme, are learning mostly from the teachers engaged in environmental learning and environmental management activities and projects in both Eco-Schools. In addition some of the factors that enable and constrain stakeholders to participate and learn in each Eco-School were also discussed. The next chapter will provide a general summary of the findings discussed in this chapter with recommendations drawn from the factors discussed for future consideration.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

Good governance occurs where decision making is distributed across the school community and involves students in an appropriate way. Good governance is important for schools because it helps them to maximise their use of physical and human resources in a manner which is economically, ecologically and socially sustainable (Department of Environment and Heritage, 2005).

6.1 Introduction

This chapter concludes with a summary of findings and proposes some recommendations for future consideration. At first I will present a synopsis of the study and the findings from Chapter Five taking into account each of the analytical statements. Recommendations to be considered to improve stakeholder involvement in the programme and for future research will also be discussed. I will then conclude with a discussion on some limitations of the study.

6.2 Summary of the study

This research was guided by two main questions:

- 1) How are stakeholders participating and learning in each Eco-School investigated of the Seychelles Eco-School programme? and
- 2) How are the participation and learning of stakeholders enabled and constrained in the two schools investigated?

Two schools were purposefully chosen to provide data that would inform the research questions. A variety of methods were used: semi-structured interviews and focus group discussions to collect information from the students, parents, and teachers' experiences of stakeholder participation and learning in the programme. Questionnaires were also completed by organizations that were working closely with each Eco-School investigated. Analysis of several documents was conducted to provide insights into the research interest. A research journal was also kept for personal reflections during fieldwork. Data generated from all five sources of information was analysed in two phases. Both phases of analysis involved the use of a constant comparative method to identify categories in the data that answers the research questions. Phase one of the analysis informed Goal one of the research, namely, describing how stakeholders are participating and learning in Eco-School activities and projects within the six elements of school community. This description was presented in

Chapter 4. Phase two informed Goal two, namely, deepening the discussion on how the stakeholders are participating and learning within the six elements of school community using the model of situated learning in a community of practice. Phase two also informed goal three of the research namely to analyse and identify the different factors that have enabled or constrained stakeholder participation and learning in the programme and was presented in Chapter 5.

The findings generated from the research questions and goals have the potential to inform the Seychelles Government of the current situation of stakeholders' participation in the programme within a primary school context and a secondary school context as outlined in Section 1.4. This will provide baseline data to improve the programme so that all groups in society play an active role in the development of schools in support of national policies for quality education and promotion of EE/EfS (Ministry of Environment and Energy, 2012, Ministry of Education, 2001).

6.3 The key findings

As discussed in Chapter 5 there are four analytical statements. The summary below summarises the findings for each of the statements based on the research goals.

1) Different practices within the Eco-School community provide opportunities for participation and learning

All seven learning situations created through the six practices/elements of the Eco-School community provide opportunities for stakeholders to participate and learn in the programme. Students and teachers are predominantly participating and learning in the programme with occasional participation of some parents and environmental organizations.

Many of the teachers are participating and learning in joint discussions, organization of curriculum, planning of lessons, through environmental activities and projects, teacher professional development sessions and through partnership with environmental organizations. These provide opportunities for teachers to interact with peers and other adults to share knowledge and experiences on environmental topics and environmental related issues in context.

Students are given opportunities by the teachers to participate and learn through interactions in different environmental learning situations at school, namely, in environmental clubs, classrooms, environmental activities and projects. Events organized by environmental organizations, field trips and visits are some of the enabling opportunities for students to participate and learn outside school.

There is a group of parents and organizations sharing knowledge alongside the teachers in the two schools and the Ministry of Education (2010 – Section 2.6) suggests that this is crucial to the school's development and greater achievements in education. There are fewer opportunities for students, parents and organizations to participate in the planning and discussions regarding the programme.

2) Stakeholders are participating and learning through different practices at different levels in the Eco-School community

The stakeholders are operating at different levels in the practices of the Eco-School community. The teachers are operating in the core and active group of the Eco-School community, mostly as leaders, planners of lessons, activities and projects, enforcers of the Eco-Code, facilitators of environmental learning and of their own learning. Students are operating in the active and occasional group working alongside teachers in environmental projects and activities placed at the centre of learning in the programme. Students are occasionally sharing what they have learnt at school on an environmental topic with their parents at home. Parents are operating mostly in the occasional group as facilitators of learning on environmental topics, sharing ideas in the programme and providing materials for environmental learning and projects at the school. The environmental organizations are operating in the occasional and transactional group, providing services to both Eco-Schools in the form of donations of learning support materials, facilitating environmental learning, and requesting the participation of the two Eco-Schools to participate in the activities and campaigns that they have initiated at national level.

3) A variety of contextual variables enable the participation and learning of stakeholders in the programme

There are several factors that have enabled stakeholders to participate and learn in the programme. These include stakeholders' shared interest in facilitating learning that promotes care for the sensitive environment of Seychelles and some of the research

participants have also indicated that this is influenced by their passion for the environment. In addition, stakeholders also have the interest to invest time and share knowledge and experiences in the programme so as to help the school receive special recognition in the national Eco-School competition. A group of teachers' collective effort has contributed substantially in the leadership, management and administration of the programme to be integrated successfully in the daily running of the two Eco-Schools. It is through the commitment of the committee that teachers, students, parents and organizations are also participating and learning in the programme. The environmental activities and projects in the Eco-Schools are regarded by research participants to be providing opportunities for stakeholders to interact and learn from each other. It was also discussed in Section 5.4 that stakeholders who recognize and share the knowledge and experience that they have will can be an enabling factor for participation and learning in the programme. It was also outlined that there is regular communication between teachers and students regarding the programme and this influences the teachers and students to be kept up to date about the activities and projects for them to participate and learn.

4) *A variety of contextual variables constrain the participation and learning of stakeholders in the programme*

Several issues have been recognized to constrain stakeholder participation and learning in the programme. The time that most of the activities and projects are organized at school is an inconvenience for most of the parents who are at work and cannot be there to also participate. The two schools have several programmes to implement and this creates tension for teachers to organize and commit time for the Eco-School programme. The issue of financial support was also raised and believed to be essential to fund projects that would provide opportunities for adults and students to participate and learn from each other. Other factors, namely, personal commitment and lack of communication amongst stakeholders were also indicated to constrain participation and learning in the programme.

6.4 Recommendations

It was discussed in Chapter 5 that each group of stakeholders is involved in the programme at different levels. Over the years the disparity in stakeholders' level of participation has not hindered the community of practice in each Eco-School to remain on their learning agenda.

This is because the schools have managed to respond to the national programme's criterion - promoting environmental learning and environmental management actions, amongst others as highlighted in Chapter Four.

In view of some of the strengths of stakeholders' participation and learning in the programme, the following are some of the recommendations for other Eco-Schools to consider.

In both Eco-Schools investigated evidence in Sections 4.2.3, 4.3.3 and 5.2.1 suggests that there is a strong Eco-School committee with teachers who are committed to the implementation of the Eco-School programme in the daily operation of the school. Their commitment as discussed in Section 5.2.1 could potentially serve as a guideline for other Eco-Schools to consider when establishing an Eco-School committee or ensuring consistency in the functions of the committee at the Eco-School. Eco-Schools could consider having short meetings during lunch time and after school hours so as to meet to discuss and plan for activities and projects that consider the interests and ideas of adults and students.

Regardless of the difference between both Eco-Schools investigated, one being a primary school and the other being a secondary school, the two schools illustrate similar opportunities for stakeholders to participate and learn in the programme. These are across the six elements/practices of each Eco-School community in support of the formal curriculum, teacher professional development programmes, co-curricular programmes, and school development programmes. With these taken into consideration, Eco-Schools can ensure that the Eco-School framework is implemented with the support of most teachers and students at the school with support from parents and environmental organizations. If the Eco-School framework is integrated across different elements/practices at the school (such as teacher professional development sessions, curriculum learning and co-curricular activities), teachers and students can be given more opportunities to engage in environmental learning and environmental management practices.

Apart from the above-mentioned, strengthening the lines of communication between stakeholders in an Eco-School community can ensure that matters related to the programme are brought to the attention of teachers, students, and their partners. This could involve a trickle-down approach as evident in cases 1 and 2 starting from the Eco-School committee

who shares information to teachers at cycle/departmental level and during staff morning briefings. Then information is also shared by the Head-teacher during the general assemblies for students and staff, during the 15 minutes briefing by class teachers with students before class starts, by teachers during general parents' meetings and through other forms of communication such as newsletters and letters distributed to parents by their child.

In view of the stakeholders' contributions and interest in the programme and some other constraining factors outlined in Chapter 5, the following are some recommendations for the Seychelles Government and its partners to consider to further improve stakeholder participation and learning in the Eco-School programme.

In order to strengthen inclusivity in the programme students could be included in formal fora to give them the opportunity to participate and contribute ideas. In other words, students should be given a voice in the programme to provide their own views for activities and projects through consultations that could be done at cycle level by the teacher representative who sits on the Eco-School committee. Students could also be given the opportunity to participate in Eco-School committee meetings to be involved in the planning and coordination of the programme. It could be some students who are active in the programme, students who are members of the students' council at the school, the head boy or head girl of the school, or at the discretion of the Eco-School committee after consulting other teachers and students. Students would at least be given the opportunity to be involved in dialogue and decision making in the programme and, in doing so, integrate the interest of other students. This will be a move away from students' role of just being learners and participants responding to instructions. Rahnema (1992 – Section 2.3.2) argues for a shift from manipulation to freedom, where people such as students are empowered to succeed in life as they learn to solve problems and represent peers who wish to have their needs addressed in school life.

Based on discussion in Section 5.2, it would be ideal if each Eco-School provided opportunities for students to also facilitate environmental learning and have their input in the planning and discussions in the programme. This will support the Ministry of Education's policy framework on school governance (2011 – Section 2.6) that encourages schools to provide opportunities for students to share their views on school-related issues for them to reflect on their own learning and development and for the development of the school.

There could be a forum for students, teachers, parents and organizations to come together and discuss the issues that are present in the programme and suggest new mechanisms in line with their interest to improve stakeholder participation in the programme. Van de Fliert (2010 – Section 2.5) explains that through collective efforts stakeholders are able to assess and test different alternatives that will lead to desirable needs. Stakeholders will have the chance to look at the issues after they are made aware of the problems and reflect on them as opportunities for improved partnership in support of policies that promote learning on Environmental Education/Education for Sustainability.

