EXPLORING OPPORTUNITIES FOR
ACTION COMPETENCE DEVELOPMENT THROUGH
LEARNERS' PARTICIPATION IN WASTE MANAGEMENT
ACTIVITIES IN SELECTED PRIMARY SCHOOLS
IN BOTSWANA

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ABSTRACT

The broader aim of this study is to probe participation of learners in waste management activities in selected primary schools in Botswana and through these activities, explore opportunities for action competence development. The study starts by tracing and outlining the socio-ecological challenges that confront children and the historical background of learner-centred education which gave rise to an emphasis on learner participation in Botswana education policy. It then maps out the development of children's participation in the global, regional and Botswana contexts by tracing the development of environmental education from early ecological and issue resolution goals of environmental education to sustainable development discourses. The focus is on policy issues and how learner participation has been represented and implemented in environmental education.

The study then probes the rhetorical and normalised emphases on participation, and seeks further insight into how learners can be engaged in participatory learning processes that are meaningful, purposeful and that broaden their action competence and civic agency.

The study uses the Cultural Historical Activity Theory (CHAT) methodology to build a picture of waste management activity systems in primary schools and to bring to the surface contradictions and tensions in learner participation in these activity systems. These contradictions are used to open up expansive learning participatory processes with learners using the Danish action competence framework. The expansive learning process uses action competence models that provide potential for transformative participation with learners, and new and different opportunities for learner participation.

Case study research was used and conducted in the south eastern region of Botswana in three primary schools in three contexts, namely urban, peri-urban and rural. The data was largely generated through focus group interviews during workshops with children and observations of waste management activities. These two methods formed the main data generation methods. They were complemented by semi-structured interviews with teachers, and other actors in the waste management activities, learners' activities and work, learners' notes, photographs and children's drawings as well as show-and-tell

explanations by learners. Content analysis and the abductive mode of inference were used to analyse data in all three case studies.

Findings from the first phase of the study reveal that participation of learners in waste management activities was largely teacher-directed. This resulted in a mis-match between teachers views of what practices are necessary and important, and children's views of what practices are necessary and important in and for environmental education. Due to culturally and historically formed views of environmental education, the study reveals that teachers wanted children to pick up litter, and this was their primary environmental education concern. Learners on the other hand, identified sanitation management in the school toilets as their primary waste management concern. Teachers had not considered this an environmental education concern.

Using the action competence expansive learning approach, the second phase of the study addressed this tension by opening up dialogue between teachers and learners and amongst the learners themselves through an expansive learning process supporting children's participation and action competence development. Through this teacher-learner dialogical engagement, a broader range of possibilities became available and ideas around participation were radically changed. The study further reveals that the achievement of this open dialogue provided for a better relationship within the school community. And with improved communication came better ideas to solve waste management issues that the community still face on a daily basis, such as too much litter. Newly devised solutions were practical and had a broader impact than the initial ones that teachers had always focussed on. They included mobilising the maintenance of toilets, landscaping the school premises and even re-contextualising the litter management that had always caused tensions between learners and teachers. Children seemed to be developing not only a better understanding of the environment, but also developing the ability to resolve conflict amongst themselves and with their elders.

By engaging in dialogue with children, they became co-catalysts for change in the school community. This study shows that if children's participation is taken seriously, and if opportunities for dialogue exist between teachers and children, positive changes for a healthier environment can be created in schools. It reveals that children also appeared to be feeling more confident and more equipped to consider changes in their environment outside of the school community. The study further shows that participation

in environmental education involves more than cognitive changes as proposed in earlier constructivist literature; it includes in-depth engagement with socio-cultural dynamics and histories in the school context, such as the cultural histories of teachers, schooling and authority structures in the cultural community of the school.

The study recommends that there is need to strengthen Teacher Education programmes to develop teaching practices and support for teachers to identify ways of engaging learners' views on issues in the school in open, dialogical ways. Such Teacher Education programmes should deepen teachers' understandings of learners' zone of proximal development (ZPD), demonstrating how dialogue and scaffolding are part of a teacher's role in supporting learning. This is shown in the three case studies that form part of this study.

Finally, the study also deepens insights of using the Cultural Historical Activity theory (CHAT) to shed light on issues surrounding learner participation within the socio-cultural and historical environmental education contexts of the schools. The action competence models used in the study provide a tool for revealing forms of learner participation. This tool can be used for critical reflections and monitoring of teaching practices in schools.

DECLARATION

I declare that this thesis is my own work, and that all other sources used or quoted have been fully acknowledged and referenced. It is being submitted for the Degree of Philosophy at Rhodes University, and has not been submitted for a degree or examination at any other university.

Nthalivi Silo

Signature………… …………………………………………………

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Dedication

This thesis is dedicated to
my late husband, Sakhe;
my late father, Noah; mother, Maria and my sister, Lubaka

"I wish you were here"

and

my daughter, Wandi

"I would not have coped without you. You were the pillar of my strength"

TABLE OF CONTENTS

CHAPTER 10: SYNTHESIS, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

LIST OF ACRONYMS

AECB	Association of Environmental Clubs of Botswana
CRC	Convention on the Rights of the Child
DWNP	Department of Wildlife and National Parks
EE	Environmental Education
EEASA	Environmental Education Association of Southern Africa
EFA	Education for All
KCS	Kalahari Conservation Society
NCS	National Conservation Strategy
NCE	National Commission on Education
NPE	National Policy on Education
NDP	National Development Plan
NGO	Non Governmental Organisation
PTA	Parents Teachers Association
RNPE	Revised National Policy on Education
SADC REEP	Southern Africa Development Community-Regional Environmental Education Programme
SEC	School Environmental Committee
UN	United Nations
UNDESD	United Nations Decade of Education for Sustainable Development
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
WCED	World Conference on Environment and Development
WMA	Waste Management Activity
WESSA	Wildlife and Environment Society of South Africa
WSSD	World Summit on Sustainable Development
ZPD	Zone of Proximal Development

LIST OF FIGURES

LIST OF TABLES

LIST OF PLATES

LIST OF APPENDICES

PART I
BACKGROUND AND SETTING UP THE STUDY – THE STUDY CONTEXT

CHAPTER 1: CRITICAL CONCERN – AN EMERGING RESEARCH FOCUS

1.1 Introduction

This chapter introduces the study by tracing and outlining the context and the background from which the research focus emerged. This is done through a broad contextual profile of some socio-ecological issues faced by children in Botswana. It provides a history of Botswana's education and associated curricula reforms which are intended to embrace participation through learner-centred education, specifically in environmental education with special reference to waste management activities in schools. It further highlights how these reforms have led to the normalisation of environmental education in schools. Relevant philosophical, social-cultural and historical background information is also provided relating to issues of democracy and socialization of children in Botswana that will help readers to understand the study's rationale and motivation behind the study. Subsequent chapters demonstrate how these aspects influenced the choice of methodological frameworks and methods (see Chapter 5). Finally the chapter outlines the purpose and goals of the study and describes the layout of the thesis.

1.2 A background to socio-ecological issues for children in Botswana

Botswana is rated one of the most successful democracies in Africa and is currently regarded as a model of African democracy (Preece & Mosweunyane, 2004). By most accounts there has been tremendous progress and phenomenal and unprecedented growth in the economy and since independence in 1966, but the country still faces a number of socio-ecological challenges (UNDP Botswana Human Development Report, 2005; Maundeni, 2004; Maundeni & Mookodi, 2004). In spite of the advances that the country has made in the last four decades from being among the least developed nations to its current status as a middle income country, it faces challenges that range

from poverty, unemployment, HIV AIDS, environmental sustainability issues that include land degradation, energy shortages and pollution, waste and sanitation due to rapid urbanisation, youth restiveness and the volatile land issues (Preece & Mosweunyane, 2004; UNDP Botswana Human Development Report, 2005; Maundeni & Mookodi, 2004; Ditshwanelo, 2008; Botswana Government NDP 9, 2003). Evidence abounds of social problems, specifically an upsurge in youth crime and violence against women, a direct result of societal influences such as unemployment (Preece & Mosweunyane, 2004) and substance abuse (Maundeni & Mookodi, 2004). Peer pressure and sexual harassment among the youth are other areas of concern (Maundeni & Mookodi, 2004). Unemployment "tends to be high among the 15-24 age group, which accounts for about 51 percent of the total unemployed, and the 25-39 age group, accounting for 34 percent" (Osei-Hwedie, 2004 p. 11). While acknowledging the effort and many achievements government has made towards addressing these challenges, these problems have been exacerbated by excessive dependence on the state. A slow pace of citizen economic empowerment to address these challenges continues to be identified as the country's foremost development challenge which threatens to reverse the economic development advances made so far (Preece & Mosweunyane, 2004; Botswana Government, 2003; UNDP Botswana Human Development Report, 2005; Ditshwanelo, 2008).

Botswana has made impressive economic development particularly in the mining and livestock sectors which has immensely contributed to the development of education, health, infrastructure and rural development. But the benefits seem to have not yet accrued to the human development of its citizens in terms of their participation in areas of employment and poverty reduction (Botswana Government, 2003, 2007; UNDP Botswana Human Development Report, 2005). This is in spite of government's concerted effort and huge investment into these two areas through various poverty reduction programmes and an attempt to diversify the economy by moving away from the historic dependence on the growth of government spending, and further towards private sector development (Botswana Government, 2007). These socio-economic features of the country, that is high prevalence of poverty, particularly in rural areas, and rural under-employment and unemployment have over the years contributed to a steady increase in rural urban migration (Osei-Hwedie, 2004; Nkate, 1999). Municipal authorities are failing to provide for the infrastructural and human needs of the growing populations, and serious environmental problems particularly poor waste and sanitation management are now threatening the sustainability of the major metropolitan areas,

particularly the low income neighbourhoods (Gwebu, 2003a; Toteng, 2001; Molebatsi, 1998; Segosebe & Van der Post, 1991). Due to overcrowding low income urban neighbourhoods lack adequate water and sanitation facilities as well as facilities for the collection and disposal of solid waste (Gwebu, 2003a, p. 410). Gwebu submits that

> Due to overcrowding, the cleaning and maintenance of latrines in the low-income areas is so poor that the facilities have become a major health hazard which people avoid getting close to. Pit latrines also fill up rapidly, and due to inadequate facilities for their regular drainage, they overflow. Municipal authorities lack sufficient human and infrastructural capacity to deal effectively and timeously with the garbage generated by households (p. 411).

This poses serious health problems for inhabitants in these residential areas which comprise the largest proportion of urban and peri-urban populations in the country.

> Clinic records indicate that the main health problems among infants and children are communicable ones, namely; respiratory infections, skin infections, diarrhoea and minor injuries. Because of malnutrition, the resistance of the victims to these ailments is greatly weakened. Among the adults, STDs and HIV-AIDS, tuberculosis and hypertension are common. Typically, these diseases are closely related to overcrowding. The contraction and spread of these diseases is further facilitated by lack of hygiene and widespread alcohol and drug abuse (Gwebu, 2003a, p. 418).

Gwebu argues that the environment that exists in these crowded neighbourhoods, inadequate infrastructure (lack of proper access roads), lack of open spaces , shortage of recreational facilities (children's playgrounds), poor sanitary conditions, lack of storm water drainage and littering have instilled negative feelings in the residents regarding the quality of their day to day lives (p. 420).

In addition, Botswana has one of the highest HIV prevalence rates in the world. This scourge has led to a high number of HIV orphaned children. By any measure this is a huge challenge and UNAIDS estimated that at the end of 2009 the number of children (under the age of 15) who were orphaned due to HIV/AIDS was 95 000 (UNAIDS Botswana Country Report, 2010). As a result, a substantial part of the country's budget and UN assistance to the country focuses on the fight against the epidemic (UNAIDS Botswana Country Report, 2010; Botswana Government, 2003). But reports have emerged of orphaned children being exploited in their adoptive households (Salaam, 2004).

> Exploitation remains an issue even in countries like Botswana, where the government offers support to orphans. It has been reported that some caretakers, while offering

minimal care, are using children to benefit from the government orphan packages. Children, especially girls, have also reported instances of sexual abuse in their new households. However, many may silently accept it because they have nowhere else to turn for shelter or protection (Salaam, 2004, p. 10).

Orphanhood is frequently accompanied by prejudice and increased poverty, factors that can further jeopardize children's chances of completing school education (UNAIDS, 2010, p. 25). This impedes their capacity and deprives them of future opportunities to better their lives. Salaam (2004, p. 9) found that:

> Children who are orphaned by AIDS often have a lower performance in school than children who are not. The preoccupation with the illness or death of their parents, the isolation due to the loss of friends, and the undertaking of additional work that comes with caring for ill parents or supporting oneself after one's parents has died, often make it difficult for orphaned children to concentrate in school.

Some children who find themselves as heads of households "also face a wide range of issues. The most pressing issues are related to survival needs and poverty" (Babugura, 2008, p. 150). Babugura suggests that these children require the support of community volunteers and extended family members to cope more effectively and training in effective life skills to promote resilience is of paramount importance.

The HIV/AIDS problem in Botswana is compounded by poverty which is prevalent in rural communities consisting of largely agrarian subsistence farmers. But Botswana, like most sub-Saharan parts of Africa, is prone to droughts that are exacerbated by the impacts of climate change (Omari, 2010) (see Chapter 2). Large parts of Botswana experience both low to average rainfall and periodic and severe droughts. More than three-quarters of the country is covered by the Kgalagadi desert which absorbs all of the rainfall without any run-off (Fako & Molamu, 1995; Botswana Government, 2003; McDonald, 2000).

> Available climate change projections and impact studies suggest that Botswana is highly vulnerable to the impacts of climate change. The variable nature of the country's rainfall frequency and magnitude make Botswana particularly vulnerable. A variety of climate simulation models predict that temperatures in Botswana will on average rise by $1\text{-}3^0$ C by the year 2050. Drought is a recurring feature of Botswana's climate, and desertification is a national concern (Omari, 2010, p. 1).

Low rainfall and high temperatures in many of the country's drought prone areas severely limit arable production and encourage extensive livestock production suitable

for these conditions (Botswana Government, 2003, Omari, 2010). But most poor households do not have livestock. In a worst-case scenario these droughts which precipitate famines in the region have resulted in massive social and economic upheavals (Botswana Government, 2003; McDonald, 2000). In such circumstances the government has had to develop strong incentives to engage communities in drought relief programmes both on humanitarian and economic grounds. Droughts, in a country where half the population is made up of agrarian rural communities, add significantly to existing problems of poverty and HIV/AIDS especially for children and women who are amongst the most affected (Botswana Government, 2003; UNDP Botswana Human Development Report, 2005; Maundeni & Mookodi, 2004; Babugura, 2008). It is assumed that the extended family system takes care of (particularly orphaned) children but discrimination against children in these poor households is not uncommon (Botswana Government/UNDP, 2000). This coupled with the already compromised education of such children puts them at risk to a perpetual cycle of poverty.

Rapid population growth, urbanization, HIV/AIDS, poverty and inequality place significant pressure on the environment and communities especially children and this necessitates a response from the government and its partners. In its current National Development Plan (NDP 10), the Government of Botswana with the support of the United Nations Development Assistance Framework (UNDAF) has identified five thematic outcome areas: governance and human rights promotion, economic diversification and poverty reduction, health and HIV/AIDS, environment and climate change and children, youth and women's empowerment.

With particular reference to children, the government has re-committed itself and made progress through various initiatives and programmes that seek to work towards achieving the objectives and targets of the Plan of Action of "A World Fit for Children" (WFFC) which are related to the Millennium Development Goals (MDGs) (Botswana Government/UNICEF, 2007). The actions and initiatives are taken for children by the government in collaboration with civil society and other partners by analyzing and drawing attention to challenges faced by children.

> The WFFC Plan of Action and related MDGs and targets mobilizes partners to accelerate progress towards the objectives/targets, particularly as milestones on the path to achievement of the MDGs and the commitments of the Millennium Declaration; and draw on the most recent available information and data providing a national assessment of whether Botswana is on track to achieve the objectives/targets of the

WFFC Plan of Action. By pointing to what has been achieved, these results also highlight how much remains to be done (Botswana Government/UNICEF, 2007, p. 4).

But statistical economic growth rates, reviews and assessments on the progress made in addressing the challenges that children face have tended to conceal the extent of these challenges and the extent to which children and youth participate in the mainstream socio-economic activities in Botswana (Preece & Mosweunyane, 2004; Fako & Molamu, 1995). There is therefore a need to foreground the role that children and youth can play given that these socio-economic and socio-ecological influences and challenges affect them directly. From this highlight of the socio-ecological realities that directly affect children, the consequent implications of all these challenges "require new forms of participation, democracy and decision making" (Preece & Mosweunyane, 2004, p. 48). These human development challenges demand and require identifying children's priorities and empowering them to transform the conditions they personally experience. One way of doing this is to target children and youths by re-orienting their education towards more pro-active sustainable ways of engagement in a more articulated way through relevant civic and environmental education.