Van de Fliert (*ibid*) adds that internal problems (interpreted in this research as internal school problems) should not be the only focus, but also problems that are happening within the local context. For example, stakeholders can discuss socio-ecological issues to emphasize the need for improved collaboration between the school and the wider community. The advantage of such an approach would not only promote the need for collective efforts to empower individuals to take care of their environment but also provide the opportunity for parents and organizations to suggest how they can support the teachers.

Furthermore, findings in each Eco-School illustrated a lack of awareness about the Eco-School programme amongst the wider community as one factor constraining participation. A national campaign on the Eco-School programme is recommended to inform most of the parents and organizations in the country about the programme. The Ministry of Education which is the institution responsible for the coordination of the programme at national level might request the support of other partners like the Ministry of Environment and Energy to participate in the campaign. This could include publicity in media through advertisements and educational programmes with the involvement of some Eco-Schools.

I would, therefore, urge all Eco-Schools, the Ministry of Education and other partners to consider the above mentioned recommendations. The aim of these recommendations is not to focus on the effectiveness of the Eco-School programme, but to provide meaningful participatory and learning experiences in schools with support from stakeholders.

6.5 Reflexively looking back at the research process

Several methodological constraints were encountered during the research process. Changing the date and time for interviews was one of them because a few participants forgot about the interview and some had other unforeseen commitments to attend to. One school took some time to submit some documents that were required for the research and another school did not have the Eco-School portfolio for year 2010 that would have provided other information useful for this research.

If similar research was to be conducted, several changes would be considered to improve the data generation process. First of all, some questions in the semi-structured interview were not necessary. These could have been replaced by questions that provide deeper understanding of the factors that enable and constrain stakeholder participation and learning in the programme.

More time would have been useful to analyse data from the contextual profile (Emilie, 2013) in line with the research interest. Data from the contextual profile would have been useful to include in Chapter Four to provide insights on how some of the organizations participate in the programme.

6.6 Conclusion

The two case studies have provided information on stakeholder participation and learning in the Eco-School programme. Findings for each case study are fairly similar, outlining that there is a community of practice in each Eco-School with the active involvement of teachers and students and occasional participation by some parents and organizations. Some contextual variables have been identified as positive and negative influences on stakeholder participation and learning in each Eco-School. Learning is seen to be happening through social interaction amongst students and adults while they engage in discussion, activities and projects in the programme.

I would like to draw from Epstein (2010) and emphasize that partnership is vital at this stage when programmes like the Eco-School programme are striving to promote environmental education/education for sustainability. By drawing on different groups in society to take the responsibility of supporting teachers in this educational endeavour, a caring community is likely to form around the schools. It is hoped that this research will contribute findings to

potentially enhance the partnerships that exist between schools and the wider community to improve the Seychelles Eco-School programme.

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Appendices

Appendix 1: *The criterion of the annual competition of the Seychelles Eco-School programme*

CRITERION:

Schools will be judged on the basis of the following criteria.

A) MAINTENANCE PRACTISES

- (1) Cleaning Methods and Materials
 - Environmental-friendliness of cleaning agents and materials
 - Cleaning frequency
- (2) Rubbish Disposal Methods
 - Waste sorted into categories:
Recyclables, organics, non recyclable, other
 - Recycling, use of STAR
- (3) Conservation initiative
 - Water
 - Energy
 - Solid waste management
- (4) School Appearance
 - Classrooms clean and attractive
 - School grounds tidy and attractive
 - Building Maintenance (depending on the year the school was built and its location)
- (5) Pest Management
 - Prevention
 - Environment-friendly control methods

B) ADMINISTRATION PRACTISES

- (1) Conservation Initiatives
 - Paper
 - Energy
- (2) School Environment Decision-Making
 - involvement of teachers
 - involvement of support staff
 - involvement of students
 - involvement of parents

- (3) Participation in school activities and projects
- involvement of management members
 - involvement of teaching/non-teaching staff
 - involvement of students
 - involvement of parents

C) CONSERVATION INITIATIVES

- (1) Conservation Activities
- Action projects
 - Conservation of local ecosystems promoted in the school
- (2) schoolyard naturalisation
- designated area set aside and maintained for wildlife habitat
 - natural area used by classes
- (3) International Links
- School membership in environmental organisation
 - Other

D) Environmental Education

- (1) Field Trips links to curriculum
- Frequency
 - Aim to promote conservation and respect for living things
- (2) EE Integration Across the Curriculum
- Teacher initiatives
 - School initiatives
 - PTA
- (3) Environmentally Friendly Clubs
- Frequency of meetings
 - Activities
 - Members and leaders
- (4) Co-curricular Environmental Activities
(e.g. Subios, Environment Week, etc.)
- Of activities
 - Degree of school participation
- (5) Other EE Projects
- Initiated by school
 - Initiated externally(local, regional, international)

Appendix 2: The flags



Green flag for Level 3 schools



Yellow flag for Level 2 schools



Blue flag for best practices in water management



Orange flag for best practices in energy management



Dark red flag for best practices in waste management



School Environment leaders working on the flags for Eco-School new award system

Appendix 3: One sample page of the EE Policy of the Ministry of Education and Culture, Seychelles

Ministry of Education and Culture

EE Policy

January, 1997

CONTEXT

1. It is the policy of the Ministry of Education and Culture to promote and support an understanding, valuing, respect and appreciation of the environment that is reflected in all of its activities. The implementation of this policy is the collective responsibility of all employees and students of the Ministry of Education and Culture.
2. the Ministry of Education and Culture acknowledges:
 - *the inherent value of all life forms and life-giving ecosystems;*
 - *that people are an integral part of nature;*
 - *that the limited resources of the Earth necessitate sound management and conservation practices.*

EDUCATION DEVELOPMENT

1. EE

- (i) The MEC shall promote EE for all staff and students, with the aim of enabling members of society to develop a sense of caring and respect for our environment as a whole, and to develop the knowledge, skills, values and commitment needed to participate in the conservation and sustainable management of a healthy environment.
- (ii) The MEC shall work in partnership with the Division of environment, other Ministries, recognized government and non-government organizations, and individuals in order to promote EE in the formal education system.
- (iii) The MEC shall promote the integration of EE across the curriculum, from Creche to Polytechnic, at both the curriculum development and classroom levels.
- (iv) The EE Coordinating committee shall be responsible for coordinating the integration of EE within the formal education system.
- (v) The EE Sub-committee shall be responsible for facilitating the integration of EE across the curriculum, in collaboration with the Subject committees in the curriculum Development Section.

Appendix 4: The principle of 'global participation' in details from Seychelles Ministry of Education's policy document entitled 'Education for a Learning Society'.

Education for Global Participation

The exponential growth of science and technology in recent years has created an awareness of the vulnerability of planet Earth, and sharpened our sense of inter-connectedness as citizens of a world where irresponsible environmental action or protracted civil conflicts at a local level can have global repercussions on the health and economic growth of nations, as well as on our personal and social well-being. Communication technology has not only brought the world much closer to our shores, but has given us the capacity to tap into a wealth of information which can be harnessed for our own development and enrichment. A mastery of modern media of communication by young people will ensure that Seychelles can operate confidently within a commercial and cultural environment that increasingly relies on the rapid transfer of information by electronic means.

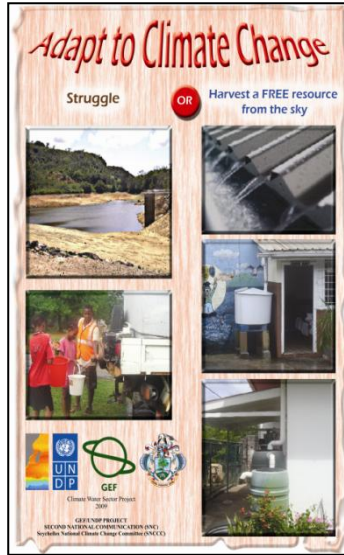
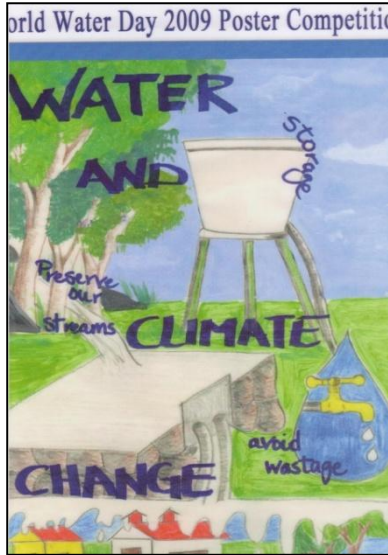
Seychelles' contribution to the realisation of two of mankind's most cherished aspirations, namely, the twin achievements of world peace and sustainable development will be enhanced through an education which promotes our tradition as a society sensitive to environmental issues and committed to policies emphasising the social/human aspects of development. Our ability to pursue these policies in a climate of stability will depend on the extent to which education can help to consolidate a democratic ethos and a culture of human rights which draws its vitality from vigorous critical discourse, tempered by tolerance.

"Education for Global Participation" encapsulates the following key concepts:

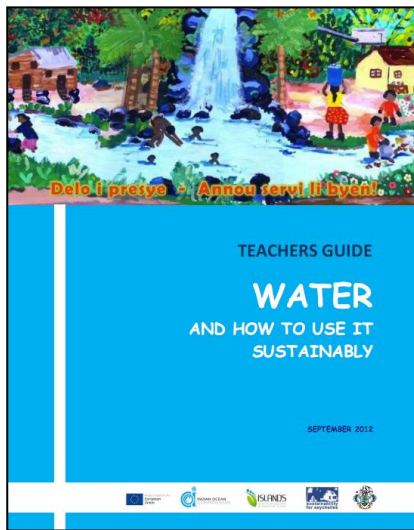
- ◆ commitment to environmental protection and principles of sustainable development
- ◆ building a culture of peace and harmony
- ◆ development of a sense of regional identity
- ◆ preservation of / capitalising on our culture of multi-lingualism
- ◆ competitiveness on the world market through development of our human resources
- ◆ understanding the concept of the 'global village' and its implications for our development
- ◆ understanding and building on the specificities/strengths of a small island state.