1.3 An emerging research focus

In Botswana, participation in environmental learning activities has become a central component of environmental education in formal education. The introduction of environmental education in schools was one of the main recommendations of the 1994 Revised National Policy on Education (RNPE) intended to respond to the country's environmental and related socio-ecological challenges (Botswana Government, 1994). Botswana's 1990 National Conservation Strategy (NCS) influenced this recommendation after it identified a number of environmental challenges including pollution as one of the major environmental problems facing the country. It particularly identified general poor waste and sanitation management as a key environmental challenge partly due to the reasons outlined in the previous section (Gwebu, 2003a; Toteng, 2001; Molebatsi, 1998; Segosebe & Van der Post, 1991). The strategy submitted that

> Land pollution stems primarily from poor waste disposal and management. Problems associated with waste management in Botswana include littering and poor waste collection and disposal... (Botswana Government, 2002a, p. 15).

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Through this emphasis in the NCS, the waste management problem became a key focus for developing a citizenry that will take full responsibility for its environment. Consequently, schools have been charged with the responsibility of producing environmentally responsible learners who will be able to handle the demands of ever increasing pressure of environmental challenges in their society. The National Environmental Education Strategy and Action Plan (NEESAP) which translated the NCS policy intent into actions, recommended the infusion of environmental education into the national curriculum in 1997 (see Section 2.6.4). Assessing the impact of the implementation of the infusion of environmental education and to accommodate new environmental needs and interests of its stakeholders, NEESAP stated and emphasised as one of its main guiding principles of environmental education that a "participatory approach shall be given special attention in planning and implementing environmental education activities and initiatives with a direct, perceived benefit to the learners" (Botswana Government, 2007, p. 9). Schools in Botswana seem to have generally used waste management to meet this objective as demanded by the infusion policy.

1.4 Participation of children in waste management

Research done on waste management in Botswana has repeatedly called on a comprehensive environmental education programme that should address waste generation at source that is geared towards reduction, recycling, and re-use of solid waste (Somarelang Tikologo, 2004 (see Section 2.8.1); Kgathi & Bolaane, 2001, Ketlogetswe & Mothudi, 2005). At best, current practices of waste management in schools in Botswana involve routine activities that are tailored towards meeting these requirements through normalised activities (Ketlhoilwe, 2007a, 2007b, see Section 1.6) which include cleaning classrooms and school grounds, community litter campaigns, as well as collection of cans and bottles for recycling. In all these initiatives, participation by learners is supposed to be central if the country is to have citizenry that can contribute towards solving its environmental challenges by 2016 (Government of Botswana/UNDP, 2000; Cantrell & Nganunu, 1992).

As a teacher educator and a former school teacher, through my interactions with teachers and school visits, I have observed that, as part of fulfilling the curriculum objective of embracing participation, waste management in Botswana schools usually takes the form of cleaning activities, litter campaigns and recycling activities. As I observed children doing this work, I was struck by how they were simply cleaning the

area as we had in my own school days many decades before, when we were required to do the same thing to keep our schools clean and tidy. Upon reflection, children's involvement in these cleaning activities was probably due to limited financial resources from government, the sole funder of education, for cleaning services; poverty and the socio economic status of the majority of Botswana parents did not allow them to contribute towards the structural functioning of schools (see Section 1.2). Yet related to Ketlhoilwe's observation, in my interactions with student teachers on the professional development course at the University of Botswana, they would always describe how school cleaning was part of environmental education activities. These are all seen as part of a comprehensive environmental education programme that addresses waste generation at source geared towards reduction, recycling, and re-use of solid waste (Kgathi & Bolaane, 2001; Grodzinska-Jurczak, Bartosiewicz, Twardowska & Ballantyne, 2003; Grodzinska-Jurczak, 2003). However, Grodzinska-Jurczak (2003) argues that it is important to establish whether these campaigns are supported by theoretical knowledge or whether they only focus on developing specific behaviours, without thorough understanding of their sense and purpose. Glažar, Vrtačnik & Bačnik (1998) note that children who undertake these cleaning activities on a regular basis often show considerably low pro-environmental agency (Jensen, 2002; Kollmuss & Agyeman, 2002), and analysing the question of their motives for their participation in such campaigns seems to be necessary.

Grodzinska-Jurczak (2003) also noted that waste management activities are common in schools and these are associated with campaigns organised to pick up litter and collect cans and bottles and a widespread promotion of waste recycling. She concurs with the findings of a study that I carried out with a colleague in Botswana (Ajiboye & Silo, 2008) and a pilot study in South African and Botswana primary schools (Silo, 2008) that indicated that primary school children knew what recycling was, because they did it during class, but either they did not know the importance and purpose of recycling (Silo, 2008) or it did not reflect knowledge that had direct local relevance (Ajiboye & Silo, 2009). However, Grodzinska-Jurczak (2003) contends that for pro-environmental actions (Jensen, 2002; Stevenson, 2007; Kollmuss & Agyeman, 2002) to be undertaken by learners in their everyday life, in addition to knowledge, other components must be present. It is important for such campaigns to be combined with detailed discussion of the topic that covers the activity in their syllabus, providing pupils with the foundation for understanding which should motivate learners to develop such action later in life (Grodzinska-Jurczak, 2003).

It seems an important task to develop in learners a sense of responsibility for the environment by engaging them in any potential ways that affect their daily lives and their future. Teaching skills essential for successful functioning in society is also necessary so that their optimistic attitudes as they participate in these activities will not degenerate into a sense of helplessness (Tilbury, 1995; Oscarsson, 1996) when they face real problems beyond their formal schooling. To be able to achieve this task and to respond to the socio-ecological challenges that learners face, there is a need for a context based educational approach that looks at the mediating factors in the learners' participation that will remove barriers which disregard their role as potentially full stakeholders in their learning (Barratt Hacking, Barratt & Scott, 2007; Barratt & Barratt Hacking, 2008). Botswana has made attempts to meet this need through education reform policies which are supposed to be learner centred to develop human capacity that will enable and nurture learners by moving them from being mere actors or participants to learners who are reflexive and co-engaging contributing stakeholders. This is one aspect I focussed on in this study.

1.5 A history of learner-centred education in Botswana

Botswana like the rest of sub-Saharan Africa has in the last three decades after its independence, witnessed fundamental educational changes to produce a learner that would be able to respond to the developmental, socio-economic and socio-ecological demands and challenges of the nation. The country has specifically invested immensely in its education system among other things to produce this kind of learner (Tabulawa, 1997, 1998; Pandey & Moorad, 2003). In an attempt to produce such a learner the past three decades have been characterised by unprecedented efforts by the government to bring in fundamental curricula reforms (Tabulawa, 2003, 2009; Chisholm, 2007; Chisholm & Leyendecker, 2008; Weeks, 1993). However these reforms did not escape the impact of the history of colonialism, the political and global economic liberalization of the post-1990 period and the socio-cultural contexts such as the Tswana traditional authority structures all of which had an influence on the educational policy-practice trajectories (Tabulawa, 1997, 2003, 2009; Pandey & Moorad, 2003; Chisholm, 2007; Chisholm & Leyendecker, 2008).

At the centre of these reforms is the "emphasis on the centrality of the learner in the educative process, hence the term learner-centred methods" (Tabulawa, 2003, p. 9)

which are founded upon the social constructivist epistemology which posit that learning is a product of social interaction (see Chapter 3).

> Thus, learner-centred pedagogy views students as active participants in the learning process rather than meek recipients of ready-made factual knowledge from the teacher. The pedagogy is seen as democratic since it demands a relationship between teachers and students in which dialogue is an important means of learning (Tabulawa, 2003, p. 9).

The curricular reforms that have characterised the country's education policies therefore emphasised a learner-centred pedagogy as the official pedagogy in schools (ibid.).

1.5.1 The National Policy on Education (NPE) on learner centred pedagogy

In 1977 Botswana saw its first National Policy on Education (NPE) since independence which was derived from the report of the first National Commission on Education (NCE), known as *Education for Kagisano*. The NPE was a significant milestone in the history of Botswana's education system in that it provided a sound framework for educational planning, and for the provision of education. It also closed a chapter on one of the legacies of Botswana's colonial history: that of restricting access to quality education to only a few privileged individuals (Pandey & Moorad, 2003; Tabulawa, 1997).

Botswana's philosophy of education*, Kagisano,* which means *Social Harmony* was first articulated in this initial policy document on education and it is based on the four national principles of democracy, development, self-reliance and unity, all of which constitute social harmony, which should be an important outcome for the society of Botswana (Botswana Government, 1977). The proponents of the philosophy envisaged that an ideal education system for Botswana would be one that can be instrumental in the production of a learner whose characteristics reflect the national principles, for a society in pursuit of the national ideal of social harmony. It was expected that a reorientation of the curriculum should embody these national principles and should emphasise the acquisition of basic knowledge and skills that Batswana will need in a developing, rapidly changing society and economy (Botswana Government, 1977).

> The focus of education in the school and classroom should therefore be upon learners: enabling them to acquire the knowledge, skills, attitudes and behaviour that will give them a full successful life and continued personal growth; and equipping them *to participate effectively* in a changing society (p. 23, my emphasis).

The NPE acknowledged that substantial changes throughout the education system were necessary in order to adapt the education or pursue new goals that could produce such learners. Hence according to Tabulawa (1997), the education policy pronounced a new strategy for achieving those goals in the country's quest for curricula reforms.

> What the Commission was calling for, among other things, was the teacher-student relationship which, in the case of Botswana, has been found to be excessively teacher-dominated. Such change could only take place if learner-centred pedagogy were to be adopted by teachers (p. 189-190).

While Botswana was in the middle of implementing her own goals of the NPE towards a reformed citizenry, the 1990 Jomtien Conference adopted a declaration of education for all which was geared towards the provision of basic education for all citizens of any nation (UNESCO, 1990).

1.5.2 Education for all (EFA)

The World Conference held in Jomtien, Thailand in 1990, brought together the world community under a theme "Education For All" (EFA) in which the UN member states pronounced their commitment to Article 26 of the Universal Declaration of Human Rights, and adopted a rights-based approach to the provision of education in their countries. The Jomtien conference resulted in a declaration, which is known as the World Declaration on Education for All: Meeting Basic Learning Needs (UNESCO, 1990).

> The Jomtien framework constituted what has came to be known as the "expanded vision of basic education" in that it recognises basic education to be broader than schooling. In this vision, basic education starts with early childhood development education, and extends to in-school activities. It also covers a range of non-formal education activities for adults and youth who need to be equipped with a range of basic skills that they need to navigate the world. The framework introduced, for most of the countries, a paradigm shift from equating schooling with education, thereby increasing the challenges to educators most of which are school teachers. The new vision affirms by definition, the right-based approach to education (UNESCO, 1990).

In Botswana the Jomtien Conference was immediately followed by the country's 1991 Planning conference in June which worked on translating the Jomtien conference goals into action. The conference objectives were:

- To have a dialogue on the present problems in meeting the basic learning needs of the child, youth and adult.
- To focus the attention of the people, the private sector, governmental and non-governmental organisations and the public at large on the present education system and to explore realistic means of rapidly extending coverage and improving the quality of Basic Education in Botswana.
- To provide a platform for revitalisation of commitment by the community, support-ministries, NGOs, the public and private sector and all other institutions to participate and support Government to realise its educational objectives (Seisa & Youngman, 1993, p. 5-6).

It is worth noting that it was out of this conference that the National Planning Conference on Environmental Education (EE) was convened in October 1991 to plan the way forward for and consolidate environmental education initiatives both in the formal and non-formal education sectors (see Chapter 2).

A sequel to the Jomtien Conference was convened in 2000 in Dakar, Senegal, resulting in a framework of collective commitment to action by African Governments to ensure that EFA goals and targets were reached and sustained by promoting, enabling and building advocacy capacities for equitable access to education for all African children, youth and adults (UNESCO, 2000a). The conference re-affirmed the vision of the World Declaration on Education for All (UNESCO, 1990), supported by the Universal Declaration of Human Rights and the Convention on the Rights of the Child (CRC) (see Section 2.4). This outlined that all African "children, young people and adults have the human right to benefit from an education that will meet their basic learning needs in the best and fullest sense of the term, an education that includes learning to know, to do, to live together and to be" (UNESCO, 2000a, p. 8). The Dakar declaration was affirmed during the same year by the parallel adoption of the UNESCO Millennium Development Goals (MDGs) on education which however narrowed their focus to universal primary schooling and gender equality (UNESCO, 2000b). Although the EFA conference and its sequel, the Dakar accord, did not have as their major focus the educational reform agenda focussing more on access and equity, they provided and added an impetus to a framework for reform initiatives which made learner-centeredness explicit in the education reform agenda of sub-Saharan countries (Chilsholm, 2007; UNESCO, 2000b. In Botswana this became evident in the Revised National Policy on Education (1994).

1.5.3 The Revised National Policy on Education (RNPE)

The Revised National Policy on Education (1994) was the blueprint document that drove education planning in most of the EFA decade and was the first policy to recommend infusion of Environmental Education into existing subjects in the school curriculum (see Chapter 2). Building on the previous 1977 NPE, this policy was developed against the background that there had been a considerable change in the socio-economic context within which the 1977 NPE was developed. While the 1977 NPE was developed ten years after independence with a focus on meeting the country's workforce skills needs, the 1994 RNPE, was designed to meet the challenge of preparing the workforce for a global economy with new socio-economic and ecological challenges (UNESCO, 2000b; Tabulawa, 2009). It was therefore necessary to develop an education policy which would be realigned with the country's goals and aspirations, and to refocus it to new priorities which included the socio-ecological challenges children faced.

> The RNPE was published against the backdrop of a harsh global economic reality that saw Botswana's revenues decline owing to a depressed world diamond market. This resulted in an upsurge in the unemployment rate, especially amongst the youth. In the face of massive youth unemployment concerns were raised about the relevance of the education being provided (Tabulawa, 2009, p. 90-91).

According to Tabulawa (ibid.), the policy was meant to provide a framework for curriculum reforms that would produce what he terms a 'self-programmable learner' (p. 90). The self-programmable learner, he submits is

> a new kind of learner, worker or citizen. The education system is expected to develop in learners attributes such as creativity, versatility, innovativeness, critical thinking, problem-solving skills, and a positive disposition towards teamwork – attributes deemed essential in today's changed work environment (p. 87).

Such a learner should possess qualities of communication skills, interpersonal skills, work activity skills, creativity, innovativeness and flexibility in order to respond to the challenges of the new socio-economic and socio-ecological order (ibid.).

Botswana, like most of the sub-Saharan countries, has been a signatory to a number of conventions on education, including the Convention on the Rights of the Child (1989), the World Declaration on EFA (1990), the Dakar Accord (2000) and MDGs (2000) all of which spell out collective commitments by nation states and international agencies for

the achievement of education development goals and bind sub-Saharan African countries to changing educational policy and practice in order to realise these commitments. Attention has been focused on curricular policy and practice with a reform agenda geared towards learner-centred approaches (Chisholm & Leyendecker, 2008, p. 198). But there is overwhelming evidence from very different kinds of sources that although learner-centred education has been increasingly promoted as part of this new educational reform agenda, the idea has not taken root in practice in classrooms to produce this envisaged learner (Chisholm & Leyendecker, 2008; Tabulawa, 1997, 2009; Pandey & Moorad, 2003).

Tabulawa (2003) has commented on the gap between policy and practice: the learner-centred goals of learner-centred education as envisaged in the educational philosophy are proving far harder to achieve in practice than in policy. He comments that policy intentions which have simply not been matched by implementation are related to "the ascendancy of neo-liberalism as a development paradigm in the 1980s and the 1990s elevated political democratisation as a prerequisite for economic development" (ibid.). This he argues became the driver for learner-centred pedagogy. He argues that this is because pedagogy is simply "an ideological outlook, a worldview intended to develop a preferred kind of society and people representing a process of westernisation disguised as quality and effective teaching" (2003, p. 7). As he sees it, this neoliberal discourse could have had more influence on the reform agenda of the RNPE than the actual socio-ecological needs of the nation.

Chisholm (2007) suggests that, given that practice in schools and classrooms has not changed, much more work is needed to establish how school-based practices mediate and express the new discourses (p. 306). This is especially against the backdrop of the RNPE policy reform agenda. This is another aspect that this research sought to examine by looking at how environmental education practices are mediated in schools.

1.6 Governmentality and normalisation of learner participation in environmental education in Botswana

Ketlhoilwe (2007a; 2007b), in his findings from a study on construction and interpretation of the RNPE environmental education infusion policy (see Section 2.6.3) in Botswana, corroborates Kgathi and Bolaane (2001) and Silo's (2008) observations of the schools' apparent focus on environmental management approaches to deal with

waste management (see Section 1.4). He argues that there is a fundamental flaw with the policy of infusion of environmental education in the way it is currently being used in schools. His research reveals that there has been a *normalization* of environmental education into existing school culture through cleaning and sometimes recycling activities by learners based on instructions of teachers to keep the school environment clean, and through introduction of an association between 'clean schools' and environmental education. Normalization according to Ketlhoilwe (2007a) includes 'invoking, requiring, setting, or conforming to a standard – defining the normal' (p.93). Darier (1999, p. 221) defines 'normalisation' as "the process by which individuals are induced to internalize a given set of norms, world-view and expected conduct".

This state of normalisation, according to Ketlhoilwe, arises from the way global, regional and national environmental dominant discourses (see Chapter 2), have produced and influenced teachers' interpretations of what learner-centeredness in environmental education is or ought to be. Ketlhoilwe (2007a) argued that, like most countries around the world, Botswana has been influenced by global and regional responses to environmental crises to govern unsustainable actions. Increased environmental degradation and education has been used "as an instrument to address concerns and promote care for the environment and ultimately to provide a tool for enhanced governance in response to socio-ecological concerns and unsustainable development patterns" (p. 309), a process in which he, drawing on Foucault (1978, 1979), describes as governmentality (Foucault, 1991).

According to Triantafillou (2004, p. 492), Foucault's notion of governmentality has been "coined to denote a set of historically specific constellations of problematizations, forms of knowledge and practices of government". Government in this context, does not mean the state apparatus only, (Dean, 1999; Triantafillou , 2004) but how subjects come to be produced, shaped and managed to conduct themselves in certain desired ways or "the manifold ways in which the conduct of individuals and groups are directed" (Triantafillou 2004, p. 491). Drawing on Foucault's work, Dean (1999), Triantafillou (2004) and Ailwood (2003) perceive governmentality as revolving around questions about the "conduct of conduct" (Dean, 1999, p. 10). Government, according to Dean,

> involves some sort of attempt to deliberate on and to direct human conduct. From the perspective of those who seek to govern, human conduct is conceived as something that can be regulated, controlled, shaped and turned to specific ends (Dean, 1999, p. 11).

Governmentality, which accounts for the normalised waste management practices in schools noted above, is how we are governed or managed by others, how we govern or manage others and how we govern or manage ourselves using "technologies of government" which are "tactics, strategies, ideas and knowledges that delimit and shape ... conduct in the hope of producing desired effects and averting certain undesired events" (Ailwood, 2003, p. 287). Ketlhoilwe, (2007a, p. 85 citing Lechte, 2003, p. 98), views Foucault's notion of governmentality as seeking "to explore power relations, particularly in the domain of what constitutes conduct". This power "is always associated with knowledge and their relationship is crucial in understanding the discourses in which they operate. The power-knowledge linkage may stimulate resistance or normalization of certain social practices" (Ketlhoilwe, 2007a, p. 84). Foucault (1978) in his works on governmentality and power-knowledge relations observed that people

> must not imagine a world of discourses divided between accepted discourse and excluded discourse, or between the dominant discourse and the dominated one; but as a multiplicity of discursive elements that can come into play in various strategies. It is this distribution that we must reconstruct with the things said and those concealed, the enunciations required and those forbidden that it comprises; with the variants and different effects – according to who is speaking, his position of power, the institutional context in which he happens to be situated – what it implies; and with the shifts and reutilizations for contrary objectives that it also includes (p. 100).

Darier (1999) views Foucault's notion of governmentality as offering a way into a historical survey of the conditions for the emergence of modern forms of power and their influence on the policy implementation. According to Triantafillou (2004), these modern forms of power are located in various networks of governance. In the case of Botswana these would be global and regional policies, government departments, school management teams, teachers, non-governmental organisations (NGOs), parents and teachers associations (PTAs) and learners, all of which form the various nodes of influence in the policy representation and implementation process (Ketlhoilwe, 2007a). Triantafillou (2004), reminds us however to note that "government implies not only the exercise of power, but also the exercise of freedom" (p. 492) in which "the latter exists only to the extent that the individuals and groups over whom it is exercised are free" (ibid.), which means the freedom to self govern because "the situation in which an individual is left with no possibilities to resist would not qualify as a relation of power, but as a state of domination" (p. 493).

Using the governmentality conceptual framework, Ketlhoilwe (2007a) explored power relations within interpretation and implementation of infusion of environmental education as recommended by the policy, which was meant to be learner-centred. He focussed more deeply on influences in historical context and on the broader power effects of the policy, and found that

> Learner-centred education expects learners to become creative, independent thinkers, and problem-solvers in pedagogical practices. The syllabus guides teachers on the pedagogy: it is not prescriptive as it declares that "the syllabus encourages a learner-centred approach" without specifying learners' activities. It gives the teacher the latitude to operate innovatively with the learner-centred approach. It marks a shift away from the teacher constructed as "authoritarian dispenser of knowledge, to a facilitator of learning" (Janse van Renseburg, 2000: 18). The syllabus justifies the learner-centred approach saying that it involves placing emphasis on science processes skills, and exposure to hands-on activities which should increase the participation and performance of all learners. The text does not describe or prescribe 'hand-on activities'. The teacher's role is constituted as that of a mediator of learning, with the liberty to use various teaching methods within a broader frame of learner-centred education and participatory, active approaches (p. 210).

While the policy does not seem to provide strict methodological approaches to be used in implementing the manifold practices associated with learner-centred forms of pedagogy "it begs an analysis of diverse regimes of governmental practices that rest and possibly reshape particular power-freedom relations" in the implementation of these approaches (Triantafillou , 2004, p. 494). This is particularly so in light of the influence of the dominant global, regional and national environmental dominant discourses that led to its formulation, alluded to by Ketlhoilwe (2007a) (see Section 2.6.4, Chapter 6, 7.3.1, 7.3.3 & 7.4.3).

Ketlhoilwe (2007a) found that these dominant discourses had influenced the policy documents to be all declarative "claiming indisputable truths about discipline knowledge and processes. The documents are official, authoritarian and informative inviting collaboration and compliance to ensure accomplishment of programme goals" (p. 226). He however noted that the infusion policy's recommendations and emerging curricula documents accommodated old content and orientations (representing older discourses with an environmental preservation and management focus) while also introducing new concepts and processes such as sustainability and learner-centred education (which draw from new discourses of sustainable education to address emerging socio-ecological issues - see Chapter 2). He observed that

The wording of the aims generally constitute teachers as capable of assisting individual learners to regulate themselves through the development of desired characteristics and behaviors. This form of governmentality implies that through these subjects learners would be aware, knowledgeable, understand and be able to problematize their relationship with the environment, and respond with applied ethics, which imply the ability to monitor and regulate various aspects of their behaviour through disciplinary power (p. 226).

The policy, in its formulation, went through multiple discourse networks which operate as nodes or cites of power in which this power is exercised through administrative procedures, rules and regulations (Foucault, 1979). It now seems to have moved from the early ecological and issue resolution goals of environmental education to sustainable development discourses (see Chapter 2). Ketlhoilwe observed that

The shift has been precipitated by the complexity of socio-ecological issues and international development inequalities, and further insights have been gained through research and deliberations on the nature, causes and impact of environmental issues. Some of the current concerns shaping the search for a common understanding of environmental education are socio-ecological issues, poverty, development of new ethics, and more adequate political and health-related responses to the HIV/AIDS pandemic in southern Africa in an effort to bring together environment and development and human well-being concerns (p. 309).

Subsequently he notes that

The texts promote mental, material, verbal and behavioural processes, privileging the mental and material processes. The analysis also revealed that the subject content included self governing strategies through the promotion of mental and material processes that aim to produce self-reflexive subjects capable of instituting the self-surveillance identified by Foucault as essential to be exercised by the willing subject to exercise independent thought and actions (p. 227).

Drawing from Foucault (1979), Ketlhoilwe noted further that within each site of policy formulation, implementation and interpretation, a microanalysis of power indicated that there was disciplinary power exercised by individuals which subsequently framed the everyday lives of learners "placing under surveillance their everyday behaviour, identity, their activities and gestures" (p. 91). These behaviours, identities, gestures and the learners' activities become norms. These norms are inscribed through attendant forms of knowledge and governmental technologies as determined by the dominant discourses that influenced the policy as they become embedded in concrete practices and how participants govern themselves in relation to environmental education policy implementation in schools (see Section 2.6.4, 7.3.1, 7.3.3 & 7.4.3). Hence in these Botswana schools, normalization became the procedures and processes through which

these norms were brought into play and informed the practices that it sought to regulate, that is, how the policy was represented and implemented. It is the diverse programmes, procedures, and techniques by which schools took these norms "as the reference for measuring and perhaps problematizing the adequacy, correctness or desirability of the ways they are doing things" (Triantafillou, 2004, p. 496).

Through normalization teachers internalized norms and rules that ensured consistency in their behaviour as a result of local power-knowledge relationships in the policy development and implementation that influenced their interpretations of the policy and some contextual constraints. This resulted in them choosing "to do something that is related to the environment, most notably environmental management activities" in the school (Ketlhoilwe, 2007b). Ketlhoilwe specifically identified waste management activities in schools such as involvement of learners in structured cleaning of schools as a prominent normalizing strategy which was equated with environmental education. He noted that teachers "mentioned school *cleaning* or *cleanliness* as one of the activities showing that environmental education is given some status in their schools" (p. 174).

> The status of environmental education is also measured by schedules of cleaning and litter collection activities. These activities are common across all the research sites and are allocated a particular day during the week, usually Wednesday afternoons. They include everyday sweeping, litter collection… and collection of other waste materials for recycling (p.175).

These cleaning activities were all done under the supervision of the teachers who exercised their power to regulate learners and their activities. Normalization became "lived through every day practices that were perceived as self-evident and natural" (Lorey, 2009, p. 193). Additionally, as Lorey sees it, "the normal was naturalized with the effect of actuality of authenticity" (ibid.). This normalizing self-governing was based on an imagined coherence, uniformity and wholeness, which can be traced back to the construction of learner-centred pedagogy in the interpretation and representation of the policy as observed by Ketlhoilwe (2007a, 2007b).

Related to Ketlhoilwe's observation, we also conducted an intervention study in ten primary schools funded by the Office of Research and Development (ORD), University of Botswana in which we set up School Civic Clubs to improve Botswana children's environmental knowledge, attitudes and practices (Ajiboye & Silo, 2008). The underlying assumption in using this informal approach was based on the premise that the school

timetable was already overcrowded and that the infusion approach as was currently adopted in the country had not produced the desired results. Hence, the Civic Clubs were introduced into the Primary schools. Using this informal approach, the children were given requisite training in civic and environmental issues, and they engaged in various activities for a period of six weeks. The clubs' activities included among others clean-up campaigns and recycling projects.

> The basic premise of the Civic Clubs is that the citizenship consciousness attained will hopefully equip members with the knowledge and skills needed to engage them as active environmental citizens and that this will be transmitted through ripple effect to others in the school, in homes, the neighbourhood and finally across the community. Through the involvement of club members, awareness campaigns on citizenship and environmental issues will hopefully be used as an effective mode in bringing change and improvement in their own environment and communities now and in the future (p. 108).

The findings revealed that pupils who were members of the clubs demonstrated improved knowledge and skills and a more positive attitude towards most of the salient environmental issues discussed than non-club members in the project after intervention (ibid.). But I observed in further school visits that the children had not sustained their club activities either in their schools or communities beyond. Some researchers have argued that it is unrealistic to expect children to suddenly become responsible citizens in their communities by engaging them in activities such as the ones they undertook in these clubs (cleaning campaigns, recycling practices etc.) without prior exposure to the appropriate skills and responsibilities which expand their capacities or foster action competence (Jensen & Schnack, 2006) and agency to participate in the day to day management of their immediate environment and respond to the human well-being concerns of sanitation, HIV, poverty, unemployment that are pandemic in the nation (Hart, 1992, 1997, 2008; Chawla & Cushing, 2007). These researchers see shared decision making in issues that affect children's lives as an important dimension of meaningful or genuine participation (see Section 3.3.2) which is also seen to be their democratic right. This was another aspect that motivated me to undertake this study and it was what I focussed on in this research project.

1.7 Participation as a democratic principle

Central to Botswana's philosophy of education, *Kagisano* (see Section 1.5.1), is its focus on the principle of *participatory democracy* implying a voice for all the people in issues that affect them and their future, not only in politics but also in community, social

and economic affairs (Botswana Government, 1977, p. 24). Encapsulated within this principle is the call for participatory approaches in school learning processes that are democratic. According to the commissioners, democracy involves giving each person a voice in the running of affairs of the teaching and learning process

> and the chance *to participate*, directly or through representatives, in decisions affecting their lives. If democracy were to be achieved, people should have sufficient and relevant information to make wise decisions that should be respected (p. 25, my emphasis).

Implementing democracy in education, particularly in schools implies that decisions about teaching and learning processes in schools should be shared among all the stakeholders who are affected: "… the community and parents, professional workers in education, and the *pupils themselves*" (Botswana Government 1977, p. 25, my emphasis)

According to Tabulawa (1997), the commission that drew up the policy contended that any features of the education system (be it structure, organisation, curriculum, content or methods) that appeared to impair this principle of democracy, must be changed. It would be meaningless to speak of democracy if schools showed quite opposite tendencies, the commission suggested (ibid., p. 190). In response to this call, a number of learner-centred and participatory models of learning have since emerged and been advanced over recent years in the Botswana education system (including in environmental education teaching and learning processes) in order to bring about some reforms that would embrace this principle of democracy. But research done on pedagogical practices in Botswana, have repeatedly shown that teaching and learning processes continue to be teacher dominated (Tabulawa, 1997, 1998, 2004; Prophet, 1995; Monyatsi, 2005). This has been attributed to the history of authority structures that have their roots in the colonial bureaucratic-authoritarian models (Tabulawa, 1997) and the Tswana culture of children's submissive compliance to authorities and adults (Tabulawa, 1997; Maundeni, 2002).

1.8 Authoritarian Tswana culture

Normalisation in the environmental education discourse could have also emerged from the authority structures that characterise Botswana society. In Botswana, children are rarely involved or consulted on important issues or on matters concerning themselves. The socialization of children emphasizes passivity and submissiveness in most spheres

of their lives in the family, school and society at large (Tabulawa, 1997; Maundeni, 2002). The school is an institution within a broader society operating within a set socio-cultural context. This therefore means that even in schools, as a result of the way children are socialised in Botswana, the resultant tendency is that children do not question adults which is "by and large influenced by Tswana conceptions of adult-child relations and conceptions of the place of children" (Maundeni, 2002, p. 287). This subjugates children as in Tswana culture it is considered improper for children to question adults' (including teachers) decisions. Maundeni's observation is supported by other scholars (Tabulawa, 1997, Monyatsi, 2005; Dambe, 1996), who also observed that Tswana culture demands unquestioning obedience of children towards parents, teachers and any other adults, and that it obliges children to "willingly do whatever they are told" (Maundeni, 2002, p. 287). These expectations are reinforced by the use of a Tswana proverb that emphasizes complete subservience of children to adults: '*Motsala-motho ke Modimo wa gagwe'* which translates to 'A child's parent is its god' (Maundeni, p. 288, citing Schapera, 1977, p. 179). In the Tswana culture, children "are expected to fear and honour their parents, to address and speak to them politely and with the use of the appropriate relationship terms, to behave towards them and in their presence with considerable respect" (ibid.). However, though Botswana has attempted to embrace democratic values across most of its institutions in line with the philosophy of *Kagisano,* these attempts have persistently been undermined because of this strong indigenous paternalistic culture which is undemocratic and is evident in Botswana's educational processes. Control and authority are still centred on those in authority and this is visibly so in pedagogical practices (Monyatsi, 2005; Tabulawa, 1997).

1.8.1 Authoritarian culture in pedagogical practices in schools

Consistent with the Tswana authoritarian culture, research done on educational reform and pedagogical practices in Botswana schools (Tabulawa, 1997) has consistently revealed that pedagogical practices are organised along bureaucratic-authoritarian lines which are an extension of

> certain aspects of Tswana social structure, such as traditional authority structures and child-rearing practices in which the child is dominated and subordinated ... Because these structures of domination and subordination have been internalised, students and teachers carry them to the classroom as their cultural baggage, which in turn inform their actions and respective classroom roles ... therefore, the authoritarian pedagogical style mediates the classroom and the wider social structure, that is, it is through the pedagogical style that the wider social structure finds expression in the classroom (Tabulawa, 1997, p. 195).