Appendix 5: Samples of learning support materials and photos relating to water management

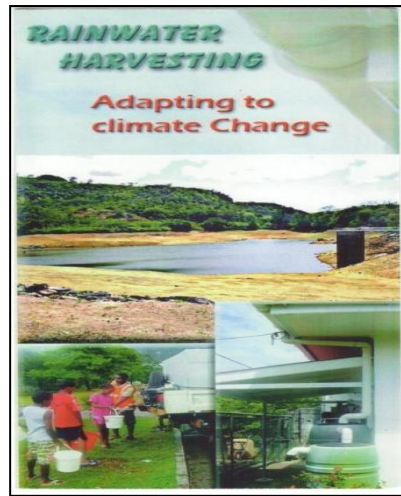
Posters



Resource book



Leaflet

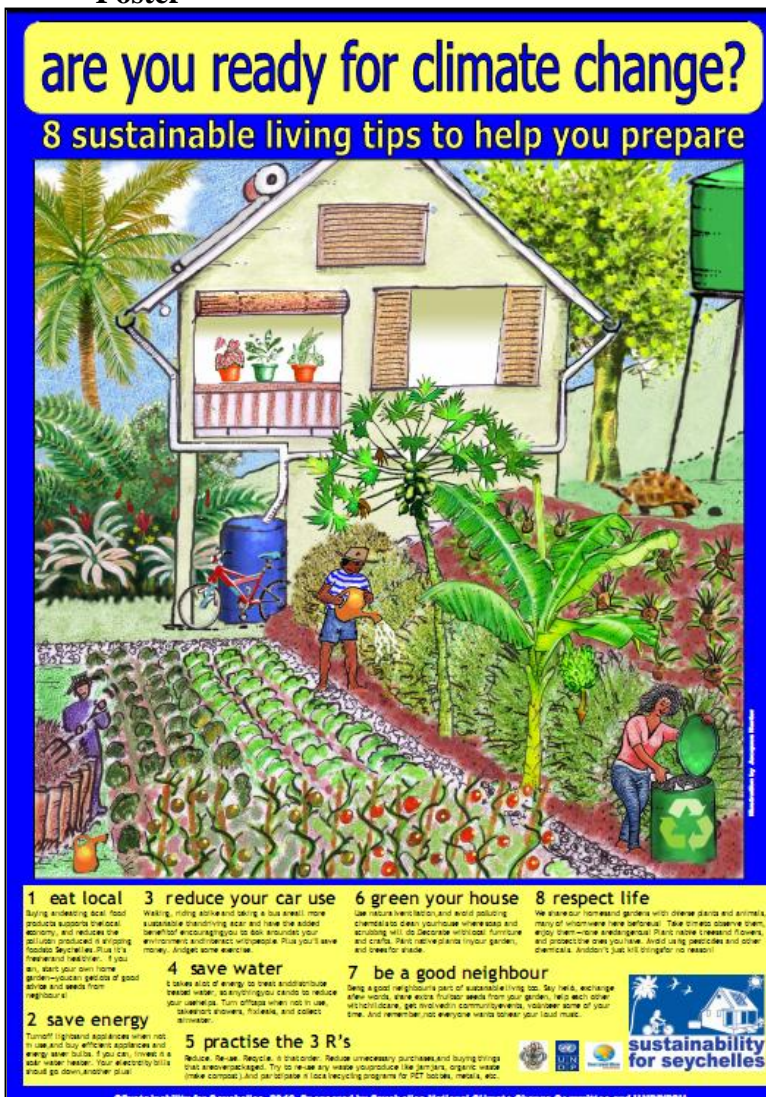


Rainwater harvesting project at some schools



Appendix 6: Samples of learning support materials and photos relating to climate change education (cc)

Poster



Sticker



Book



Workshop for School Environment leaders on climate change

Appendix 7: Sample of piloted interview schedule

The questions

The Eco-School programme

1. What do you know about the Eco-School programme?
2. How would you describe the current situation of stakeholder involvement in the Eco-School programme?
3. How do you feel about the current situation of stakeholder participation in the Eco-School programme? Why do you say so?
4. How is the programme integrated into the everyday running of the school? (is it included in administration, curriculum organisation, teaching and learning, resources, school environment, networks and partnerships)
5. Based on the information provided in the previous question, describe in details how the programme is linked to:
 - a. Administration
 - b. Curriculum organisation:
 - c. Teaching and learning:
 - d. Resources:
 - e. School environment:
 - f. Networks and partnership:

Learning to participate by stakeholders in the programme (Based on the use of relationships, culture?? knowledge, skills, prior experience, prior knowledge and values)

6. How would you describe your relationship with the school community in relation to the Eco-School programme?
7. How would you describe your experience of the school's relationship with other teachers, students, parents and local organizations in relation to the programme?
8. Give some examples of the knowledge, skills and values you are contributing towards the implementation of the programme in the school?

Comment [R4]: I like the questions – they look mostly useful – I hope you won't find it is too long for the interviewees – you can test this as you pilot it ...

Comment [R5]: Why not just ask WHO is involved at this stage and then Q4 covers HOW they are involved?

Comment [R6]: I would move this question to the end – after you asked in depth questions about stakeholder participation, then you can ask for overall comment (strengths and suggestions for improvements)??

Knowledge

Skills

Values

9. What prior knowledge and prior experience do you have in relation to environmental education that is supporting the programme in the school?

10. Does the school provide the same opportunities for other teachers, parents and students to make use of their knowledge, skills, values, prior experience and prior knowledge? If yes, How?

Participating to learn by the stakeholders in the programme (Based on evidence of actions, interactions, reflection, communication and negotiation).

11. In what ways are you involved in the implementation of programme in relation to:

Administration

Curriculum organisation

Teaching and Learning

Resources

School environment

Networks and partnerships

12. In what ways are teachers participating in the implementation of the programme in relation to:

Administration

Curriculum organisation

Teaching and Learning

Resources

School environment

Comment [R7]: I like the questions below, but my feeling is that they will only elicit info about ACTIONS and that interactions, reflections, communication and negotiation may not be that strongly emphasised (besides question 17 which might get some interesting data)???

13. In what ways are students participating in the implementation of the programme in relation to:

Administration

Curriculum organisation

Teaching and Learning

Resources

School environment

Networks and partnerships

14. In what ways are local organizations participating in the implementation of the programme in relation to:

Administration

Curriculum organisation

Teaching and Learning

Resources

School environment

Networks and partnerships

15. Does the school have a communication system to disseminate information regarding the programme to all teachers, students, parents and organizations? How is this done for each group?

Teacher

Students

Parents

Local organizations

16. Are you aware of any structure in school for parents, teachers and organizations to meet, discuss and work together for the implementation of the programme in school? Kindly provide more details.

17. How are **students** involved in contributing ideas and decision making in the programme?

Comment [R8]: Why only students?

18. What is the school doing together with parents and local organizations for learning to take place in the programme? (such as professional development sessions, projects, educational activities, environmental week)

19. ~~How would you describe the number of~~ **How many** parents and teachers participating in the programme?

20. ~~How would you describe the number of~~ **many** students participating in the programme?

21. What is your interest in the programme?

22. How do you feel to be part of the implementation of the Eco-School programme in the school?

23. In general what do you think are the benefits of the programme?

24. Do you think the school is doing enough to provide students with the opportunity to participate and learn from the programme? Why do you say so?

25. Do you think the school is doing enough to provide adults (teachers, parents, and organizations) with the opportunity to participate and learn from the programme? Why do you say so?

26. Any suggestions to improve stakeholder participation in the programme?

End of interview questions.

Thank you for your time and contribution to this research. Once again, for confidentiality purposes your name will not be used in the written work and the information. Thank you.

Appendix 8: Interview schedule

Purpose

The purpose of this interview is to gather information on ways that teachers, students, parents and organizations are participating in the Seychelles Eco-School programme within a primary context and secondary school context. This will provide specific information on how the community in the schools are participating and learning within the six elements of school community such as teaching and learning, physical surrounds of school, resources, networks and partnership. The school has been chosen purposefully in order to provide information based on years of experience as a registered school on the Eco-School programme. The findings will provide an overview of some of the enabling and constraining factors of the participation of teachers, students, parents and organizations in the programme in the school.

Instructions for interviewees

Please answer all questions for this interview to the best of your knowledge and understanding. Kindly note that there are no right or wrong answers for each of the questions in this interview. The information you provide will provide an overview of the current situation of teachers, students, parents and organizations participation in the programme. For confidentiality purposes your name will not be used in the written work.

The questions

The Eco-School programme

1. What do you know about the Eco-School programme?
2. Who are involved in the programme?
3. Describe in details how the programme is linked to these elements of school community:
 - a. Leadership, management and administration
 - b. Curriculum planning
 - c. Teaching and learning
 - d. Resources
 - e. Physical surrounds of school
 - f. Networks and partnership

Learning to participate by stakeholders in the programme (Based on the use of relationships, culture, knowledge, skills, prior experience, prior knowledge and values)

4. How would you describe your relationship with the school community in relation to the Eco-School programme?
5. How would you describe your experience of the relationship between teachers,

students, parents and organizations in relation to the programme?

6. Give some examples of the knowledge, skills and values you are contributing towards the implementation of the programme in the school?

Knowledge

Skills

Values

7. What prior knowledge and prior experience do you have in relation to environmental education that is supporting the programme in the school?

8. Does the school provide the same opportunities for stakeholders (teachers, students, parents, organizations) to make use of their knowledge, skills, values, prior experience and prior knowledge? If yes, How?

Participating to learn by the stakeholders in the programme (Based on evidence of actions, interactions, reflection, communication and negotiation).

9a. In what ways are you involved in the implementation of programme in relation to these elements:

Leadership, management and administration

Curriculum planning

Teaching and Learning

Resources

Physical surrounds of school

Networks and partnerships

9b. In what ways are students participating in the implementation of the programme in relation to these elements:

Leadership, management and administration

Curriculum planning

Teaching and Learning

Resources

Physical surrounds of school

Networks and partnerships

9c. In what ways are the adults (teachers, parents and organizations) participating in the implementation of the programme in relation to these elements:

Leadership, management and administration

Curriculum planning

Teaching and Learning

Resources

Physical surrounds of school

Networks and partnerships

10. Does the school have a communication system to disseminate information regarding the programme to all stakeholders (teachers, students, parents, organizations)? How is this done for each group?