Thus, these asymmetrical power relationships have always mandated the authoritarian teacher to direct all teaching and learning activities, (Tabulawa, 1997, p. 194) because "the assumption is that in the practice of learning there is a teacher who knows what has to be learned" (Daniels, 2008, p.126). Monyatsi (2005) corroborates Tabulawa's findings in his study on the transformation of schools into democratic organisations in which he observed that Botswana schools are still organised bureaucratically whereby cultural values are reinforced in schools and they are

> aimed at the functioning of bureaucracy and the maintenance of social order, such as obedience, abiding by the rules, loyalty, respect for authority ... quietness, orderly work in large groups, response to orders, bells, and timetables and tolerance of monotony. Despite the negative connotations attached to these concepts, it has been argued that bureaucracy serves a vital function in society because it is believed to be the most efficient and rational form for organisations with goals of high productivity and efficiency. Traditionally, in pursuant of efficiency and effectiveness, schools have been, and are still structurally organised along bureaucratic lines; with the common feature of tight control, a somewhat rigid and inflexible dependence on top-down authoritarianism (p.355).

It becomes clear from what these researchers have observed in the teaching and learning structures in schools that democracy, so much cherished in Botswana's philosophy of *Kagisano*, could not be reasonably expected to develop and flourish if schools themselves continue to be undemocratic (Tabulawa, 1997. p. 190). Perhaps it was in the light of these entrenched cultural values that have been embedded in the schools' pedagogical practices that the government has relentlessly invested in teacher development programmes that could equip teachers with the requisite skills to vary their pedagogical practices in order to embrace more democratic approaches in their teaching.

1.8.2 Authoritarian culture in environmental education teaching processes

In an attempt to embrace the participatory approach in the teaching of environmental education, Ketlhoilwe (2007a) observed that, consistent with the authoritarian culture revealed by Tabulawa (1997), Maundeni (2002) and Monyatsi (2005), power relations are embedded in classroom discourses as reflected by teachers who teach by giving instructions and learners responding as expected.

> Although some tried to vary their teaching methods, practice confirmed the objectification of learner by the policy as a 'receiver' of instructions in the production of knowledge. An analysis of policy statements shows that the learners are constructed with mental

processes at the receiving end of the policy instead of being partners in knowledge construction. In this study learners played a more reactive role as teachers exercised their power in the teaching and learning process (Ketlhoilwe, 2007a, p. 339).

From this it appears that the curriculum has recommended participatory approaches through varied methods of teaching meant to promote relevance of environmental education to the country's socio ecological challenges and needs by infusing it into some existing subjects (see Sections 1.3, 1.5.3 & Chapter 2). But teachers, using their power and authority, have come to see it as part of the education system's provision of theoretical and practical skills which do not necessarily directly relate to the reality around learners. There is little connection made between how these tasks improve the waste problems at the school, or why they are being undertaken in the first place. Children consequently see these tasks as hard labour, and not as a learning activity (Ketlhoilwe, 2007a; Silo, 2009). Ketlhoilwe (2007a) goes on to suggest that in order for effective teaching of environmental education to move from

> … rhetoric to action teachers should be equipped with focused environmental education training that will demystify the rationalist view of pro-environmental change by showing teachers that environmental education is a process contributing to social change and it takes time to influence learners, changing attitudes and behaviour towards the environment (p. 352).

This statement implies and emphasises the need for reform in teaching that will recognise the socio-cultural context within which learning takes place in order for the change processes in learning to take place. Also implied is that the responsibility is squarely placed on the teacher as the central agent with potential for pedagogic change in terms of developing the learners' pro-environmental behaviours (Jensen, 2002; Kollmuss & Agyeman, 2002) with the hope that the objective of learner-centred education will be realised. Further review of literature (Tabulawa, 1997, 2003, 2009) reaffirms that there has been substantial effort and investment that has been directed towards teacher development in response to educational reforms, with the expectation that this can solve problems of resistance to pedagogic change, but without success as shown by Tabulawa (1997) who observed that

> as a response to these problems, massive investments of time and resources have been made in interventionist programmes such as teacher in-service programmes, workshops and seminars, all aimed at changing the teacher's classroom behaviour. But still very little alteration in the classroom interactive processes has occurred (Tabulawa, 1997, p. 192).

This research (Tabulawa, 1997, 2003; Ketlhoilwe, 2007a, 2007b) and numerous other qualitative studies of teacher development programmes targeted for curriculum reforms and pedagogic change towards learner-centred approaches (Tabulawa, 1997; Prophet, 1995; Marope & Amey, 1995; Prophet & Rowell, 1993; Botswana Government, 1993) seem to focus on the teacher's central role in the teaching and learning processes. These studies provide valuable findings regarding the barriers and constraints school systems encounter when teachers attempt to integrate this approach in their teaching activities. However, these traditional qualitative studies do not address the historical development or the social nature of how the programme integration efforts of teachers affect the subsequent learner participation in these activities and more importantly how learners themselves participate in these activities as agents of change. These studies have not explored the inherent potential of learners' initiatives as active participants and agents of change and the implications that this could have for pedagogic reform and change. It is this gap that this study intends to fill, as these views seem not to recognise that learners are constituent to a cultural, historical and social milieu. They cannot be viewed as inert subjects but are innate agents with the ability to contribute to social change in the environmental education learning process. It is also apparent that in most of these research models and studies, there is a relative dearth of research regarding how children actually participate in these learning activities from their perspective as active agents. It is this central dilemma, namely *how* participation is constituted specifically in environmental educational processes that forms the main object of this study.

1.9 The research purpose

Against the background provided in the previous sections the research purpose emerged from the need to *rethink* (Section 3) learner participation in waste management activities in Botswana primary schools, and to research *how* learners actually participate in these practices in schools with the aim of developing some sense of purpose in their participation. The broader aim was therefore to explore opportunities available for developing learners' **action competence** (i.e. their abilities to make decisions and act more independently or collectively, see Chapters 3 & 4) and civic agency because there seems to be lack of genuine participation on the part of learners in these activities as a result of a) apparently narrow interpretations of participation in learning in environmental education, and b) consequent normalisations of waste management activities with a clean schools environmental education discourse in

Botswana**.** The research probed the rhetorical and normalised emphases on participation (Hart, 1992; Hart, 1997; Simovska, 2004, 2008; Graham, Whelan & Fitzgerald, 2006; Barratt Hacking et al., 2007; Stevenson, 2007), and sought further insight into how learners could be engaged in participatory learning processes that were meaningful, purposeful and that could broaden their action competence and civic agency (Jensen & Schnack, 2006; Jensen, 2000, 2002, 2004a).

Consequently, this study addressed the following question: **How can learner participation in waste management practices in schools develop action competence for civic agency?** In order to address this question, I defined two research goals. The first goal sought to provide an in-depth existing context with regard to how learners were participating in waste management activities in Botswana primary schools. The second goal explored the potential for developing action competence for civic agency through learners' participation through expansive learning.

1.9.1 Research goals and questions

From the broad research question the following two research goals were identified:
1. To establish a picture of the waste management activities, existing learner waste management activity systems in schools, and how learners participated in these activities so as to;
2. Explore the potential of expansive learning opportunities that may develop action competence for civic agency in waste management through learner participation.

Specifically the study sought to answer the following questions:
1. What is the current picture and nature of waste management activities in Botswana Primary Schools (i.e. what are the existing learner waste management activity systems, and how are they constituted)?
2. How are learners participating in these waste management activities?
3. What contradictions and tensions exist in learner participation in these waste management activity systems?
4. What expansive learning opportunities can be mobilised to develop action competence for civic agency through learner participation in waste management activities and how can they be supported?

1.10 Research methodology

The study was broadly undertaken in two phases which are interpretive and socially critical in orientation because the objectives of the study involved seeking explanations of the learners' participation in waste management activities and sought to empower them to transform their social practices (Miles & Huberman, 1994) by developing their action competence (see Sections 1.10.1 & 1.10.2). Phase one focussed on the development of the existing picture of waste management activities and learner waste management activity systems (Engeström 1987, 1999, 2000, 2001) in schools so as to establish how learners participated in these systems (see Chapters 4 & 6). This phase identified components of the activity system that mediated learner participation in these activities and contradictions or tensions (see Chapter 7) that were evident in the learner waste management activity systems. Phase two explored expansive learning opportunities with learners to enhance and extend their participation in waste management activities in the school, with the intention of strengthening or developing their action competence (Jensen & Schnack, 2006) to enhance civic agency (see Chapters 3, 4 & 9).

1.10.1 Phase One: Building a waste management activity picture

Using Engeström's model of second generation activity theory (Engeström, 1987), phase one sought to establish an in-depth picture of existing waste management activities in schools involving learners and how they participated in these practices within the broader socio-cultural and historical context of the school. This was done by mapping out a school waste management activity system and using the components of Engeström's second generation activity theory as a framework of analysis (see Chapter 4). This was fundamental to the study as it is intended to provide a rigorous language of description of what was taking place in schools. The whole purpose was to reveal and define roles and divisions of labour between members of the school community relevant to waste management and to show how power relations and status were distributed (Engeström, 1987, 1999, 2001). Rules guiding explicit and implicit school regulations, norms and conventions that governed waste management activities within the activity system (Engeström, 1987, 1999, 2000, 2001) were revealed as described above.

In each of the learner activity systems, I also tried to identify **contradictions** and arising *tensions* with, for example, participation of learners in waste management activities and

norms and rules of the school; or learners' characteristics (e.g. motivation) and division of labour (see Chapters 3 & 4). The building of the picture in phase one provided initial data to move from the second generation systems' "initial state of unreflected, situationally given 'raw material'" (Engeström, 2001 p. 136) to the exploration of **expansive learning opportunities** with learners by identifying contradictions and tensions in the activity systems. Forms of learner participation (Jensen, 2004b) in these normalised (Ketlhoilwe, 2007a) activities are shown.

1.10.2 Phase Two: Exploring the potential of expansive learning opportunities for enhancing action competence and civic agency

Expansive learning opportunities that arose from contradictions and tensions identified in phase one provide an immense potential for transformative learning with learners (and new and different opportunities for learner participation). Not only did such contradictions and tensions arise within the learner activity system itself, as outlined above, but these contradictions and tensions arose because the members within the school community had a different *objects[1]*/motives in these waste management activities which they would not have realised at first i.e. the contradictions arose between different activity systems related to the learner participation. The contradictions and tensions identified within and among the different components of activity systems, and which arose between different activity systems, which characterised the concept of expansive learning (Engeström, 1987, 1999; 2000, 2001, 2004), were used as starting points for generating *learner responses, alternatives, visions, decisions, and other learning activities that characterised the development of working towards action competence* (Jensen & Schnack, 2006; Jensen, 1997, 2002, 2004a; Carlsson & Jensen, 2006; Breiting & Mogensen, 1999).

This analysis of contradictions and tensions within activity systems aided in developing conceptual tools to generate **dialogue** (Palinscar, 1986; Wells, 2002; Karlsson, 2001) and multiple perspectives (Jensen & Schnack, 2006; Jensen, 1997, 2002; 2004a) from learners and networks amongst learners, teachers and other relevant members of the school community involved in the waste management activities (e.g. teachers and cleaners, see Chapters 8 and 9). This was achieved by using participatory approaches

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[1] Object is defined as a human motive in an activity according to Cultural Historical Activity Theory (see Chapter 4)

through collectively meaningful, shared or jointly supported and guided learner participation with learners (Rogoff, 1990; Wertsch, 1985; Rogoff & Wertsch, 1984). The study essentially relied on researcher-learner-teacher mediated discourses and activities on waste management activities within the concept of Vygotsky's zone of proximal development (ZPD) (Vygotsky, 1978; Rogoff & Wertsch, 1984; Wertsch, 1984; Vare, 2008) which is the distance between the point at which learners were within the school normalised waste management activities (see Section 1.6) and where they envisioned to be, given collaboration with a more experienced other or more capable peers (Vygotsky, 1978, p. 85-86). *Scaffolding* and *guided participation* (Palinscar, 1986; Rogoff & Wertsch, 1984; Rogoff, 1990; Wertsch, 1984) through collaboration, or dialogue, was therefore seen as an essential component of working with the learners (see Chapters 8 & 9). Forms of participation before and after learners were exposed to the expansive learning processes are revealed (see Chapters 7 & 9).

1.11 Justification of the study

As I have already indicated earlier (see Section 1.8.2) research done in Botswana has consistently focussed on the teacher as an agent of change in environmental learning processes. But in the field of environmental education there has been an increased interest in the rights and abilities of children to actively participate in their own learning. This is part of a broader trend towards examining participation in constructivist learning processes in the cognitive sciences; through access to language, cultural capital and through scaffolded pedagogical processes. Through emphasising participation, the hope has been that children will be more aware of social transformation so that they can make changes in their context. In environmental education, the focus has mainly been on teaching children to participate, but without understanding and addressing environmental issues through developing their action competence (i.e. their abilities to make decisions and act more independently or collectively).

Previous research on learner participation on action competence has not explored the relationship between the learners' activity system, arising tensions in these activity systems, and the development of action competence; instead research has tended to focus more on the kinds of knowledge skills and processes involved in developing action competence (Jensen, 1997; Jensen, 2002; Jensen & Schnack, 2006 Carlson & Jensen, 2006). The historically constituted starting points and socio-cultural context of action competence development (and hence learner participation in action oriented

environmental activities) has been under-examined. Only recently has Jensen (2004a, 2004b) started to turn his attention to a deeper analysis of the socio-cultural context of learning and its relationship to action competence development. It is in this area that this study is likely to contribute to new knowledge in the field of environmental education.

1.12 Intended benefits to be derived from the study

It is hoped that findings from this study will make contributions to theory and practice of waste management in schools and as a result develop a positive effect on waste management competencies and agency of the learners. It is also expected that the findings would have important epistemological and pedagogical implications for curriculum development, teacher education, and educational administration regarding participation of learners in waste management. At a wider theoretical level, the study will contribute to an understanding of the socio-cultural historical activity systems that provide expansive learning opportunities and the development of action competence and civic agency.

1.13 Thesis layout

PART I: BACKGROUND AND SETTING UP THE STUDY – THE STUDY CONTEXT

Chapter 1: Contextual profile: Socio-ecological context and historical context of learner participation in Botswana education systems
In this chapter I introduced the study by tracing and outlining the socio-ecological context and the historical background of learner-centred education which gave rise to learner participation in Botswana. The chapter further reveals the context from which the research focus emerged and how the outlined context motivated me to undertake this study. The research purpose and goals, research questions and an introduction to the methodological framework of the study are also outlined.

Chapter 2: Development and representation of learner participation in environmental education processes
This chapter maps out an overview of the development of children's participation in the global, regional and Botswana contexts by tracing the development of environmental education from the early ecological and issue resolution goals of environmental

education to sustainable development discourses, with a focus on policy issues and how learner participation has been represented and implemented in environmental education.

PART II: FRAMING THE STUDY

Chapter 3: Conceptual framework of the study – Conceptual analysis of learner participation
This chapter attempts to give a conceptual analysis of learner participation by focussing on the key concepts that were used in the study. It provides a broader concept of learner participation within a socio-cultural context, drawing from Vygotsky's socio-cultural cognitive learning theory and action competence approaches to participation as developed in the field of environmental education.

Chapter 4: Study theoretical framework
This chapter covers the key theoretical frameworks that informed the study methodology. These are Engeström's (1987, 1999, 2000, 2001) second generation activity system meditational model and Jensen's (1997, 2000, 2002, 2004a, 2004b) models of action competence development and forms of participation.

PART III: RESEARCH PROCESS AND STUDY DESIGN

Chapter 5: The research process and study design
In this chapter the research process and methods applied in the research are discussed. The chapter also attempts to adequately outline the methodological challenges that had a bearing on the ethics and trustworthiness of the research and how these were reflexively dealt with.

PART IV: RESEARCH FINDINGS

SECTION 1
LEARNER PARTICIPATION: WASTE MANAGEMENT ACTIVITY PICTURE AND CONTRADICTIONS AND TENSIONS

Chapter 6: The schools' waste management activity systems

In this chapter a picture of school waste management activity systems in three cases studies is presented. The picture reveals how learners are participating in school waste management activity systems.

Chapter 7: Contradictions and tensions in waste management activity systems

The chapter focuses on and discusses emerging contradictions and tensions in the school waste management activity systems. Forms and categories of learner participation which are largely teacher-directed are revealed.

SECTION 2: EXPANSIVE LEARNING PROCESSES

Chapter 8: Dialogue as a tool for scaffolding and guiding learner participation – Expanding the learners' ZPD

Though this chapter presents mostly review of literature on dialogue, this review emerges from the findings in Chapter 7 which reveal that learner participation was largely teacher directed due to lack of dialogue between teachers and learners. The chapter therefore discusses the importance of dialogue as a central tool for guiding and scaffolding learner participation by expanding learner ZPD in order to facilitate expansive learning processes for action competence development, the main object of Chapter 9.