Teacher

Students

Parents

Local organizations

11. Would you agree that there is good communication between the stakeholders to participate in the programme? Why do you say so?
12. Are you aware of any structure in school for adults (teachers, parents, organizations) to meet, discuss and work together for the implementation of the programme? Kindly provide more details?
13. In what ways are the adults (teachers, parents and organizations) reflecting and negotiating before implementing any activities or projects related to the programme?
14. How are students involved in this process of reflecting to contribute ideas and making decisions in the programme?
15. What are some other ways that stakeholders are interacting together for learning to take place in the programme? (apart from communicating, reflecting and negotiating as a community do they interact within environmental visits, environmental activities, professional development sessions, environmental weeks, environmental projects, environmental clubs etc...)
16. What is your interest in the programme?
17. How do you feel to be part of the implementation of the Eco-School programme in the school?
18. In general what do you think are the benefits of the programme?
19. Do you think the school is doing enough to provide students with the opportunity to participate and learn from the programme? Why do you say so?
20. Do you think the school is doing enough to provide adults (teachers, parents, and organizations) with the opportunity to participate and learn from the programme? Why do you say so?
21. How do you feel about the current situation of stakeholders' participation in the Eco-School programme? Why do you say so?
22. Any suggestions to improve stakeholders' participation in the programme?

End of interview questions.

Thank you for your time and contribution to this research. Once again, for confidentiality purposes your name will not be used in the written work and the information. Thank you.

Appendix 9: Consent form for interview

INTERVIEW

Consent for audio recording and transcription

I _____ agree to:

Please tick the appropriate box and sign.

1. have the interview recorded
2. have the recorded interview transcribed
3. provide permission to the interviewee to use the transcript for research purposes
4. inform the interviewee of my intention to withdraw at any stage of the interview in case I do not feel at ease to proceed

Please note that this consent is effective as of today.

Interviewee signature: _____ Date: _____

Appendix 10: Sample of pilot focus group discussion questions

FOCUS GROUP DISCUSSION WITH STUDENTS

The questions for discussion:

1. Are you aware of a programme at school called the Eco-School programme?
2. What do you know about the programme?
3. In what ways do you (and others?) participate in the programme inside the classroom?
4. In what ways do you (and others?) participate in the programme in outdoor activities and projects?
5. How do other students participate in the programme inside the classroom?
6. How do other students participate in the programme in outdoor activities or projects?
7. Does your school provide all students including yourselves with the opportunity to contribute ideas and take decisions in the programme? How is this done?
 - 8a. Between teachers and parents, who are more involved in the programme at the school?
 - 8b. What makes you say so?
 - 9a. Do you think the school is doing enough to involve more teachers in the programme?
 - 9b. If yes, what is the school doing that encourages teachers to participate in the programme?
 - 9c. If no, what is the school not doing to encourage the teachers to participate in the programme?
 - 10a. Do you think the school is doing enough to involve more students in the programme?
 - 10b. If yes, what is the school doing that encourages students to participate in the programme?
 - 10c. If no, what is the school not doing to encourage the students to participate in the programme?
 - 11a. Do you think the school is doing enough to involve more parents in the programme?
 - 11b. If yes, what is the school doing that encourages parents to participate in the programme?
 - 11c. If no, what is the school not doing to encourage the parents to participate in the programme?
12. What do you like about the Eco-School programme?
13. Is there anything interesting that you have been learning from the programme?
14. Any suggestions of how the students could be more involved in the programme?

Comment [R9]: In order to reduce length you might consider integrating 5 and 6 into 3 and 4

Comment [R10]: I am not sure about the usefulness of this question – your interest is not quantitative as far as I know

Comment [R11]: Mostly in a focus group discussion I think the b and c questions are not necessary – they should come up anyway as you probe for more detail.

Comment [R12]: Might be difficult for students to comment on ... maybe just ask how teachers are involved?

Comment [R13]: You need to see a focus group discussion as quite loose so I imagine you will not need to ask these questions – they should simply be encouraged as you facilitate the discussion

Comment [R14]: Is the evaluative tone of this question necessary? It may put the students on the spot – how about just asking them how parents are involved – if you get a sense from them that there is not enough encouragement, you can gently probe this?

Appendix 11: Key questions for focus group discussion with students

The key questions for discussion

1. Are you aware of a programme at school called the Eco-School programme?
2. What do you know about the programme?
3. In what ways do you and others participate in the programme inside the classroom?
4. In what ways do you and others participate in the programme outside the classroom?
5. Does your school provide all students including yourselves with the opportunity to contribute ideas and take decisions in the programme? How is this done?
- 6a. Between teachers and parents, who are more involved in the programme at the school?
- 6b. What makes you say so?
7. How are teachers involved in the programme inside and outside classroom?
8. How are parents involved in the programme inside and outside classroom?
9. How are organizations involved in the programme inside and outside classroom?
10. What is the school doing to encourage students to participate in the programme?
11. What is the school doing to encourage adults like teachers, parents and organizations to participate in the programme?
12. What do you like about the Eco-School programme?
13. Is there anything interesting that you have been learning from the programme?
14. Any suggestions of how students could be more involved in the programme?

End of discussion

Thank you for your time and contribution to this research. For confidentiality purposes your name will not be used in the written work and the information. Thank you.

Appendix 12: Key questions for focus group discussion with Eco-School committee

The key questions for discussion

1. What is the role of the committee members for the implementation of the Eco-School programme?
2. How is the programme integrated in the daily running of the school?
3. What is the role of the teachers, students, parents, and organizations in the programme?
4. What are some of the strengths and outcomes of stakeholder participation in the Eco-School programme?
5. What are some of the learning taking place in the programme amongst all stakeholders?
6. How is the following being used by stakeholders while they are learning to participate in the programme: (elements should be on flashcard)

Relationships

Knowledge

Skills

Culture

Cognitive skills

Values

Prior experience

7. What are the opportunities/mechanisms available for stakeholders to participate in the programme through the following: (elements should be on flashcard)

Actions

Interactions

Communication

Reflection

Negotiation

8. What are some factors constraining stakeholders to participate? [looking at relationship, language, culture, time constraints, mechanisms in schools, communication etc...]
9. Any suggestions to improve stakeholder participation in the programme?

10. In what ways can the Eco-School committee contribute to greater impact of stakeholder participation in the programme?

End of discussion

Thank you for your time and contribution to this research. Once again, for confidentiality purposes your name will not be used in the written work and the information. Thank you.

Appendix 13: Consent form for focus group discussion

FOCUS GROUP DISCUSSION

Consent for audio recording and transcription

| Name of in | Position in school | Initial |
|------------|--------------------|---------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

I _____ on behalf of all the participants above agree to:

Please tick the appropriate box and sign.

1. have the focus group discussion recorded
2. have the recorded focus group discussion transcribed
3. provide permission to the researcher to use the transcript in written work

Please note that this consent is effective as of today.

Signature: _____ Date: _____

Appendix 14: Form for parental consent

CONSENT FORM FOR PARENTS

[School logo]

Date: _____

Dear Parent/Guardian

Mr. Shane Emilie from Rhodes University, South Africa, will be conducting a research into the current situation of how teachers, parents, and students are participating in the Seychelles Eco-School programme at _____ school. His research will involve some of the teachers, students and parents from the school to provide necessary information based on the research interest mentioned above. The school has selected your child, _____ to participate in a focus group discussion that will take place at the school on _____ at _____ a.m/p.m. The discussion will focus on how students are given the opportunity to participate in the implementation in the Eco-School programme and also how other teachers, parents and organizations are participating in the programme.

Kindly fill in the spaces below to provide permission for your child to participate in the research.

I _____, the parent/guardian of _____ hereby agree for _____ (name of child) to participate in the focus group discussion to contribute positively to the research conducted by Mr. Shane Emilie.

Yours Sincerely

Head-teacher

[School name]

Appendix 15: Sample of document log

| Document type | Date of production | Source/author | Main contents | Value of the document | Use in analytic memo |
|--|--|----------------------|---|--|----------------------|
| Professional Development Plan and Evaluation Plan | Term 1, 2012 Term 2, 2012 Term 3, 2011 Term 2, 2010 Term 2, 2009 | School 2 | Time plan for Professional Development sessions per term with remarks | Evidence of the programme in Professional Development sessions for teachers | |
| School Improvement Programme minutes of meetings | Term 1, 2011 | School 2 | Points on agenda discussed during School Improvement Programme meetings | Evidence of the programme discussed during School Improvement meetings | |
| School Three year Development Plan (2009-2011) and its evaluation report | January, 2009 December, 2011 | School 2 | Action plans in support of the programme Evaluation of the action plans with recommendations | <ul style="list-style-type: none"> • The school's support of the programme when they plan for the three year cycle to address issues within action plans on teaching, learning, support guidance and pupil welfare • Achievements in relation to the Living Values Project • Integration of environment education in teaching and learning • Achievements on physical surrounds of school • Relationship between stakeholders | |
| Eco-School minutes of meeting | 2010, 2011, 2012 & 2013 | Eco-School committee | Points on agenda discussed in relation to the elements of | <ul style="list-style-type: none"> • Evidence of members of the committee | |

| | | | | | |
|--|------------|----------------------|--|--|--|
| | | | school community | <ul style="list-style-type: none"> • Evidence of what is discussed during the Eco-School committee meetings • Evidence of some of the reflection and negotiation taking place during the meetings | |
| PTA/School Council minutes of meetings | 2012 | School Council | Points on agenda that relates to the programme | Evidence that Head-teacher with support of other teachers takes up issues/matters arising in the programme on during the meetings | |
| Eco-School portfolio | 2011, 2012 | Eco-School committee | Record of achievements in the programme | <ul style="list-style-type: none"> • Evidence of how stakeholders are learning and participating in the programme • Examples of some projects implemented in the programme • Photos as evidence of stakeholders participation in activities and projects in the programme | |

Appendix 16: Sample of completed questionnaire

Questionnaire

Purpose

The purpose of this questionnaire is to gather information on how your organisation participates in the Seychelles Eco-School programme within a primary school context and/or secondary school context. This will provide specific information on how your organisation in collaboration with teachers, students and parents are participating and learning within the different elements of school community such as teaching and learning, physical surrounds of school, resources, networks and partnership. Your organisation has been purposefully chosen based on contribution made to the school when implementing the Eco-School programme. The findings will provide an overview of some of the enabling and constraining factors of the participation of teachers, students, parents and your organization in the programme in the school.

Provisional research title: An investigation of teacher, student and parent participation in the Seychelles Eco-school programme: a case study of two eco-schools.

Instructions for respondent

Please answer all questions in the questionnaire to the best of your knowledge and understanding. This questionnaire consist of two parts: A & B. You are required in **Part A** to a tick under *yes* or *no* next to each questions and feel free to elaborate under the *comments* column. In **Part B** there are other question that requires your time to answer in brief so as to support some of the questions in **Part A**. Kindly note that there are no right or wrong answers for each of the questions in this questionnaire. The information you provide will provide an overview of the current situation of teachers, students, parents and organizations participation in the programme. For confidentiality purposes your name will not be used in the written work.

Date: June 19th 2013

School: 

Name of organisation: Wildlife Clubs of Seychelles

Number of years supporting the school: 19 years

Do you agree to complete this questionnaire to the best of your knowledge?

Yes No

Part A

| Questions | Yes | No | Comments (Please feel free to elaborate on your option from the left) |
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| <i>Based on the Eco-School programme in the school:</i> | | | |
| 1. Are you supporting the school in its implementation? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • Up on requested • Whenever there are project • Special events (Theme Days) • Provide ideas on how to run an environmental club in school base and running environmental programme |
| 2. Do you provide support for curriculum planning before teachers starts to plan and deliver lessons for each term? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • Meeting with the subject teachers Science and Environment coordinators / Wildlife club leaders • Discussion on Enviro resources and planning for field trips |
| 3. Do you provide support for environmental teaching and learning? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Teacher's manual e.g. <ul style="list-style-type: none"> • Wetlands Manual • Endangered species fact sheets • Posters (birds, habitat, Native plants Etc...) • Provide funding with available for field trips and micro project in school base • Support to create and design Heritage, medicinal and wildlife garden project (garden tools, nursery) |
| 4. Do your support the school with materials development to facilitate teaching and learning? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • Wetlands Manual • Endangered species fact sheets • Posters (birds, habitat, Native plants Etc...) • Power point presentation on Enviro topical issues |
| 5. Do you support the school in managing the resources? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Equipment and other materials in the past donated to the school has been poorly maintained and managed/ most of the time it has been misplaced and disappear |
| 6. Do you provide support to the school to manage its environment? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Project funding and self initiatives |
| 7. Do you provide support in its administration at the school? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Click here to enter text. |
| 8. Do you contribute environmental knowledge in the implementation of the programme? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • Advise • Loan of equipment E.g. binoculars ect... |
| 9. Do you provide support in environmental related skills demonstration and development at the school? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • According to project funding ongoing |
| 10. Is your organization | | | <ul style="list-style-type: none"> • Valuing wetland |

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| promoting any values in the school? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • Valuing Endangered Species and Habitats • Living value |
| 11. Do you support the programme by facilitating professional development sessions for teachers? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Click here to enter text. |
| 12. Have you observed any students and parents in these sessions? (Should be answered if your answer in question 11 is yes) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Click here to enter text. |
| 13. Do you support the school with environmental project (s)? (If the answer is yes please take some time to list some examples in part B of this questionnaire) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <ul style="list-style-type: none"> • Wetlands are a must project • Heritage and Medicinal garden project • Endangered species project • Birds are Brilliant Project • Our Rivers Our Heritage project |
| 14. Do you support the school with any environmental activities? (If the answer is yes please take some time to list some examples in part B of this questionnaire) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Water Wetlands Rivers Endangered Species Habitats Birds Murals paintings |
| 15. Do you support the school with any environmental visits or field trips? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Field trip to the Flycatcher special reserves on La Digue island Field trip to visit rivers Field trip in the World heritage sites the Vallée de mai |
| 16. Have you requested the service of the school for any national environmental activities or environmental theme days? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | International Environmental Theme Days Biodiversity Day Wetlands Day World Water Day |
| 17. Does the school have a good communication with your organization? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Via Phone calls and emails |
| 18. Do you participate in any school meetings or Eco-School committee meetings at the school in relation to the programme? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Somehow |

Appendix 17: Sample of field notes

There is a good atmosphere that prevails at the school. Students have good relationships amongst each other and the same applies for teachers. Students even have a good relationship with the teachers and I believe this is why the school environment is conducive for learning. I did not encounter any problems during the data collection in the field because the school was friendly to me as the researcher. Everyone on the management team were supportive when I needed them to provide some documents or clarify any points regarding information in the documents. The head-teacher and the School Environment leader were given a short feedback of the days I spent in the school so as to show my gratitude to their cooperation and understanding during the data collection preparation and collection.

I was able to start analysing the data from the different data collection sources such as interviews and focus group discussion. I recognized the fact that my first interviewee was not truthful in some of her answers for my good particular questions regarding students' participation in the programme. Interviewee one stated that students

sit on the Eco-school committee when in fact when I had the focus group discussion with the members of the committee none of the students were present, and when I asked the questions about students' participation in contributing ideas and in decision making in the programme other members on the committee explained that students does not sit on the committee to do this and there is no forum for them to do it. However, they did emphasised on students given the opportunity to contribute ideas in the teaching and learning process for field trips, visits based on lesson topics for curriculum.

Teachers are still the main decision maker and initiators in the programme. Students are just most of the time responding to their instructions so as to engage in environmental activities or projects. Parents are not involved in the programme directly, because they are only contacted to provide resources or consent for the child to participate in field trips, environmental visits or environmental activities. Even if there is a Parent and Teacher Association, the association does not discuss about the Eco-school programme often. They meet only once a month and discuss more on issues like students' behaviour, upcoming events, assessments, resources to support teaching and learning (not specifically to the programme). I am surprised to make this observation because the PTA chairperson is one of the leading environmental educator in the Seychelles, who is also a consultant. However, I am

Appendix 18: Sample of matrix for Phase One of analysis

PHASE ONE

School code: 1

Source of data: Interviews, Focus group discussions, Questionnaires, Documents and Field notes

| Data source | Code |
|-------------------------|--------|
| Interviews | I.1 |
| Focus group discussions | FC.1 |
| Documents | D.1 |
| Questionnaires | QU.1.1 |
| Field notes | JN.1 |

Note: All extracts in italics are direct quotations from the source of data

| Colour code | Categories | Sub-categories | Extract | Reference |
|-------------|--|---|---|---------------------------------------|
| | Stakeholder interests in the programme | Reinforcing the effectiveness of the programme | <ul style="list-style-type: none"> <i>How much they know about the environment and also they need to display any kind of activity that they may have done. Just to try to score points and be finally recognised for their efforts for trying at least to meet certain environmental issues or interests</i> | I.1.4 (line 4-7, p. 1) |
| | | | <ul style="list-style-type: none"> A group of teachers with support of some students and parents are putting effort for the school to meet the criteria of the programme and do the utmost to win <i>What's the use for you to participate in something when you know you have not put all the effort and all the other things in it and then you are going to participate for you to lose?</i> | FC.1.1 FC.1.1 (line 262-264, p. 8) |
| | Development of the school to more sustainability practices | <ul style="list-style-type: none"> To create a conducive learning environment at the school | I.1.1, I.1.2 | |
| | | <ul style="list-style-type: none"> The students participate so as to improve the school ground and make it become environmentally friendly | I.1.1, I.1.2 | |

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| | | <ul style="list-style-type: none"> • <i>Well I like when we go outside and also when we plant new plants in the school and also help the school to come much healthier and not littering everywhere</i> | FC.1.2 (line 143-144, p. 5) |
| | | <ul style="list-style-type: none"> • Most parents are only interested to participate when their support is requested and some parents like the PTA chairperson is interested to participate by providing resources and ideas for the development of the school | I.1.2, I.1.4 |
| | Empowering stakeholders in the programme | <ul style="list-style-type: none"> • Teachers with support of some parents are preparing students as future leaders/care-takers of the environment of Seychelles through environmental learning | I.1.1, I.1.2, I.1.3 |
| | | <ul style="list-style-type: none"> • <i>...to encourage pupils if I may say to be aware of their environment to take care and to beautify their environment so that it will be a place that they will enjoy themselves to live</i> | I.1.2 (line 3, p. 1) |
| | | <ul style="list-style-type: none"> • As a parent and PTA chairperson to encourage learning in the programme for the benefits of the students • <i>..to get students to keep on learning to do something useful rather than sit back and let time pass</i> | I.1.4 I.1.4 (line 290-291, p. 8) |
| | | <ul style="list-style-type: none"> • <i>I think deep in their mind they have this environmental consciousness, so whether when they grow up to become who they want to be in the field of study or when they go out there to work. I mean when they join the work force, probably it will ring a bell. This is my aim to at least get them at a very early age, to put something in their mind and, you know, bring some good values out of them to take care of nature</i> | I.1.4 (line 303-307, p. 9) |
| | | <ul style="list-style-type: none"> • <i>I [student] love the Eco-School programme because it makes you discover more about environment and the parts of your school.</i> | FC.1.2 (line 151-152, p. 5) |
| | | <ul style="list-style-type: none"> • For students to learn about the environment and some of the socio-ecological issues that are affecting it so as to do something about it | FC.1.2 |
| | For personal benefits | <ul style="list-style-type: none"> • As a teacher to develop knowledge and skills that could be | I.1.1 |