Chapter 9: Action competence development

The chapter outlines and discusses the expansive learning processes that were undertaken in the study to develop learners' action competence. It also shows how through the process, their participation was supported through dialogue by the researcher with the help of teachers. The outcomes and evidence of action competence development as well as the constraining and enabling factors in this action competence development are highlighted. The chapter concludes by revealing forms of learner participation after learners were exposed to the expansive learning processes which

had shifted from being teacher-directed to being teacher-learner directed through dialogue.

Chapter 10: Synthesis, Reflections, Conclusions and Recommendations
This chapter provides reflections on the study process, the major findings and summarises the key emerging issues. It provides lessons and implications of the study for the mediation of learner participation in waste management activities. It also assesses what the study has been able to achieve and makes recommendations.

1.14 Chapter Summary

This chapter provided the context and the background from which the research focus emerged by giving a broad philosophical, social-cultural and historical background contextual profile of participation of learners in Botswana education processes, introducing the main focus, questions and goals guiding the study. It also provided an overview of the structure of the study. The next chapter provides a broader context of learner participation within environmental education policy and processes, globally, regionally and locally.

CHAPTER 2: DEVELOPMENT AND REPRESENTATION OF LEARNER PARTICIPATION IN ENVIRONMENTAL EDUCATION PROCESSES

2.1 Introduction

This chapter provides a contextual profile of the origins and emergence of the increased interest in the rights and abilities of children to actively participate in environmental education processes within the history of the development of environmental education, with a focus on global, regional and local policy trends. I also make an attempt to trace and discuss the development and contextual picture of learner participation within the framework of global, regional and local contexts and how it has been interpreted and represented with a special focus on the Botswana context. Having provided the background on learner participation in Botswana, particularly how it has been interpreted and represented in the society and education processes, this chapter also looks at the key players in the environmental education landscape that have also made a contribution to advance this initiative in their programmes.

2.2 Development of learner participation in environmental education

The concept of children's participation within environmental education can be traced to the roots of environmental education itself. In education, the origins of environmental education can be traced to the promotion of nature and outdoor study, essentially in primary schools, and later to the conservation movement (Stevenson, 2007). Stevenson argues that

> The primary purpose of nature study was to develop an understanding and appreciation of the natural environment through first-hand observations. The conservation movement, which grew gradually during the first half of this century, introduced a concern for the preservation of species and areas of natural significance through sound management (p. 140)

Historically, conservation education was driven by the conservation movement whose main objective and focus was on creating awareness and modifying learners' behaviours towards preservation and conservation of the physical ecological environment (Stevenson, 2007). Within the broad project of these movements,

neither nature study nor conservation education challenged the socio-economic or political fabric of our society. Reviews of school practices generally indicated that nature study's and conservation education's aims of developing knowledge, skills and awareness about natural resources and their management were fairly widely incorporated into primary school curricula and the science and geography curricula of secondary schools (Stevenson, 2007, p. 140; citing UNESCO, 1977, Childress, 1978).

Conservation education had as its focus the importance of the public's better understanding of the importance of natural resources to the society, and developing citizen support for sound natural resource preservation and conservation and management programmes. On a socio-political level Stevenson notes that it wasn't until Rachel Carson's *Silent Spring* (1962) that the 1960s brought warnings of imminent ecological disasters. There was an extensive emergence of organisations such as Friends of the Earth, which together with pressure from the media on scientists and ecologists reflected a widespread concern in the late 1960s and early 1970s that action was needed to change the prevailing pattern of damage to the environment. These concerns led to environmental discourses that were more concerned about the global socio-ecological issues such as inadequate supply and availability of fresh water, rapid population growth, poverty and inequality, food shortage, depletion of tropical forests, loss of biodiversity, pollution, desertification and many more that could not be solved by preservation and management approaches alone (Stevenson, 2007) .

At the international level, in 1972, subsequently followed by the Belgrade Charter, the United Nations Conference on the Human Environment in Stockholm, Sweden, called for the provision of environmental education as a means to address the global socio-ecological crises worldwide. The Tbilisi Conference that was held in 1977 intensified the call for the recognition of environmental education. Following ten years later, with increased environment development discourse, the concept of sustainable development emerged through the Brundtland report, *Our Common Future,* (WCED, 1987). This concept was meant to take a holistic approach to tackling environmental issues in a more sustainable and pluralistic way that moved away from the technical approach that was mainly concerned with developing 'quick technological fixes' (Stevenson, 2007; Uzzell, 1999) to environmental problems to a more holistic approach that focused among other things, on societal empowerment through participation across all sectors of society (Stevenson, 2006, 2007; Breiting & Wickenberg, 2010). From this some influential and widely accepted policy statements emerged in UN international conferences with an established clear consensus that this approach could be realised

inter alia through participation by all stakeholders in environmental education processes.

Emerging from the Stockholm conference, participation of learners as a key concept in learning in environmental education was included in a number of key UN policy documents (Belgrade Charter, 1976; Rio Declaration, 1992; Chapter 36 of Agenda 21 (UNESCO/UNEP); Convention for the Rights of Children). The Belgrade Charter argued that learners should be provided "…with opportunities for active participation in all levels of activities to solve environmental problems" (UNESCO-UNEP, 1976, p. 4). In its principles, the Rio Declaration of 1992 also made reference to the importance of participation in best handling environmental issues by all concerned citizens (*including children*) at the relevant levels through facilitating and encouraging public awareness and participation by making information widely available to the concerned parties (UNESCO-UNEP, 1992). These principles can be achieved by "forging a partnership that mobilizes the creativity, ideals and courage of the youth in order to achieve sustainable development and ensure a better future for all" (UNEP, 1992). From these statements it becomes clear that considerable emphasis was placed on the role that education can play in sustainable development.

2.3 Education for sustainable development (ESD)

The emphasis on the central role of sustainable development emerged at the Rio Conference in 1992 through Chapter 36 of Agenda 21 which was critical in its position that, to achieve environmental and ethical awareness, values and attitudes, skills and behaviour that are consistent with sustainable development, effective public participation in decision-making should be an inherent component at all levels of society. It was specifically noted that there was a need to reorient the curricula in all levels of formal education towards an education that must be a vehicle of knowledge, thought patterns and values needed to build a sustainable world (Ogbuigwe, 2007; UNESCO, 2009). Agenda 21 provided a comprehensive plan of action to be taken up globally, nationally and locally by UN agencies, governments and major organizations (NGOs, and related networks) to reduce the human impact on the environment (ibid.). Subsequently the World Summit on Sustainable Development (WSSD) in 2002 identified Education for Sustainable Development (ESD) as a critical intervention area for furthering the goals of sustainable development at a global level. The role of education was later consolidated at the UN general assembly in 2002 when the Decade

of Education for Sustainable Development (DESD, 2005-2014) was declared following the recommendation of the WSSD Plan of Implementation (Ogbuigwe, 2007).

Since then, ESD has broadened its mandate and vision to encompass issues of social justice and the violation of human rights and human-induced climate change (which has led to rapid depletion of natural resources, the increased frequency of natural disasters, the loss of biodiversity, the spread of infectious diseases (e.g. HIV-AIDS) and increased poverty (UNESCO, 2009). While there had been widespread consensus about these goals of ESD, there is considerable debate on the meaning of ESD (Stevenson, 2006, 2007; Landorf, Doscher & Rocco, 2008; Lotz-Sisitka, 2004; Robottom, 2007; Gough, 2006; Wals, 2007). The general consensus is that the ESD concept offers a framework that provides different vantage points in locally grounded but globally connected diverse ways

> to arrive at a 'learning society' in which people learn from and with one another and collectively become more capable of withstanding setbacks and dealing with sustainability-induced insecurity, complexity and risks. From this vantage point, ESD is about - through education and learning - engaging people in SD issues, developing their capacities to give meaning to SD and to contribute to its development and utilizing the diversity represented by all people - including those who have been or feel marginalized - in generating innovative solutions to SD problems and crises (UNESCO, 2009, p. 7).

All sustainable development discourses which have become a common concern in UN conferences have agreed that education is a driving force for the change needed (UNESCO, 2005). The 2002 World Summit on Sustainable Development conference, in which DESD was declared, tasked UNESCO with leading the decade and developing an implementation scheme. The overall goal of the UN DESD was defined as integrating the values inherent to sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all (UNESCO, 2005, p. 1). ESD was seen to be the vehicle through which environmental education which is participatory and action oriented would influence the direction of change for a better and just society (UNESCO, 2005).

The UNDESD highlights the role that education plays in sustainable development (UNESCO, 2005). The mid-term DESD review (UNESCO, 2009) re-emphasised this by highlighting the role of formal education in seeking to meet this mandate. This position is further reiterated in the 2007 Ahmedabad Declaration and Recommendations which were adopted by the Fourth International Conference on Environmental Education. The

conference particularly re-emphasised the focus on increasing inequalities, climate change problems, poverty, health risks, gender equity, social justice, and environmental health among other sustainability challenges. It emphasised the relevance, responsiveness and accountability of education in identifying alternative methods of learning by describing ESD as a lifelong, holistic and inclusive learning process (Ahmedabad Declaration, 2007). In relation to formal education the following recommendations were made:

> 1.4 Take an integrated approach to environmental education so that it can be a process of transformation. Teaching and learning should make use of diverse methodologies and be sufficiently flexible to cater to the various needs of learners in different cultures, contexts and nations. Such teaching and learning should incorporate ethical and critical reflection and creative thinking and learning approaches (such as those that characterise arts, design and creative cultural fields) and be inclusive of various approaches to learning. Educators and learners should explore and draw on local environments and knowledge critically and creatively to inform their work.

> 1.6 Employ pedagogies in schools and other formal learning institutions as a means of integrating environmental education and ESD principles and transformative learning approaches across all areas of the curriculum and all aspects of the school/formal learning institution's life. Provide and develop clear direction for formal education curriculum development to enhance environmental learning over time.

> 1.8 Help people to review values in relation to policy and behaviour through mandatory interdisciplinary and/or trans-disciplinary courses for learning for sustainability that employ new research and pedagogical approaches. Such approaches can be developed (for formal or non-formal contexts), shared and reviewed within a learning network approach.

It is clear from these recommendations that environmental education continues to be seen as a tool that can contribute towards ESD goals. It has always been, from its origins, concerned with relationships between environmental and social issues that contribute to the prevailing sustainable development narratives. It also strives towards goals similar to those of the sustainability concept (Lotz-Sisitka, 2004). This is the view that added impetus to the focus on education reforms that emphasised learner-centred pedagogical approaches to environmental education in sub-Saharan Africa including Botswana (see Chapter 1). However, in spite of this, the ESD agenda continues to be debated and critiqued by various scholars.

2.3.1 Global perspectives on ESD

González-Gaudiano (2006) has criticised the ESD concept for being drawn from the concept of sustainable development, which itself is said to suffer from internal contradictions and has been subject to a variety of interpretations. Scott and Gough (2004) view ESD's roots as firmly planted in environmental education and consider it as an important ally that has steadily striven towards goals and outcomes similar and comparable to those inherent in the concept of sustainability as espoused in the concept of sustainable development. They view environmental education as an investment to build upon and suggest we need to learn from its genealogy in formulating any future action for ESD (ibid.). Their view concords with Lotz-Sisitka, Olvitt, Gumede & Pesanayi (2006) who place the roots of ESD in the history of quality basic education and sustainable development, both of which are areas of interest to the UN ESD. They see ESD goals as being well aligned towards the attainment of MDG goals (UN, 2005) which seek to ensure environmental sustainability and social justice (UN, 2005). Lotz-Sisitka (2004) has argued that the ESD agenda is broad, diffuse and increasingly dominated by a strong economic emphasis which narrows and marginalises environmental perspectives and socio-ecological sustainability issues that particularly characterise sub-Saharan Africa (see Section 2.5). But Gough (2006) argues that ESD and environmental education are both concerned with achieving the same ends of "enabling learners to question unsustainable practices and participate in changing these practices" (p. 49). ESD however is broader than environmental education that has traditionally been more focussed on the environment and its associated problems in that it encompasses environmental education by

> setting it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life, as well as development perspective on social change and evolving circumstances. It still has much in common with earlier conceptions of active citizenship in environmental contexts, but differs in that ESD is envisaged as ultimately about education and capacity building and only secondly about environmental problem solving. (Gough, 2006, p. 49).

Wals (2007) provides a deeper insight into the ESD concept which he theorises as a framework offering opportunities for social learning processes that call for reflexive responsiveness and the creation of learning societies that should move "towards a world that is more sustainable than the one currently in prospect" (p. 36). Wals's perspective is shared by Lotz-Sisitka's (2009, 2010) emphasis on socio-ecological resilience, Sen's (2005, 2009) focus on human capabilities and freedoms and Landorf

et al.'s (2008) education for sustainable human development drawn from Sen's capabilities approach. All these scholars argue for an ESD approach that has within its framework the basic principles of capabilities, functioning, agency and development of real opportunities based on personal and social circumstance which consider individuals' or communities' rights and freedoms to make choices and act within their social contexts. Lotz-Sisitka (2009, 2010) views the role of education and sustainability within an ESD framework in relation to the strengthening of social ecological resilience and participation practices with people through deliberating valued beings and doings in the context of socio-ecological change and risk. The social ecological resilience concept seeks to understand the adaptive capacity of society and how society and ecosystems mediate, adapt, and learn from change, particularly global climate change (Krasny, Lundholm & Plummer, 2010; Lundholm & Plummer, 2010, see Section 2.5.1). All these positions taken by these scholars are directed towards building people's capabilities and capacities.

2.3.2 ESD within the capabilities approach

Landorf et al. (2008) argue for the need for an agency-driven, educationally useful definition of ESD. They suggest the conceptualization and implementation of ESD within Amartya Sen's human capability approach, and suggest its redefinition to *education for sustainable human development.* This definition, they suggest, has two components that seem to be lacking in existing definitions, namely agency and educational applicability in which democracy, equity and participation should be seen as equally vital components on the concept (p. 227). Sen's (2009) capability approach emphasizes functional capabilities and substantive human rights and freedoms (Sen, 2005), such as the ability to participate in any activities, political or otherwise, freely. These rights and freedoms are construed in terms of the substantive freedoms people have not only on how they actually function but on their having the capability, which is a practical choice, to function in important ways if they so wish (Sen, 2005, 2009).

> Sen's approach is based on 'capabilities', i.e. freedoms to achieve 'functionings', or the 'beings and doings' constitutive of well-being. Under this view, well-being is an ongoing process, rather than a product, of human development through the expansion of 'the real freedoms that people enjoy' (Landorf et al. 2008, p. 228).

Someone stuck in poverty, for example, could be deprived of such capabilities in many ways, e.g. by ignorance, government oppression, lack of financial resources, or false

consciousness (ibid.). This approach to human well-being emphasizes the importance of freedom of choice, individual heterogeneity and the multi-dimensional nature of welfare (Sen, 2009). For Landorf et al (2008), Sen offers a broad paradigm for evaluating the effects of social change policies on human well-being which is evident in the way it has provided a "framework for the Human Development Index (HDI), a comparative measure of the standard of living, life expectancy, literacy, and education for countries worldwide" (p. 227).

> We believe that Amartya Sen's human capability approach to development offers a new perspective on sustainable development, one that puts people – rather than the environment, society or the economy in which they function – at the centre. We hope that our definition of education for sustainable human development will spark public discussion of the centrality of human capability in our efforts to redirect education towards the fulfilment of both humanity's and earth's peaceful potential. The human capability approach has practical and far-reaching implications in all aspects of knowledge acquisition, content, curriculum and pedagogy (p. 234).

Landorf et al. (2008) see the capability approach as the basis of ESD to provide the clarity of direction and purpose needed for the transformation of curriculum, pedagogy and assessment. Related to this citation Ogunyemi (2005), quoting the former UN Secretary-General, Mr. Kofi Anan, in the preface his article, indicates that

> *Our biggest challenge in this new century is to take an idea that sounds abstract - sustainable development and turn it into reality for all the world's people (United Nations, 2001).*

The quote draws our attention to the fact that in spite of these ongoing debates about the meaning of sustainable development, for education, the greatest challenge is how to translate it to practical realities in the lives of people within the capability approach, for example. Within the framework of ESD, what this suggests is the reorientation, rethinking and revision of existing school education programmes, to include a clear focus on the development of the knowledge, skills, perspectives and values related to sustainability that will bring about understandings of social, economic and environmental sustainability (Ogunyemi, 2005, p. 96) by developing learners' capacities and capabilities. "Skills to be fostered, in the process include skills for creative and critical thinking, collaboration and cooperation, conflict management, decision-making, problem-solving and planning and practical citizenship" (p. 97) to respond adequately to the socio-ecological challenges highlighted in Chapter 1 that children in Botswana face. In terms of curriculum, Landorf et al. (2008) suggest that educating for sustainable

human development does not focus solely on human capital development, but it directs educators to examine learners' abilities to achieve locally determined basic capabilities.