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| | | applied in every-day life within a different context such as at home | |
| | | <ul style="list-style-type: none"> • <i>My opinion, it's the same people [teachers], even the helpers [assistant teachers] they're not really trained people but they are interested in helping, to learn, have fun and discover</i> | I.1.4 (line 209-210, p. 6) |
| | | <ul style="list-style-type: none"> • <i>So it all depends on the activity, and how interesting it is, and how you organise it. If you give it enough time and you send reminders and try to organise it properly-that's the missing part</i> | I.1.4 (line 214-216, p. 6) |
| | | <ul style="list-style-type: none"> • Some students participate in the programme because it is fun and they are rewarded for their participation in environmental activities or competitions • <i>The teacher encourage them [students] to participate in the environmental activities and the children thinks after the activities they will get a reward, that's why they participate in a lot of things. They see children from other schools and also from here; getting rewards like just the two kids from P1-P2 they got a reward for a poster competition</i> | FC.1.2 FC.1.2 (line 135-138, p. 5) |
| | Raise awareness about the programme | <ul style="list-style-type: none"> • <i>As a parent to involve more parents in the programme because when I go in the community I talk a lot about the Eco-School programme many parent doesn't know about programme.</i> | I.1.3 (line 181-182, p. 6) |
| | Passion for the environment | <ul style="list-style-type: none"> • Students and adults are interested in the environment of Seychelles and contribute towards its protection • Students are interested in the environment because of the interesting activities that promotes care for the environment | I.1.1, I.1.2, I.1.3, I.1.4, FC.1.1, FC.1.2 FC.1.2 |
| Leadership, management and administration of the programme | | <ul style="list-style-type: none"> • Mostly teachers and one parent are members on the Eco-School committee • <i>...cycle members, we have the librarian, we have a specialist teacher and then we have our informal ways whereby we pass on our information to students...Then there's the management but it's not always that we have them in the meeting due to constraints of other things that comes up or they don't just make</i> | I.1.1, I.1.2, I.1.4, FC.1.1 FC.1.1 (line 7-9, p.1) |

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| | | | <i>the effort to come</i> | |
| | | | <ul style="list-style-type: none"> • <i>We have a representative from each cycle to represent the group of teachers. It's the teachers who bring points discussed to other teachers at their cycle and come back to us to tell us what they have discussed with other teachers</i> | I.1.3 (line 159-161) |
| | | | <ul style="list-style-type: none"> • <i>Mostly teachers who sits on the Eco-School committee discuss, take decision and plan for the coordination of the programme</i> • <i>The Eco-School committee is influential when it comes to the types of activities and decisions that are made sometime at the school, because it comes from us the committee members and then it moves through the other teachers and then it is implemented</i> | I.1.2, I.1.4, FC.1.1, FC.1.2 FC.1.1 (line 205-207, p. 6) |
| | | | <ul style="list-style-type: none"> • <i>The PTA chairperson supports the Eco-School committee whenever he can so that there are new activities and projects</i> • <i>Well as the PTA chairperson, of course now it becomes a bit more of a responsibility. Before I was doing it for fun, now I have to get it right... So the first thing with regards to administration, of course to push the head of school or the administrators of the programme, especially when it's a bit stagnant, I would say. Things which suppose to happen in one term, takes a few years, I would say, there is a very slow progress-whether this is not a priority for schools? This is my main question.</i> | I.1.4 I.1.4 (line 148-153, p. 5) |
| | | | <ul style="list-style-type: none"> • <i>The teachers meet on a regular basis to discuss on upcoming environmental activities and theme days, for projects and other environmental related issues in school</i> • <i>The meeting is informal conducted mostly during lunch time and not all teachers can participate because they have other school responsibilities</i> • <i>Whereas for us we have to use our lunch hour, sometimes we are able to meet or sometimes we don't eat for us to be able to conduct the meeting. Because we don't have a specific time to</i> | I.1.1, I.1.2, I.1.3, FC.1.1, D.1-ESM (2012) FC.1.1 FC.1.1 (line 225-228, p. 7) |

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| | | | <p><i>conduct the meeting all the teachers are involved in all the classes-sometimes it is not possible to have all the members present to conduct the meeting.</i></p> <ul style="list-style-type: none"> • Mainly the teachers that sits on the committee and also teachers at the school are involved in reflecting and negotiating for environmental activities or projects • <i>...when we propose something we go back to the teachers in morning briefing, we put it across they have their input as well, if there is a need to change according to what most pupils agree-we learn to agree and to disagree. For example, when we can come up with something if we have not talked about other possibilities and when they [teacher] come up with something, we do have to consider. It is not our intention to impose on them that they have to do whatever the committee decides on. We go back to them [teachers] they have their input they agree and then we go ahead</i> | <p>I.1.1, I.1.2, I.1.3, FC.1.1</p> <p>FC.1.1 (line 210-216, p. 6)</p> |
| | | | <ul style="list-style-type: none"> • <i>Yes because when the Ministry sends the memos, we meet and discuss in Eco-School committee. When we have finished we discuss with the teachers within a meeting in the school and then the teacher decide if should participate or not.</i> | <p>I.1.3 (line 144-146, p. 5)</p> |
| | | | <ul style="list-style-type: none"> • In few instances, students are consulted after teachers presents the ideas discussed for environmental activities or projects • It's only a small group of students who meets to discuss mostly after the lessons during lunch time with instructions from the teachers or during the club meetings such as for Wildlife Clubs of Seychelles • <i>The students discuss on the students council and they bring back to us</i> • There is no evidence of minutes of meetings for the students' council • <i>We [teachers] take into consideration pupils' responses and then by looking at the physical surrounds of school itself we try</i> | <p>I.1.1, I.1.2, FC.1.2</p> <p>FC.1.2</p> <p>FC.1.1 (line 9, p.1)</p> <p>I.1.2 (line 198-199, p. 6)</p> |

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| | | | <p><i>to come upon a consensus</i></p> <ul style="list-style-type: none"> • <i>I recall sometimes back, for the medicinal garden, the students were involved in its design- they drew a plan and decided where they would like the benches to be.</i> • <i>We [students] have to think and discuss and write down all the things in groups</i> | <p>I.1.2 (line 207-208, p. 6)</p> <p>FC.1.2 (line 62, p. 3)</p> |
| | | | <ul style="list-style-type: none"> • Teachers who sit on the committee are also involved in monitoring how the school compound is used and any issues are then communicated on the committee and then taken up during morning briefings with all teachers or to each cycle by the representatives | I.1.2, FC.1.1 |
| | | | <ul style="list-style-type: none"> • Teachers on the committee ensures that teachers incorporate objectives related to environment learning in termly plans and lesson activities | I.1.2, FC.1.1 |
| | | | <ul style="list-style-type: none"> • The PTA chairperson argued that the committee functions more as a group because they only meet to discuss about activities • <i>I think this would be a bad idea to think of a committee. Because already even the PTA committee doesn't exist, so I wouldn't expect Eco-School committee too</i> | <p>I.1.4</p> <p>I.1.4 (line 225-226, p. 7)</p> |
| | | | <ul style="list-style-type: none"> • The School Environment leader who is the chairperson of the Eco-School committee suggested that the Eco-School committee should work like the School Improvement committee, whereby the teachers can have a special time allocated for them to meet and discuss about the programme | FC.1.1 |
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| | Stakeholder involvement in curriculum planning | | <ul style="list-style-type: none"> • Only teachers meet and plan for different subjects at the beginning of each term- students, parents and organizations are not involved | I.1.1, I.1.2, I.1.3 D.1-ER (2011) |
| | | | <ul style="list-style-type: none"> • Teachers organize objectives from the curriculum for their particular subjects at the beginning of each term in a termly plan. Teachers also incorporate topics and objectives that promote environmental learning in their termly plan. | <p>I.1.1, I.1.2</p> <p>FC.1.1 (line 20-23, p. 1)</p> |

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| | | | <ul style="list-style-type: none">• <i>At the beginning of each term teachers are reminded to include topics on their termly plans related to the environment-when I say environment we don't only speak only about the environment itself, we also emphasize on the other skills such as social skills and know the different values for them to be able to pass it to the environment</i> | |
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Appendix 19: Sample of matrix for Phase Two of analysis

PHASE TWO


School code: 1 and 2

Source of data: M.1 and M.2 and partly in semi-structured interviews

| Colour code | Categories | Sub-Categories | • Discussion points | Sections of evidence |
|--------------------|--|--|---|-------------------------------|
| | <p>Stakeholder involvement and contributions in the practices of each Eco-School community</p> <p><i>Statement: Stakeholders are participating and learning through different practices at different levels in the Eco-School community</i></p> | <p>Teachers as leaders, planners, enforcers, facilitators of environmental learning and facilitators of their own learning</p> | <ul style="list-style-type: none"> • Teachers as the most active and large group of facilitators of environmental learning in the programme integrating environmental topics and objectives in their subjects or through other activities • They make use of different methods and resources to provide interesting learning experiences for the students • Reminding students to engage in sustainability practices of switching off lights and using water wisely, amongst others so as to reinforce the Eco-code • A group of teachers are engaged in environmental activities such as to commemorate theme days and projects such as beautification and maintenance of school ground, managing a small mangrove forest that runs through the school etc... • Motivate students to become involved in the activities • Group of teachers as leaders, managers and administrators of the programme • Doing their own research and consulting each other to prepare lessons and activities in support of environmental learning | <p>Sections 4.2 & 4.3</p> |
| | | <p>Students as learners and facilitators of</p> | <ul style="list-style-type: none"> • Students are treated as learners • Students respond to instructions and complete given tasks assigned to them by teachers | <p>Sections 4.2 & 4.3</p> |

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| | their own learning | <ul style="list-style-type: none"> • At times students are given the opportunity to reflect during lessons on a topic for example they are asked what actions can be taken to protect the different living things in the eco-system • Students are applying what they are learning from the adults such as teachers at school such as little practical things of switching off fans when leaving class, using water facilities wisely and proper use of bins as resource management practices • A group of students as who helps out the teachers to monitor how other students use the school grounds during recreational time • Students are also sharing what they have learnt at school in their home context • A group of students are actively engaged in environmental activities such as to commemorate theme days or participate in competitions and also in projects alongside the group of teachers | |
| | Parents as facilitators of environmental learning and resource providers | <ul style="list-style-type: none"> • Few instances a minority of parents facilitate environmental learning in class upon invitation from the teachers • A group of parents are involved in activities and projects as participants and shared knowledge acquired from family members • Parents are also there to provide support for their child in home context when completing task given by teachers • Some of the parents also contribute materials and provide consent for their child to participate in environmental field trips and visits <p><u>Differences in Case one</u></p> <ul style="list-style-type: none"> • The PTA chairperson is actively involved by facilitating environmental learning, providing ideas in the management and administration of the programme and seek for assistance from other organizations to support the programme | Sections 4.2 & 4.3 |
| | Organizations as facilitators of environmental | <ul style="list-style-type: none"> • At times upon invitation by the teachers some of the organizations facilitate environmental learning on an environmental topic with students in class based on their field of specialisation | Sections 4.2 & 4.3 |

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| | | learning, leaders, initiators and resource providers | <ul style="list-style-type: none"> • Teachers also at times benefit from presentations conducted by the organizations upon invitation by the school during Professional Development sessions • Organizations also donate learning support materials that they have produced in support of environmental learning • Provide funding for projects in school • Initiate campaigns and activities for the schools to participate such as the Tree planting campaign initiated by the Ministry of Environment and Energy and SUBIOS creative writing and art-work competition initiated by the Ministry of Education in collaboration with the Ministry of Environment and Energy and Save our Seas Foundation (refer also to contextual profiling) | |
| | <p>Contextual variables as enablers of participation</p> <p><i>Statement: A variety of contextual variables enable the participation of stakeholders in the programme</i></p> | | <ul style="list-style-type: none"> • Joint enterprise of providing opportunities for students to engage in learning that promotes care for the environment • Reinforcing the effectiveness of the programme • It is mostly the teachers and students who are interested to work together in activities responding to environmental issues • Teachers are involved in the programme so as to meet the criteria of the programme and be recognized at national level for their achievements • Interest by teachers to improve the school's daily running into more sustainable practices • There is a good relationship amongst teachers and students since they are regularly interacting together in the programme • Teachers also get along well with parents who are participating in the activities organized in the programme • Communication system to disseminate information about upcoming activities or achievements within the programme-it is more within the school amongst teachers and students through meetings, briefings or assembly • Once more teachers and students are working together for the school to become environmentally friendly | Sections 4.2 & 4.3 |

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| | | | <ul style="list-style-type: none"> • Enthusiast for the physical surrounds of school • Enthusiast for the sensitive environment of Seychelles striving to contribute towards its protection • The programme is providing opportunity for students to learn about the environment through the different mechanisms such as teaching and learning with mostly teachers as facilitators of learning • The activities are considered to be interesting and encourages stakeholders to interact • Students interest to participate in the programme is also because they want to be recognized for their individual potential • Students also participate because they wish to receive incentives for their participation in environmental activities and competitions • Teachers are motivating students to participate in the activities and competitions • Students find the activities interesting and promotes care for the environment • Students volunteers to participate in the competitions supported by their parents • Teachers professional experience of facilitating learning, experienced of using a variety of methods and activities that caters for students' needs | |
|  | <p>Contextual variables as constrainers of participation</p> <p><i>Statement: A variety of contextual variables constrain participation of stakeholders in the programme</i></p> | | <ul style="list-style-type: none"> • Organization of activities needs improvement because it is not communicated properly to parents • Some of the adults do not make the effort to participate in the programme because of other pressing matters and their level of interest for the programme is • Teachers have other responsibilities and cannot make time to attend the Eco-School committee meetings • The dates that activities are organised especially for commemoration of theme days is during working hours so most parents cannot be there to participate • Rarely there is discussion about the programme during PTA meetings | Sections 4.2 & 4.3 |

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| | | | <ul style="list-style-type: none"> • Mostly teachers are present for the PTA meetings and this is one reason why parents are not involved in the programme • The school is making an effort for parents to support the programme and most of them are not showing interest • The school needs money to fund some of the activities or projects and organizations are reluctant to assist because their budget is already set for other expenses or they do not see the value of providing money • Some of the teachers' does not have a friendly approach to the parents • Less communication between teachers and parents unless the parents needs to provide consent for their child to go for a trip or for them to donate resources • Not all parents know about the programme this is why a parent suggested that the communication system needs to be improved | |
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Appendix 20 (a): Sample of termly plan for School 1

P5 Social Studies Term3 2013

| Weeks/ Dates | Topics | Objectives | Resource | Assessment | Comments |
|------------------|----------------------|---|---|--|----------|
| 1/2 9/20Sep | Seychelles Island | <ul style="list-style-type: none"> -Define archipelago orally and in written. -Discuss about some example of archipelago in the world. -Discuss some facts about Seychelles Archipelago numbers of islands who discovered it ect. -Discussion about the type of island in Seychelles. -Discuss about the facts of a granitic island. | Map of the world Trial Edition (island of Seychelles P6) | | |
| 3/4 23sep-Oct | Seychelles Island | <ul style="list-style-type: none"> -Locate the granitic island of Seychelles. -Describe the physical features of the coralline islands of Seychelles. -state the number of coralline islands in Seychelles. -Name and locate coralline islands of Seychelles. -Describe and locate the inner and outer island of Seychelles. -Name the four main islands of the Seychelles. -Name the four main islands of the Seychelles. | Map of Seychelles The physical geography of Seychelles bks. | Assessment 1 Answer question based on granitic and coralline island of Seychelles. | |
| 5/6 | Seychelles Island | <ul style="list-style-type: none"> -State and explain that Mahe is the physical island of Seychelles. -Describe the physical features of Mahe. -Identify mountains, districts and places of interest on Mahe. -Identify places of historical interest on Mahe. -Describe the economic activity on Mahe (Tourism, fishing, agricultural, industries) | Map of Mahe Pupils work book | Assessment 1 | |

| | | | | | |
|------|----------------------|--|--|-----------------|--|
| 7/8 | Seychelles Island | <ul style="list-style-type: none"> -Describe some way people on Mahe socialise. -State example that Praslin is the second longest Island in Seychelles. -Describe the physical features of Praslin. -Identify mountains on Praslin (name, height, locate) -Identify the two districts on Praslin. -Identify places of interest on Praslin. Explain the importance of these places. Locate those places on a map of Praslin. -State the monument on Praslin. -Describe the economic activity on Praslin. | Map of Praslin Pupils work book Pictures | Assessment 2 | |
| 9/10 | Seychelles Island | <ul style="list-style-type: none"> -State and explain that silhouette is the third largest island of Seychelles. -Describe the physical features of Silhouette island. Identify the highest mountain on Silhouette. -Identify places of interest on Silhouette. Locate these places on a map of Silhouette. -Describe economic activities on Silhouette. -State and explain that La Digue is the fourth largest island in Seychelles. -Describe the highest peak on the island. -Identify places of interest on La Digue. Explain the importance of these places. -Locate these places on a map of La Digue. -Describe the economic activities on La Digue. | Map of Silhouette Pupils work book Map of La Digue Pupils work book | | |

Science P6
Third Term : 2013-

| Week /Date | Topic | Objectives | Resources | Assessment |
|--|--|---|---|--|
| Wk 1(9 th to 13 th September) | Shadow/Streamlining | -Discuss about what causes shadows. ✓ -Observe and note the position of the shadows of different objects (including themselves) at different times of the day. ✓ -Compare the lengths of shadows at different times of the day. ✓ -State the importance of streamlining. ✓ -Give examples of objects with streamlined shape ✓ | -Exam papers -Light/torch -Chalk -Paper -Pictures | |
| Wk 2 (16 th to 20 th September) | Plant Needs and Function/Water treatment | -State the function of the different parts of the plants (roots, leaves, stem fruit and flower). ✓ -State the needs of a plant: ✓ -Describe a plant that has been deprived of sunlight and water. ✓ -State and explain the different processes involved in the treatment of water. ✓ | -OHP -Example of real plants -papers | |
| Wk 3 (23 rd to 27 th September) | River | -Define the term river. ✓ -Describe the importance of rivers in our life. ✓ -Analyse given experiments. ✓ -Identify the different types of pollution that happens in a river. ✓ -Describe the effect of water pollution on our health. ✓ | -Small nets -water basin -Researched information -pictures | End of week three: Assessment 1 |
| Wk 4 (30 th September to 4 th October) | Soil | -State the different types of soil. ✓ -Carry out experiments to find out which soil can retain more water. ✓ -Analyse given experiments about air and water in relation to soil. ✓ | -different types of soil -clear containers | |
| Wk 5 (7 th to 11 th October) | Groups of animals | -Classify given animals according to their eating habits and their teeth structure. ✓ -State the characteristics of an insect. ✓ | -Pictures of animals -Chart of teeth | End of week 5 Assessment 2 |

diseases - thyroid fever, dysentery, vomiting, diarrhoea, cholera.

| | | | | |
|---|--|---|--|------------------------------------|
| | | -State the different groups of vertebrate and their characteristics. | structure -P6 Science book | |
| Wk 6/7 (14 th to 25 th October) | | | | |
| Wk 8 (28 th to 31 st October) | Digestive/Respiratory system | -Identify the different parts of the digestive system. -Describe the path that food takes through the digestive system. -State the diseases of the digestive system. -Identify the different parts of the respiratory system. -Explain the breathing process. -Name some diseases of the respiratory system. | -Book 'Scott Foresman -Chart -Researched information | |
| Wk 9 (4 th to 8 th November) | Force of air/Simple machine | -Define air resistance. -Carry out experiments to compare air resistance on small and large surfaces. -Define the term simple machine -State the names and functions of different simple machines. -Identify the importance of using simple machines in everyday life. | -Chart -Pictures -Book 'Scott Foresman | |
| Wk 10 (11 th to 15 th November) | Life cycle of plants and animals/plants, Birds | -Compare the life cycle of plants and animals. -State the importance of the role of reproduction in nature. -Identify the different types of birds' beak and the type of food that they eat. | -OHP -Pictures -Chart | End of week 10 Assessment 3 |