> From there, educators and community stakeholders through democratic dialogue construct a curriculum that addresses what students must know and be able to do to achieve valued functionings. Such a curriculum does not negate concern for the effects of the environment on people's well-being, nor people's effects on the well-being of the environment. In terms of pedagogy, educating for sustainable human development is centred on democratic dialogue (p. 232 -233).

A learner-centred curriculum operating within an ESD capabilities approach plays a role in fostering social-ecological resilience, rebuilding and increasing capacity for learning and adaptation (Krasny & Roth, 2010). The adaptive capacity, or the ability of social-ecological resilience to demonstrate robustness in the face of socio-ecological challenges is closely linked to resilience and maintaining crucial functions such as social relations and governance (ibid.) and genuine learner participation (see Section 3.3.2) through collaborative co-engagement between teachers and learners with democratic dialogue being at the centre (see Section 3.6 and Chapters 8 & 9).

> One way to build adaptive capacity in social systems and thus foster resilience would be to build capacity among many individuals. At the individual level, adaptive capacity requires learning about how to be open to changing ways of thinking and ... is created through participation in a variety of experiences accompanied by reflexivity (Krasny & Roth, p. 546).

Implicit and central to this approach of educating for sustainable human development, is the demand for full participation of children and respect for their rights. Without this we will continue to witness the failure in efforts that Botswana has invested so much in the learner-centred pedagogical reforms which should be seen as key to develop capacities in a structured environment to help address a wide range of socio-ecological issues, including poverty alleviation, HIV/ AIDS, sanitation issues, climate change, conflict and unemployment (see Chapter 1).

2.4 Participation of children as a human right

The United Nations Convention on the Rights of the Child (UNCRC, 1989) has been instrumental in setting a global agenda for raising awareness about children and in particular actively encouraging an increase in children's participation in democratic societies, placing an emphasis on children's involvement in environmental decision-

making (Barratt Hacking et al., 2007, p. 531). The obligation and right for children to be involved and engaged in civic responsibilities and decisions about matters that affect their lives is firmly enshrined in this convention through Article 12 of the CRC which says,

> States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child (UNICEF, 1989).

Article 12 challenges states to consider children as citizens with both the capacity and the right to agency (Roche, 1999) rather than construing children and young people as awaiting transformation into mature, rational and competent adults (Greene & Hogan, 2006). This was clearly captured in the recommendations issued by the Committee on the Rights of the Child during its 37th Session in Geneva on 17 September 2004.

> The Convention on the Rights of the Child principally enshrines children's participation in all matters affecting children. Therefore, States parties must take all appropriate measures to ensure that the concept of the child as rights-holders is anchored in the child's daily life from the earliest stage: at home (and including, when applicable, the extended family); in school; in day care facilities and in his or her community. States parties should take all appropriate measures to promote the active involvement of parents (and extended families), schools and communities at large, in the promotion and creation of opportunities for young children to actively and progressively exercise their rights in the everyday activities (CRC, 2004 n.p).

Hart (1992), Lansdown (2001) and Graham, Whelan & Fitzgerald (2006) view this statement as a challenge that imposes an obligation on adults in their capacity as parents, professionals, politicians or any other children's custodians, to create opportunities and ensure that children are listened to and enabled and encouraged to participate and contribute their views on all relevant matters that affect them. "All people have a right to express their views when decisions are being made that directly affect their lives – and children are people too." (Lansdown, 2001, p. 7)

An interest in learner participation has particularly come from the human rights movement and organisations such as UNICEF whose primary objective is advocacy to improve children's rights and the economic and social policies that affect them by upholding and facilitating the full implementation of the UN-CRC. This children's rights movement has raised interest in *how* children are treated in society through

emphasising participation, with the hope that children will be more aware of social transformation so that they can make changes on socio-ecological issues (such as poverty, HIV/AIDS and climate change, see Sections 1.2 & 2.3) that affect them in their context. In environmental education, the focus has mainly been on teaching children to participate in understanding and addressing environmental issues (Jensen & Schnack, 2006; Jensen, 2004b; Breiting & Mogensen, 1999; Simovska, 2004, 2008; Barratt Hacking et al., 2007). However Graham et al. (2006) submit that some scholars have argued that Article 12 of the Rights of the Child poses serious challenges,

> both in practical terms of how to hear and act upon what children and young people say and in conceptual terms of how to elevate their social status in ways that take account of their rights, their contributions to the social order and their citizenship (Mayall, 2002 and Shier, 2001). In practical terms, the discharge of these obligations requires ongoing attention to the conditions necessary for children and young people to exercise their right to participate, providing opportunities for them to do so and helping adults develop expertise to hear what children say in different types of settings (p. 234).

This argument probably arises from the long-standing cautious perception by some sectors of society that children rights expose them to a certain degree of risk as it places them outside adult protection if their views and decisions are taken seriously (Lansdown, 2001). But Lansdown counter-argues this perception by pointing out that

> this is to misunderstand the nature of the rights embodied in the CRC as the Convention does not give children full adult rights. Rather, it gives children the right to be heard and to gradually take increasing responsibility for decisions as their competence evolves (p. 7).

Beyond that, Lansdown argues that adults can only act to facilitate children's participation and meet their needs "if they know what is happening in children's lives - only children can provide that information" (ibid.). A key challenge that emerges, then, is whether and how we can best identify the opportunities that can enable and facilitate children's participation so that its principles and prospects as espoused in Article 12 are meaningful, relevant and important to the everyday lived experience of children in their contexts for their own welfare and that of the environment. The UNICEF Director in her report on the 4th World Water Forum in Mexico City in 2006, quotes one of the child delegates who challenged leaders and policymakers by saying,

> "We, the children of the world, are ready to work with you. Are you ready to work with us?" The answer must be a resounding "yes" because what is good for children – reducing pollution, safeguarding education and health, preserving environmental diversity,

protecting water supplies, increasing access to proper sanitation – is also good for the planet (UNICEF, 2007, p. 2).

The Southern African Development Community Regional Environmental Education Programme (SADC-REEP) could be seen to be responding to the CRC and other global policy initiatives and objectives through the creation of an enabling environment for policy synergy and inclusion of environmental and sustainable development concerns into regional and national education policies, strategies and systems. It also works towards including Environmental Education and ESD into regional and national development plans (Lotz-Sisitka, Olvitt, Gumede, & Pesanayi, 2006).

2.5 Participation - Environmental Education and ESD in southern Africa

Environmental education discourses in Southern Africa have continually been shaped by the global influences which have seen the emergence of environmental education in southern Africa in the early 1980s, principally centred on teaching ecology to develop environmental awareness, change attitudes, values and behaviour - it was expected this would lead to problems being addressed and rectified (O'Donoghue, 2006).

Participation in environmental education in southern Africa became highlighted and conceptualised in the late 1990s when a number of issues associated with the trend towards participatory educational practices in environmental education were raised, hence making participation in environmental education an 'under-theorised' concept (O'Donoghue, 1999). O'Donoghue (1999) observed that where the process of participation was advanced, "its failures shifted the responsibilities/blame to the participants" (Lotz-Sisitka & O'Donoghue, 2008, p. 115, citing from O'Donoghue, 1999).

> The processes were characterised by participatory learning spaces (normally developed as choreographed educational activities) for the other to participate in learning activities and to clarify their needs and perspectives. An axis of tension between inviting participation in an open-ended sense and specifying or scaffolding activities to enable or shape this, shaped participation as a contested concern that was not well differentiated in any detail. The benign guiding hand of facilitation could thus be seen to retain a somewhat 'hidden' tyranny and a subverting ambivalence that was neither fully understood nor trusted (Lotz-Sisitka & O'Donoghue, 2008, p. 115).

It was from this early review of participation in environmental education by O'Donoghue (1999) that the emergence of participation in environmental education in southern Africa came to take centre stage. The review raised robust debates on the concept around

participatory theories and assumptions on participatory imperatives. This subsequently evolved to a new shift in approaches to include also social, economic and political dimensions which were methodologically socially critical and participatory in nature, promoting reflexive co-engaged critical dialogue both of which respond to the ESD sustainability initiatives (O'Donoghue, 2006; Lotz-Sisitka & O'Donoghue, 2008). The new approaches had more concern for environmental learning and social change through participation education processes that are transformative and directed at an interest in deepening democracy and enhancing or strengthening meaning-making to engage environmental issues and risk (Lotz-Sisitka & O'Donoghue, 2008, p.116).

> These changes have developed through a participatory turn accompanying a globalizing democratic rationalism. With this there was an apparent decentralizing of state mediating functions and an increasingly concern for more local and personal (community and individual) readings of environmental and sustainability issues (O'Donoghue, 2006, p. 248).

This shift from narrower and more individualized approaches to a greater concern for sustainability emerged with the evidence of how the changing socio-ecological landscape in southern Africa was putting environment concerns and policy issues on poverty, HIV/AIDS, biodiversity, water, pollution and waste management and deepening of rural poverty at the centre (Lotz-Sisitka 2004, 2006). This created a challenge as to how best environmental education could contribute to resolving these issues. This saw the emergence of an interest towards "participatory practice in environmental education in southern Africa which was heavily influenced by early nature experience perspectives and later critical theories" (Lotz-Sisitka & O'Donoghue, 2008, p. 124) and "participatory pedagogies for capacity development and social transformation" (p. 119). This socio-historical context has given rise to the participatory framework within which SADC-REEP and its networks are operating.

Botswana, as a SADC member state, participated in the consultation process on participation in the UN Decade of ESD which was led by the SADC-REEP to "explore interpretations and meaning-making around the global discourse of (ESD) in a southern African context" (Lotz-Sisitka, 2006, p. 10). One of the themes of involving people in sustainable development actions within the SADC-REEP framework is the "need to encourage and further develop *participatory approaches* and methods in ways that are not superficial and token" (Lotz-Sisitka, 2006, p. 20, emphasis in original). This theme was developed in response to earlier approaches in environmental education that more

narrowly placed emphasis largely on preservation and protection of the ecological environment, neglecting attentions to forms of human activities that result in its degradation as highlighted by O'Donoghue above.

I have already highlighted the trigger effect that these movements had on the development and adoption of the Brundtland Report's sustainability concept and subsequently ESD (see Sections 2.2 and 2.3). But Sen (2009) in his interpretation of the Brundtland Report for human freedoms and capabilities, argues that

> the value of the environment cannot be just a matter of what there is, but must also consist of opportunities it offers to people. The impact of the environment on human lives must be among the principal considerations in assessing the value of the environment (p. 248).

Sen, writing from India where poverty related issues are paramount, goes on to contend that "in thinking about the steps that may be taken to halt environmental destruction, we have to include constructive human intervention" (p. 249). What he raises here is the question of education relevance and quality. He goes on to argue that constructive human intervention can only be achieved by, among other things better communication and awareness of environment-oriented thinking suggesting that, "the spread of school education and improvements in its quality can make us more environmentally conscious" (ibid.). Similar views are expressed by Gough (2006), Fien (2001) and Scott and Gough, (2004), all of whom also emphasise that the main ESD agenda is very much concerned with education, learning and capacity building within a capabilities orientation, or a social ecological resilience perspective (Lotz-Sisitka, 2009, 2010) rather than only through problem solving through conservation and preservation of the natural environment. To illustrate these authors' argument, generally participatory approaches in environmental programmes regarding the management of waste in Botswana have been understood and taken up as a form of preservation and protection as revealed by studies carried out on approaches to manage waste (Ketlhoilwe, 2007a, 2007b; Kgathi & Bolaane, 2001; Ketlogetswe & Mothudi, 2005) which is one of the major challenges that the country still faces (see Chapter 1). It is in light of this view that SADC-REEP saw it necessary to develop a capabilities approach for EE/ESD framework. Within this an enabling environment for change-oriented participation and learning in a context where transformation, democracy and social-ecological resilience are high on the agenda and are valued (Lotz-Sisitka, 2010) (see Section 2.3).

2.5.1 Learner participation through participatory approaches - SADC-REEP

As indicated in the previous section, the ESD consultation carried out in southern Africa established that Environmental Education in the region is now strongly oriented towards contextual socio-ecological issues related to environmental degradation and risk, the ravages of HIV/AIDS, poverty, biodiversity, water, pollution and waste management and other health risks. Thus it has a strong environmental focus but also considers other concerns to re-orient education towards sustainable development (Lotz-Sisitka, 2004, 2006). This provides a firm foundation for ESD work in the region (Lotz-Sisitka, 2004). Lately there has been an increased focus on the impact of climate change on these socio-ecological risks (Lotz-Sisitka, 2009). But Lotz-Sisitka (2009) noted that generally there is still lack of adequate analysis from structural, educational and contextual vantage points, to provide adequate response strategies or alternatives that are contextually located to deal with the climate change challenge (p. 81).

SADC countries and communities are particularly at risk because there is growing evidence that climate change is contributing to the burden of poverty and disease because of its links to low rainfall and flooding. SADC countries depend heavily on agriculture, the most climate-sensitive of all economic sectors and most communities in these countries are subsistence farmers (Lotz-Sisitka, 2009; UNFCCC, 2007; UNICEF, 2007). As rains fail, there will be a general decline in most of the subsistence crops and livestock will die, exposing those vulnerable to starvation and diminishing water supplies for drinking and hygiene and depriving them of healthy social livelihoods (UNICEF, 2007; UNFCCC, 2007; Lotz-Sisitka, 2009). There is evidence which suggests that the SADC countries which are mostly located in a warmer region and whose major source of income is agriculture will be worst hit by changes in rainfall patterns, greater weather extremes and increasing droughts and floods. This change in precipitation patterns is likely to affect the quality and quantity of water supplies, thus compounding the impact of poor water and sanitation (UNICEF, 2007). The climate change impact has the potential to add to the insecurity faced by some of the most vulnerable people in these countries particularly children (UNICEF, 2007). Because children are the most vulnerable, there is therefore need to act decisively within the ESD initiative by co-engaging children in new learning processes that develop their action competence and capabilities.

> [T]hey need not be considered passive or helpless victims under all circumstances. In fact, studies have found that many children can be extraordinarily resilient in the face of significant challenges. Older children often play a valuable role in identifying environmental problems and coming up with viable solutions based on their own knowledge and experience (UNICEF, 2007, p. 4-5).

The SADC-REEP responded to this challenge through a number of initiatives, one of which is to meet the ESD objectives of integrating sustainability practices into aspects of education and learning (Lotz-Sisitka, 2006) through the involvement of people in sustainable development actions through practical actions (Lotz-Sisitka et al., 2006).

As already mentioned in the previous section, one of the themes of involving people in sustainable development actions is to develop appropriate and genuine *participatory approaches* and methods that are purposeful (Lotz-Sisitka, 2006). The consultative process that SADC-REEP carried out in the southern Africa region established that Environmental Education is strongly oriented towards contextual socio-ecological issues, thus it has a strong environmental focus but also considers other concerns to re-orient education towards sustainable development (Lotz-Sisitka, 2006). This provides a firm foundation for ESD work in the region through ESD practices and involving participatory approaches was

> … seen to be important in building capacity for action taking, and also for ensuring ownership and longer term sustainability of initiatives. There was a strong consensus that participatory approaches were useful in teaching practices, but at the same time, there was a concern that some participatory approaches were superficially used, and were not as effective as they should be (p. 15).

This statement calls for participatory methods that are learner-centred where "everyone is represented appropriately so that they are able to voice their views on the situation" (p. 19). This is part of a broader trend towards examining participation in constructivist learning processes through access to language, cultural capital and through scaffolded pedagogical processes where it is strongly recommended that these processes are supported through the skills of the 'knowledgeable other' (ibid.) (see Chapter 3). This support could be provided through, among other things, understanding how learning takes place in social and cultural contexts and using appropriate learner support resource materials, for example (ibid.). To achieve this, O'Donoghue, (2007, p. 153) suggests that there is a need to look critically at current curriculum, methodological perspective and methods asking:

- Do the participants have access to all knowledge resources that might enable them to grasp and grapple more coherently with the issues they are engaging?
- Are learning interactions arising with close, purposeful social engagement in environment and sustainability concerns?
- Do learning interactions reflect practice-based deliberations that might allow the better mediation of choices that are more reality congruent and socially responsible?

Related to this, O'Donoghue (2001) proposed an active learning framework that offers the opportunity for the learning activities to engage issues in local context in ways that reflect practice-based deliberations with learners with purposeful social engagement in environmental and sustainability concerns by linking practice to, and structuring situated learning processes that reflect on and respond to local environmental issues, risks and concerns. The framework supports learning activities that engage environmental risk and concern through a process of finding out and sharing information about an environmental focus by undertaking investigations in local surroundings, doing things for a healthier and happier community through reporting and reflecting on the learners' actions (ibid.).

In adopting participatory approaches, SADC-REEP also worked in partnership with other non-governmental organisations through the Environmental Education Association of Southern Africa (EEASA). Some of the organisations which pioneered environmental education in their attempt to realise this objective of an all inclusive participation included the World Wildlife for Fund for Nature of South Africa and Wildlife Society of South Africa (now known as WESSA) and in Botswana, the Kalahari Conservation Society, Association of Wildlife Clubs of Botswana and Somarelang Tikologo. Through this network, some of these organizations directly influenced environmental education policy process in their countries (Ketlhoilwe, 2007a). The SADC-REEP and its partners have developed an approach to environmental education that supports individuals, communities, and institutions in southern Africa to strengthen alternatives and capabilities that respond to critical environmental and sustainability issues and risks. The programme also seeks to strengthen socio-ecological resilience and sustainable development in the southern African region (SADC-REEP, 2009). For instance, the Kalahari Conservation Society and Association of Wildlife Clubs of Botswana participated in lobbying government to incorporate environmental education into the national education system (Ketlhoilwe, 2007a). Ketlhoilwe further submits that

> at the school level progress has been noted on school environmental policy (SEP) processes in Botswana, Lesotho, Namibia and Zambia, also supported by SADC-REEP.

[The] school Environmental Policy resource provides schools with a coherent framework for environmental education activities which are, in the absence of a coherent environmental education policy or curriculum, often *ad hoc*. It encourages teachers to make curriculum links and thus to increase the educational benefits of school improvement activities... (p. 40).

This is an example of the diverse contexts in which environmental education and learning take place within the ESD initiatives of the SADC-REEP to respond to ecological risks and socio-ecological problems related to climate change. They focus on learning in multiple contexts including higher education, governance organizations, community based natural resources management, agriculture and community programmes, and civic ecology practices (Lotz-Sisitka et al*.,* 2006). This demonstrates

the notions of education and learning as *situated in* diverse contexts, [and] how environmental education and learning *interact with* these multiple contexts. [The] multiple layers of interactions within and among environmental education, learning systems, and social–ecological systems is critical if environmental education is to work alongside other fields to foster resilience (Krasny et al., 2010).

In all these initiatives, it is expected that participation of learners will take centre-stage in the participatory processes as recommended by the SADC-REEP consultation process. It was out of these initiatives that Botswana environmental education policies were developed also emphasising the same participatory approaches in environmental education in formal education. As noted earlier, the emphasis on participation is also linked to wider democratisation of society (see Section 1.7).

2.6 Participation in Environmental Education processes- Botswana context

In Botswana, participation became key in environmental education processes as a result of an ever increasing pressure of environmental challenges in the country. It was first influenced by the country's 1990 National Conservation Strategy (NCS) that identified pollution, largely due to general *poor waste management,* as one of the main environmental challenges that faced the country (see Section 1.4). The strategy paved the way for the development of the 1994 Revised National Policy on Education (RNPE) of Botswana that recommended the introduction of environmental education in schools (see Section 2.6.3). Later, the urgency to respond to the country's environmental challenges was driven by the country's *2016 Long-term National Vision for Botswana's* action plan which is aligned to the Millennium Development Goal (MDG 7) of ensuring environmental sustainability*,* in which the government states that the country should "…

take pride in their clean, *healthy* and unlittered surroundings" (Botswana Government 2000, p. 7) through participation by all sectors of society to achieve this goal. Through this emphasis in all these policies, participation became a key focus of developing a citizenry that will take full responsibility for its environment.

2.6.1 The National Conservation Strategy

The National Conservation Strategy (NCS) (Government of Botswana, 1990) was the first policy framework in the country developed by government to pave the way for the development of environmental education in the country. The strategy was developed from the National Policy on Natural Resources Conservation and Development (NPNRCD) in response to global policies and programmes of the United Nations Environment Programme (UNEP). But its focus was mainly on environmental conservation and creating public environmental awareness. Among its strategic goals, the policy subsequently identified that "increased education of and participation by all members of the society in improving the environment" (Botswana Government, 1990, p. 3) was key to achieving its objective of developing a citizenry that will take full responsibility for its environment.

To achieve different strategic conservation goals the policy spelt out measures that showed government's commitment to the national conservation strategy to be

> the expansion of facilities directed to improving environmental education, training and research activities, as well as to raising public awareness about environmental issues. It is envisaged that conservation education will be specifically included in school and teacher training college curricula (Botswana Government, 1990, p. 7).

The main goal of environmental education outlined in the strategy was to increase public awareness and understanding of the environment and related issues in order to support sustainable development and respond to the environmental challenges facing Botswana (Ketlhoilwe, 2007a, p. 153) through public participation. The leading implementing agency of this policy was the National Conservation Strategy Agency (now the Department of Environmental Affairs) and the agency was responsible for coordination of the environmental education strategy and its action plan through the National Environmental Education Strategy Action Plan (NEESAP, see Section 2.6.4). The strategy influenced among other factors the convening of the 1991 Environmental Education Planning Conference in which all those who had a role to play in the

provision of environmental education in Botswana participated. This led to the subsequent introduction of environmental education through the Revised National Policy in Education (RNPE) in 1994.

2.6.2 The 1991 Environmental Education Planning Conference

The 1991 Environmental Education Planning Conference was another milestone in the history of environmental education discourses in Botswana which provided further impetus to the growth of environmental education (Ketlhoilwe, 2007b). One of the keynote speakers at this conference was the then Minister of Education who noted that

> Education is one of the key components in the National Conservation Strategy and this conference is a first initiative to start the planning process for the environmental education. Here we refer *not only to environmental education for school children,* but for the whole population - a task that can only be achieved through a joint effort of both Government and Non-Government Organizations (Cantrell & Nganunu 1992: 1, my emphasis).

Implied in this statement is that school children were among the main target sectors of the society for which environmental education was developed. Their participation in environmental learning processes was fundamental to the success of the goals of environmental education programmes. The goals of environmental education in the formal education sector became clearly articulated in the 1994 RNPE.

2.6.3 The 1994 Revised National Policy in Education (RNPE)

At the national policy level, the 1994 Revised National Policy in Education (RNPE) was the first major effort to place a focus on environmental education into the school curriculum by making specific reference to a strong drive towards recognising and affirming the role of citizen participation in the care and preservation of the environment. This is quite evident in its recommendation that, in so doing, this should be coupled with the training of teachers

> In the methodologies, at both pre-service and in-service levels, for environmental education to ensure that learning results in attitudinal changes and citizen participation (Botswana Government, 1994, p. 26).

Consequently, schools have been charged with the responsibility of producing environmentally responsible learners who will be able to handle the demands of an ever increasing pressure of environmental challenges in their society (Cantrell & Nganunu, 1992). But Ketlhoilwe (2007a) in his analysis of the policy goals argues that the text is based on a linear casual logic that assumes that

> environmental education would lead to individual attitudinal and social change and the development of desirable behaviour. The text does not take into account unexpected factors that may emanate from economic status or personal or social (communal/cultural) attitudes and experiences that may constrain the achievement of the programme objectives (p. 197).

What Ketlhoilwe is alluding to is the fact that the policy is not clear on the social and situated nature of learning processes and the systems of education and training which both enable and constrain such learning, particularly change-oriented learning in a context where democracy, transformation and socio-ecological resilience should be are high on the agenda (see Sections 2.3.1 & 2.3.2). In spite of this cautionary note, environmental education was however infused into the school curriculum.

2.6.4 The National Environmental Education Strategy Plan (NEESAP) - Infusion Policy

The National Environmental Education Strategy and Action Plan (NEESAP) was tasked with the responsibility of translating the NCS, and subsequently the 1994 RNPE policy intent into action and to ensure that environmental education was infused into the National Curriculum in 1997. The 2007 NEESAP review action plan was developed after the SADC ESD consultation process and it was responding to the SADC-REEP's initiatives to meet the ESD objectives of integrating sustainability practices into aspects of education and learning (see Section 2.5). NEESAP tasked the Ministry of Education (Botswana Government, 2002b) through its Department of Curriculum and Evaluation (DC&E) with the responsibility of designing curriculum guidelines for schools to infuse Environmental Education. According to the guideline document,

> the overall aim of environmental education in Botswana is to develop a society that is aware of and concerned about the environment and its associated problems; a society which has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively towards solving current problems and preventing new ones (Botswana Government, 2002b, p 2).

The guidelines also contain the national goals of Environmental Education as recommended in the RNPE and one of the goals relates to the development of

> ... critical thinking, problem solving ability, individual initiative, interpersonal and inquiry skills to make informed decisions when dealing with environmental issues and willingness to participate in environmental protection and conservation (Botswana Government, 2002b, p. 1).

In his analysis of the policy and specifically this goal Ketlhoilwe (2007a) interprets that implied in this goal is the inference of

> ... the effects of environmental education programmes on the learner. It challenges schools and the education system to produce critical thinkers, problem solvers and individuals with attributes such as interpersonal skills and the capability to make informed decisions when dealing with environmental issues. The action processes relate to critical thinking, problem solving, interpersonal and inquiry skills in dealing with matters concerning sustainable utilization of natural resources. The goal is skill-based, inscribing the expected cognitive and social abilities. From an historical point of view the third National Goal of Environmental Education captures part of one of principles of the Tbilisi Declaration (1977), which calls for the active involvement of students at all levels in working towards the resolution of environmental problems (p. 198).

According to his understanding and consistent with Stevenson's (2007) thinking, learners should be exposed to processes of inquiry, critique and reflection to develop and defend their own social inquiry and moral deliberations because engaging them in a rational process of social inquiry and moral deliberation would enable them to pursue actions they deem appropriate and justifiable for achieving environmental sustainability (ibid.). This would support learners to formulate a moral code concerning environmental issues and to develop a willingness to act on their personal values by participating actively in environmental education (ibid.). Hence one of the specific objectives of environmental education in the guideline document is for learners to:

- be able to work towards resolving environmental problems as well as *actively participating* in the care and conservation of the environment (Botswana Government, 2002b, p. 2, my emphasis).

In Primary schools environmental education has been infused in some key school subjects, notably Environmental Science (for lower primary) and Science (for upper primary). Specific goals for Primary Education Environmental Education in this guideline document are:

- to make pupils aware of the physical, natural and cultural resources around their homes, schools and communities;
- to develop a sense of appreciation of the importance of these resources to the students and their communities;
- to impart to learners, basic skills necessary for healthy living and the conservation of natural and made / built resources around their home, school and community;
- to impart basic knowledge and skills that will promote the desire to conserve and preserve the environment and its finite resources from the dangers of over-exploitation, waste and pollution; and
- to acquire skills of inquiry, critical thinking, and problem solving (Botswana Government, 2002b, p. 2).

In its 2007 review to assess the impact of its implementation and to accommodate new environmental needs and interests of its stakeholders, NEESAP stated as one of the main guiding principles of environmental education, that a *"participatory approach* shall be given special attention in planning and implementing environmental education activities and initiatives with a direct, *perceived benefit to the learners*" (Botswana Government, 2007, p. 9; my emphasis). This principle recognises the importance of learner participation in environmental learning processes and it is aligned with the principles of Botswana's education philosophy, *Kagisano,* of democracy, social justice and equity that underpin the values upon which the education system is premised (see Section 1.7). But as revealed in Ketlhoilwe's study (2007a), there has been a normalisation by teachers of learners' participation in cleaning activities in the school structures which has been by equated to environmental education (see Section 1.6) and this seems to fall far short of the policy imperative. Ketlhoilwe (2007a), on further analysing policy implementation in the environmental education guideline documents and syllabuses of primary school subjects, found that due to the influence of international discourses "there are issues of institutionalisation, power relations and governmentality at play in the policy interpretation and implementation" (p. 303). This technology of power and governmentality has played itself out in the selection of subjects in primary schools for environmental education infusion, namely Science and Environmental Science as, particularly the latter was equated with environmental education. It also manifested itself in the interpretation of environmental education as an environment management and preservation discourse.

Ketlhoilwe, (2007a) found that a factor that led to the normalisation of environmental education, was that the guideline documents were written in an imperative and directive style which does not provide adequate or consistent guidance to teachers "as to what should be done in implementing environmental education" (p. 340), resulting in this

(mis)intepretation. He argues that this interpretation by teachers has impacted on the epistemological and pedagogical discourses, as teachers then deployed some normalization strategies to continue exercising their disciplinary power through teaching and equating environmental education and environmental management activities through school cleaning activities emphasising conservation-protection discourses in environmental education over "the sustainability discourse which is rapidly becoming a dominant discourse shaping the field" (p. 281). This influenced and impacted on teachers' practices and actions in schools, and in the classroom in particular, as this

> hybrid discourse consisting of conservation/preservation discourse and sustainable use discourse resulted, which had power over teachers who, through normalizing strategies and other strategies of self-governance, translated this discourse into environmental management and Science discourses. This created new technologies of power in schools, influencing teachers and learners' knowledge construction and behaviours (p. 316).

However, Ketlhoilwe found that in spite of this, teachers were also reflexive of these normalising strategies and were able to identify the challenges and constraints that confront them as they implemented these strategies (Ketlhoilwe, 2007b, p. 183). Teachers identified various structural and contextual challenges which included limited training, inadequate material resources, funding and transport for outdoor learning, as well as lack of or inadequate support from supervisors and colleagues' attitudes, all of which constrained their teaching practices and capacity to implement the policy objectives (ibid.).

2.6.5 The 2006 Ministerial Directive/Policy

In 2006 a policy which came as a directive from the Ministry of Local Government and Lands (MLGL) under whose administration all primary schools fall, was enacted barring learners from undertaking certain cleaning activities (see Appendix A10). However, in my school experience, all cleaning in Botswana public schools has routinely been done as part of extra-curricular activities by learners and without an emphasis on environmental values (see Section 1.4). The environmental value attached to these routine cleaning activities was always implicit but only became highlighted by the inception of the infusion policy when the cleaning activities became equated with environmental education (Ketlhoilwe, 2007a, 2007b). This ministerial directive specifically stipulates that learners should not be involved in cleaning activities, particularly bush and grass clearing, and though not stipulated in the directive, toilet

cleaning is also no longer done by learners in schools (see Appendix A10). While it is not clear what motivated the enactment of this policy, it has been speculated that cleaning activities were interfering with formal teaching and the primary objective was to move children from being 'cleaners' to 'learners'. Or perhaps learners were exposed to ecological and health risks and it was in the interest of the children's safety and health. However it would be interesting to find out how the directive is implemented in the light of environmental management activities, given Ketlhoilwe's (2007a, 2007b) findings that these activities had been normalised in the school curriculum by equating them to environmental education (see Section 1.6 & Chapter 7). While this directive specifically bars children from toilet cleaning and grass clearing, the general understanding in most schools is that children should not even be involved in classroom cleaning. But learners were observed doing this, verifying the normalising strategies that Ketlhoilwe observed (see Section 1.6). Local district councils have now employed cleaners who are officially known as General Duty Assistants (GDAs) or cleaners to undertake the general cleaning duties in schools (see Chapter 6).

2.7 Vision 2016: Towards prosperity for All

Another important policy within which participation of learners is clearly implied is the Botswana's Vision 2016. In 1997 the Botswana Government published a policy document *Vision 2016: Towards Prosperity for All* which is a blueprint that articulates the government's long-term vision for the achievement of the philosophy of *Kagisano* (social harmony) (see Section 1.7). Among its goals, Vision 2016 addresses issues of nationwide eradication of absolute poverty, HIV/AIDS, environmental management and sustainable growth and these feature prominently in the prosperity and productivity pillars of Vision 2016: "The goal is to enable everyone to contribute effectively and meaningfully to building the nation, while creating 'prosperity for all'" (Osei-Hwedie, 2004, p.12). The guiding principles for achieving this goal are "democracy, development, self-reliance, unity and *"botho",* which encourages cooperation, respect and social justice for all" (ibid.).

The Vision states in part that "Botswana will have a system of quality education that is able to adapt to the challenges and needs of the country as the world around us changes" (Botswana Government, 1997, p. 5). Ketlhoilwe (2007b), in his analysis of this goal, sees environmental education as one of the 'quality education programmes' that could prepare citizens to adapt to such challenging needs (p. 156). This calls all

'citizens' including children to actively participate in realising this vision. The response to this call has not only come from the formal education sector but also from non-governmental organisations (NGOs) and other relevant stakeholders like the Department of Wildlife and National Parks (DWNP) through the Association of Environmental (formerly Wildlife) Clubs of Botswana. They have also played a major role in spearheading the introduction of environmental education through their collaboration with SADC-REEP (see Section 2.5.1).