Appendix 20 (b): Sample of lesson plan for School 2

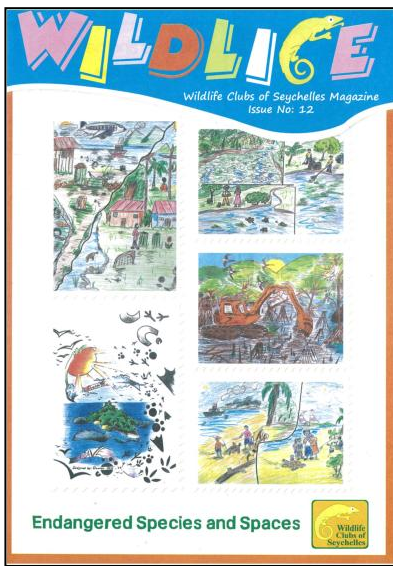
SCHOOL: XXXXXXXXXX

IGCSE CHEMISTRY 0620

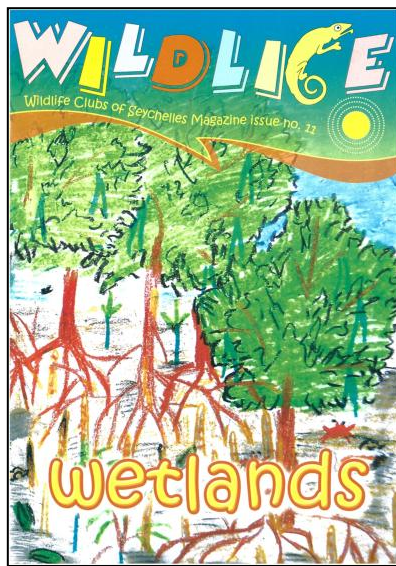
WEEKLY SCHEME / LESSON PLAN

| | | |
|--|--|---|
| <p><i>Chemistry for IGCSE, 6.6</i> Extracting aluminium. (S refers to material in the supplement)</p> <p>Approximate timing for this section: 40 minutes</p> <p>Cambridge IGCSE Syllabus Link (curriculum content numbers in brackets)</p> <ul style="list-style-type: none"> Name the main ore of aluminium as bauxite (10.3a core) Describe in outline the manufacture of aluminium from pure aluminium oxide in molten cryolite (5 supplement) Describe electrolysis in terms of the ions present and reactions at the electrodes in the examples given (5 supplement) | | |
| <p>Learning Objectives</p> <ul style="list-style-type: none"> The electrolytic cell for the extraction of aluminium has carbon anodes and cathodes (S) The electrolyte in the cell is molten aluminium oxide dissolved in cryolite to lower its melting point (S) Aluminium forms at the cathode and oxygen forms at the anode (which is oxidised away) (S) Write half equations for the electrode reactions (S) | <p>Suggested Teaching Activities</p> <p>Start by showing a sample or picture of bauxite ore and sample or picture of aluminium to show the differences.</p> <p>Highlight the main points in the process, i.e. the role of cryolite, the nature of the electrodes, the reactions occurring at the electrodes, ionic equations for the electrode reaction.</p> <p>Further discussion might focus on the large energy demand for the process because of the high electric current needed and the importance of recycling aluminium.</p> <p>Summarise the extraction of aluminium by showing short film, video clips or pictures of the process.</p> | <p>Extension and Consolidation</p> <p>More advanced students can find out more detail of the extraction process, i.e. the use of sodium hydroxide in purifying the oxide. This forms a link with the amphoteric oxide later in the syllabus.</p> <p>For less advanced students, a kinaesthetic activity illustrating the movement of ions and electrons during the process could be used as reinforcement.</p> |
| <p>Learning Outcomes</p> <ul style="list-style-type: none"> Describe the extraction of aluminium from bauxite (S) Describe the essential conditions in the extraction of aluminium (S) Be able to write half equations for the reactions occurring at the anode and cathode in the extraction of aluminium (S) | <p>Practical Work and Resources</p> <p>Film / video clips of aluminium production.</p> | |

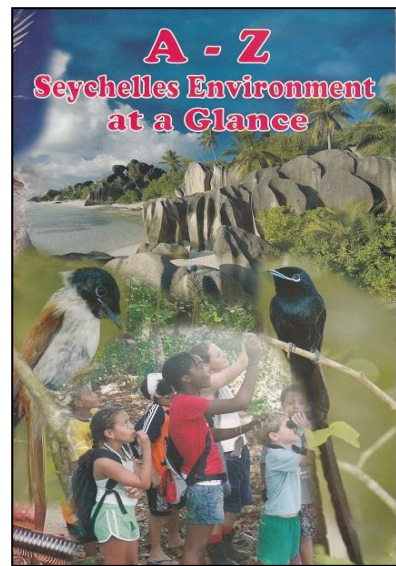
Appendix 21: Sample of other learning support materials donated by organizations



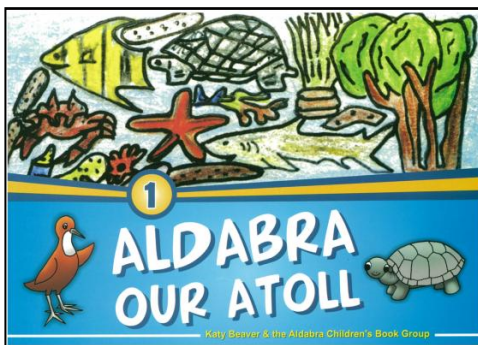
Wildlife Clubs of Seychelles



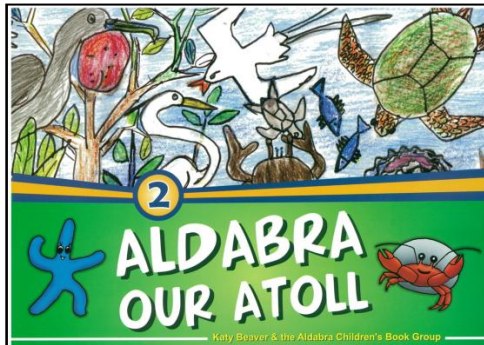
Wildlife Clubs of Seychelles



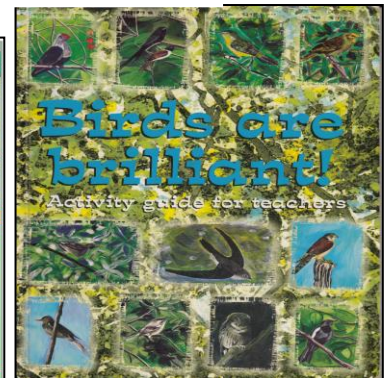
Wildlife Clubs of Seychelles



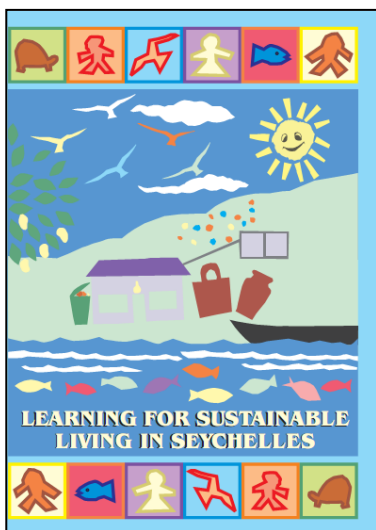
Seychelles Island Foundation



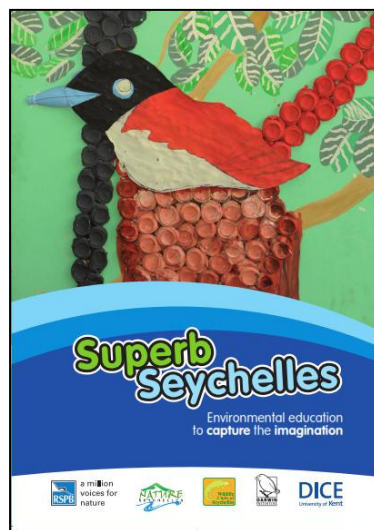
Seychelles Island Foundation



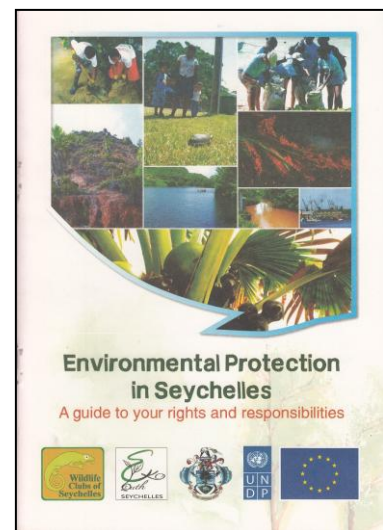
Wildlife Clubs of Seychelles



Wildlife Clubs of Seychelles



Wildlife Clubs of Seychelles



Wildlife Clubs of Seychelles

Appendix 22: Sample of Eco-School committee Action Plan

| Specific theme days | Aims/ Objectives | Dates / Time scale | Activity/ Output | Persons responsible |
|---|--|---|---|---|
| Meetings | To pass on information to members and to take decisions and actions on various issues. | | <ul style="list-style-type: none"> Dissemination of information. Planning of activities | School Environment leader and all committee members. |
| Planting of medicinal plants in relocated garden. | To get students and teachers to be more aware on the importance of using medicinal plants in their lives. | May (Ongoing) | <ul style="list-style-type: none"> Plants from parents and students. Planting of medicinal plants. | All committee members, wild life club leaders and students, parents |
| Environmental education through teaching. | To get teachers to implement environmental education in their lessons and thus allowing students to understand the different aspects of environmental education. | Ongoing. (At least TWO lesson plans from each teacher per Term) | <ul style="list-style-type: none"> Compilation of file on EE for the departments. Educate teachers on EE (workshop during SIP) | All teachers. |
| Implementation of environmental officers' programme. | To further empower students and allow them to take responsibility for the environment in which they live and learn. To help keep the overall environment of the school and its surroundings in excellent condition and free from litter. To promote good environmental values in students. | April 2012-Ongoing | <ul style="list-style-type: none"> Further training for officers. Provide students with badge in assembly. Piloting the programme. | Committee members |
| World Biodiversity day | To instil in students the importance that biodiversity plays in their environment. | 22 nd May: Marine Biodiversity` | <ul style="list-style-type: none"> Across subjects | All committee members and students. |
| Sculpture project | To remove old chairs and desks from school compound through recycling project. | Term 2 (ongoing) | <ul style="list-style-type: none"> Fund raising activity for materials. | Technical teachers. |

| | | | | |
|--|--|---|--|---|
| | | | <ul style="list-style-type: none"> • Construct sculptures to be placed around the school. | Students and committee members. |
| Environment day | To educate and instill in students about the importance in keeping a clean and healthy environment. | 5 th June: Green Economy: Does it include you? | <ul style="list-style-type: none"> • Tree painting • Cleaning school compound | |
| World Ocean day | To raise students awareness of the important role of marine resources in our everyday life and the importance of their sustainable use. | 8 th June: Youth: The next wave of change | <ul style="list-style-type: none"> • Film showing • | Students and committee members. Guest lectures |
| Sustainable development day | To remind students that we need to live a life that supports the environment in which we live, so that the environment can continue to support us and also future generations. | 10 th July: | <ul style="list-style-type: none"> • School level exhibition • Visit to | Students and committee members. |
| Educational visit to Silhouette | To make students aware of the developments taking place on the island and to also learn more about the flora and fauna of the island. | Date to be confirmed. | <ul style="list-style-type: none"> • Visit of the island. • View sustainable practices in the hotel. • Networking with Silhouette primary school. | Students and committee members. |