2.8 The role of non-governmental organisations in learner participation

Non-Governmental Organization (NGOs) and other stakeholders have had considerable input into realizing the objectives of participation of learners in environmental education. Somarelang Tikologo (ST) is one such NGO that addresses waste management issues through the education component of its programme. The Association of Environmental Clubs of Botswana (AECB) under the auspices of the Department of Wildlife and National Parks (DWNP) and Kalahari Conservation Society (KCS) operate in and outside regular school policy-making procedures and interact with different levels of the formal education structures, including school administration, teacher training, learner activities and materials development for schools. The role of these organisations in environmental education policy processes includes the following:

- Support and sponsoring endeavours related to teacher education, epistemological innovation, pedagogy, etc.;
- Creating new forums to exert pressure for legislation to promote environmental education in schools; and
- Making recommendations for the improvement of teaching, and in-service training (Ketlhoilwe, 2007a, p 164).

2.8.1 Somarelang Tikologo

Somarelang Tikologo is notably one NGO which has been active in encouraging participation in environmental education and one of its main focus areas is management of waste in urban areas. Its mission statement is "to improve the quality of life of the people of Botswana by promoting a clean healthy environment, and mobilizing members of the public to monitor, raise awareness and lobby for improvement of the environment" (ST Spring Issue, 2004, p. 2). This NGO collaborates closely with SADC-REEP through a training programme whose overall objective is to "enable environmental education practitioners in the SADC region to strengthen environmental

education processes for equitable and sustainable environmental management choices" (WESSA, 2008). This collaboration arose against the NGO's background in which there were programmes that initially responded to the waste management challenge mainly through projects that were seemingly not sustainable. One such project, for example, was the Enviro-School Pilot Project which aimed to begin environmental education at an early age. Among several of its components, the project selected some pilot schools and one of the activities at these schools is the 'waste management drop-off centre' where school children can drop off cans and bottles that they pick up and take to the school centre for recycling. According to Somarelang Tikologo Waste Management Department, environmental consciousness and awareness needed to be raised and many workshops and seminars should be held to conscientise teachers and learners about waste management practices such as separating, reducing and recycling waste (Somarelang Tikologo, 2001). The project aims to create model environmentally-friendly schools from which the rest of the schools in the country can emulate and develop their own enviro-schools.

2.8.2 Kalahari Conservation Society

The Kalahari Conservation Society (KCS) also played a significant role in creating environmental awareness through its collaboration with schools. Its education programme was directed towards primary and secondary schools. It concentrated on developing and producing teaching aids and materials that raised the level of environmental awareness by helping children learn and care about nature through funding of workshops and assisting in the integration of conservation issues into the school curriculum. The belief is that it is the informed citizen who contributes to prosperity and nature conservation (KCS Brochure, 2002).

The education materials produced by KCS included videos, newsletters, fact sheets, books and posters. The videos were loaned free to members, schools and other non-governmental organizations. It also supported other non-governmental organizations and government departments. Kalahari Conservation Society has been actively involved in a number of environmental education initiatives through organizing and participation at workshops, symposia, talks and addressing public meetings. The Society was committed to promoting environmental awareness. Its programmes and projects complemented the government's effort in promoting environmental education in the country (Ketlhoilwe, 2007a, p.166). But because their focus has been primarily on

conservation and preservation through promoting environmental awareness and change of attitudes and behaviour, it differs from the participation focus as envisaged by the current SADC-REEP participatory imperatives reviewed by O'Donoghue (1999) (see Section 2.5).

2.8.3 The Department of Wildlife and National Parks

The Department of Wildlife and National Parks (DWNP) also played a major role in what developed into environmental education today by introducing the Association of Environmental Clubs Botswana in schools through its Conservation Education Unit, established in 1975. This component of the department has as its ultimate goal "to develop the skills and attitudes" (Ketlhoilwe, 2007a, p. 156) in learners which would positively impact on how they relate to the environment. The purpose of the clubs is to enable learners to undertake specific educational and action projects in relation to their environment. But like KCS, Ketlhoilwe (2007b) observed that the department

> promoted a primarily conservationist discourse, promoting this through environmental awareness/education activities in schools through environmental management discourses through the formation of activities of the Wildlife Clubs. With the introduction of the environmental management discourses, their activities increasingly included an environmental management discourse (e.g. school grounds cleanliness, water conservation), and field visit trips (p. 178).

Ketlhoilwe (2007a), citing Modise (1978), states that in addition to this goal it has to be realized "that the future prosperity of Botswana depends in many ways upon the attitudes the young develop towards their environment now" (p. 385). The major objective of these clubs was "to awaken an awareness, interest and appreciation of the total environment among all the people of Botswana" (ibid.) including school children. To encourage and sustain the interest stimulated by the formation of the clubs in schools, the Wildlife Conservation Education Unit also initiated other ways of encouraging the teaching of conservation education including publications, wildlife clubs newsletters, public and school lectures/presentations, taking school groups on educational tours, and educational exhibitions and displays during public gatherings such as agricultural shows and trade fairs. The Department of Wildlife and National Parks through the Association of Environmental Clubs of Botswana continues to make its major contribution to schools by collaborating with teachers through the Ministry of Education to organise and run annual regional and national Environmental Education Fairs in which school children participate in a number of activities through competitions.

The department "became a dominant force in the construction of the RNPE policy and conceptualisation of environmental education" by teachers (Ketlhoilwe, 2007b, p. 178). As a way of responding to the infusion policy, through these competitions in the environmental fairs, it is hoped that by actively participating, learners would share their environmental knowledge and skills and also teach children from other schools.

2.9 The narrow concept of learner participation

Having outlined well-meant efforts and attempts made by various institutions within which children's participation has been incorporated in environmental education processes, it becomes clear that within these well intended initiatives, in terms of their programmes and policy contexts in Botswana, the concept of participation is still clearly narrowly conceptualised. This is because in its current form participation has compromised the value of environmental education in schools for addressing the social-ecological issues and social transformation as envisaged in the educational reforms in Botswana and SADC-REEP participatory imperatives (see Section 1.5 & 2.5). Either normalising strategies have framed environmental education or it is not specifically clear.

All the 'participatory' approaches outlined in Section 2.8 seem to be tokenistic due to the normalising strategies and other historical contextual factors influencing this normalisation like the authority structures of the Tswana culture (see Sections 1.6 and 1.8). This normalisation, even when defined in participation terms in all these approaches, still exhibits several problematic aspects. These include, according to Jensen (2004a): (1) marginalisation of a broader view of participation by learners; (2) restriction of action and behaviour to individual learners; and (3) an assumption that today's complex environmental problems can be tackled through unambiguous means through the notion of normalised participation. According to Jensen, this approach to participation of learners in environmental education projects,

> illustrates that this theoretical framework is too narrow and out of tune with both the complexity of contemporary environmental problems and an educational tradition based on action and democracy (the aim of which is to educate students to become critical and active citizens) (p. 328).

A review of literature shows that a considerable amount of work has been done relating to participation in environmental education processes in Botswana, children's

involvement (Ketlhoilwe, 2007a, 2007b; Ajiboye & Silo, 2008; Silo, 2008) but an analysis of how the children contribute in their participation and how they are involved in decisions is still an area that has been neglected, probably because the concept of children's participation has been under-theorised in the environmental education discourses in Botswana. This therefore calls for a need conceptualise children's participation in these environmental education processes, specifically waste management activities in order to develop a more progressive re-imagining of participation that responds to this normalised environmental education practice which still pervades Botswana schools.

2.10 Chapter summary

This chapter has provided insight into the context of participation generally and specifically into children's participation. It has done this by trying to locate participation within the broader context of the roots and development of environmental education globally, regionally and in Botswana by examining both international and local policies that contributed to its emergence in environmental education processes. A number of factors contributed to the shaping of environmental education policy in Botswana that had a focus on learner participation. For instance, on the policy level the 1992 Rio Declaration, the launch of the DESD at the WSSD conference, the NCS, the 1991 Environmental Education National Planning Conference, all played an important role in influencing the government to introduce environmental education into the education policy and into the national curriculum. At the regional level, the history of the participation discourse in environmental education in the region has largely shaped participatory approaches in formal education. SADC-REEP spearheaded and influenced the emerging participation discourses with more focus on methodological frameworks that are particularly change-oriented which use social and situated learning and participation processes in a context where transformation, democracy and social ecological resilience are high on the agenda (Lotz-Sisitka, 2010). At a local level, instrumental to the development of policy processes and learner participation was the Conservation Education Unit of the Department of Wildlife and National Parks and NGOs. Partnerships between SADC-REEP, government departments and local NGOs played a crucial role in creating environmental education policy processes that provided for learner participation through various activities, and associated pedagogical practices in schools. Lately the emphasis on participation, has come through the Ahmedabad Conference recommendations, UNFCCC and UNESCO whereby socio-ecological

issues are high on the agenda particularly climate change related ecological risks and its impact on children's socio-ecological issues. All these global and regional relations with Botswana enabled her to accept a national and global call to address socio-ecological problems by using education as tool in environmental policy discourses (Ketlhoilwe, 2007a, 2007b). As revealed in Section 1.7, in various ways they deployed their power through coalitions and partnerships to influence changes in environment and education policy discourses at country level resulting in part in the normalising strategies that influenced learner participation in environmental education (Ketlhoilwe, 2007a, p.145-146). Emphasis on learner participation in all these policy documents and initiatives was meant to enable all children to be exposed to participatory approaches. But it seems to have been met with a focus which placed more emphasis on creating awareness and care for the preservation and conservation of the environment where children are mostly engaged in participatory approaches which are token (see Chapter 3).

While both local and international role players seemed to have influenced the introduction of environmental education into the school curriculum and catered for learner participation in their programmes, it becomes apparent that there is need for new and convincing participatory approaches that call for a broader approach to learner participation that is more democratic and transformative (see Chapter 2). This need to re-conceptualise learner participation within which learners can be provided with opportunities to genuinely participate by drawing from their capabilities and competencies is the focus of Chapter 3.

PART II
FRAMING THE STUDY

OVERVIEW

This part of the thesis provides the conceptual and theoretical frameworks within which the study was conducted. Chapter 3 gives a conceptual analysis of children's participation. Drawing on this conceptual analysis, Chapter 4 provides the theoretical frameworks that guided methodologies that were applied to the study.

CHAPTER 3: LEARNER PARTICIPATION - A CONCEPTUAL FRAMEWORK

3.1 Introduction

In Chapter 2, learner participation was contextualised against the history of environmental education and how it has been employed and implemented globally, regionally and within local Botswana contexts. This chapter is going to probe the rhetorical and normalised emphases on learner participation, and seek further insight into how learners can be engaged in participatory learning processes that are meaningful, purposeful and that broaden their action competence and civic agency (Jensen & Schnack, 2006; Hart, 1992,1997, 2008; Graham et al., 2006; Barratt Hacking et al., 2007; Stevenson, 2007).

3.2 Rethinking learner participation

One of the critiques that has been levelled towards current environmental education teaching, is the lack of genuine participation of learners in meaningful ways. The critique holds that there has been an emphasis more on rhetoric rather than meaningful practice, which should be the children's fundamental right of citizenship (Hart, 1992; Graham et al., 2006; Barratt Hacking et al., 2007; Stevenson, 2007). This calls for the need to re-think learner participation in environmental education processes and in school waste management activities and *how* learners can actually participate in these activities with the aim of developing some sense of purpose in their participation that will

enable them to deal with the socio-ecological challenges that they face. This is the main object of this study (see Section 1.4).

While few today would argue that participation is a key concept in learning, several environmental education studies have questioned the interpretation of participation in such learning (Rahnema, 1992; Hart, 1992, 1997). Rahnema (1992), providing a conceptual analysis of forms of participation in development projects in India and Latin American countries, distinguishes between what he views to be "manipulated, or teleguided forms of participation, and spontaneous ones" (p. 116). He, like O'Donoghue (1999) who challenged the under-theorisation of participation in the southern African context, makes this distinction by tracing the historical developments of the concept of participation by social activists, field workers and NGOs. In manipulated or teleguided participation the participants for example partake in development projects, in what would perceivably be willingly without the participants appearing to be forced to participate, yet they are "actually led to take actions which are inspired or directed by centres outside their control", for example donors or NGOs (ibid.). This is consistent with the international and national knowledge-power relationships in the construction of the infusion policy discourses in Botswana that influenced the teachers' interpretation and implementation of the policy with the resultant self normalising strategies in an attempt to respond to learner-centred curricula reforms as revealed by Ketlhoilwe, 2007a, 2007b, see Section 1.6). In Rahnema's (1992) analysis, he posits that upon seeing the failure of these projects, this led social activists, NGOs, planners and field workers

> ... to attribute most of the failures of development projects to the fact that the populations concerned were kept out of all the processes related to their design, formulation and implementation. In their great majority, they started to advocate the end of 'top down' strategies of action and the inclusion of participation and participatory methods of interaction as an essential dimension in development (p. 117).

While these recommended participatory approaches by experts mostly in international aid organisations or networks of actors (Triantafillou, 2004) were well received "they agreed that projects had often floundered because people were left out" by experts (ibid). But Rahnema argues that ironically while the intentions of the pioneers of participation were indeed, pure and noble (1992, p. 117), the behaviour of promoters or professionals of participation in these projects was questionable:

few were actors genuinely seeking to learn from the people how they defined and perceived change, and how *they* thought to bring it about. The change, of which *they* considered themselves the agents, was only the projection of a predefined ideal of change, often highly affected by their own perception of the world and their own ideological inclinations (p. 124, emphasis original).

For these experts, by taking participation as a moral good, the issue of participation as mode of governing these people at a distance by these aid organisations or NGOs and by their promoters and field workers, as a way of shaping the conduct of the people thereby exercising power, was not raised as an issue (Triantafillou, 2004). The experts in these networks, in their expertise, would use their technologies of governance or agency in the setting of standards and inscribing norms

> for what constitutes the most proper and efficient modes of conduct when it comes, for instance, to promoting the efficiency, accountability, or participation of individuals, groups or organizations in a particular development project (Triantafillou, 2004, p. 504).

Rahnema (1992) suggests that participation should be based on genuine processes of dialogue and interaction that enable people "to act as the free subjects of their destiny" (p. 121).

> In that sense, to participate means to live and to relate differently. It implies above all, the recovery of one's inner freedom, that is, to learn to listen and to share, free from any fear or predefined conclusion, belief or judgement ... It does not mean to conform to a preordained pattern or ideal designed by others, or even one designed by one's own illusions and conditioned ideals ... [O]rganized forms of participation or mobilization either serve illusory purposes, or lead to superficial and fragmented achievements of no lasting impact on people's lives. Even when these seem to be beneficial to a particular group or region, their effects remain inevitably limited, in time and space, sometimes even producing opposite effects in many unforeseen and unexpected areas (p. 128).

In environmental education the main contention of the research on participation is that there is a discrepancy between more open-ended action-oriented and reflexive goals associated with solving environmental problems and the somewhat instrumentalist way in which environmental education has been taken up in schools through participation in environmental education activities such as in waste management. Researchers argue that much of the participation outlined in most of the initiatives in Botswana that have been discussed in Chapters 1 and 2 is focussed on instrumental transfer and acquisition of environmental knowledge, awareness development and behaviour change, as a route to environmental responsibility and pro-environmental agency (Hart, 1992, 1997; Stevenson, 2007; Chawla & Cushing, 2007). This discrepancy is ascribed to the

historical roots of environmental education where the primary purpose was and still is to develop a concern for the preservation of the environment through sound management activities (Stevenson, 2007; Hungerford & Volk, 1990) which assumes that such concerns are acquired through engaging learners in such activities (school waste management activities) that are considered pro-environmental (Ketlhoilwe, 2007a, 2007b; Chawla & Cushing, 2007; Hungerford and Volk, 1990). From these reviews it appears that school curricula have largely incorporated participation in environmental education activities mainly through narrowly defined and often de-contextualised practices which are normalized into the structural functioning of the school system and curriculum cultures (Ketlhoilwe, 2007b). Such approaches do not incorporate wider and more democratically oriented concepts of participation in learning, as reflected in the concept of developing *action competence*, responsive and responsible agency in learners (Carlsson & Jensen, 2006; Jensen, 2002; Jensen & Schnack, 2006; Jensen, 1997; Uzzell, 1999). It is this central dilemma, namely **how** participation is constituted in environmental educational processes that is going to be conceptually analysed in this chapter, as it forms the main object of this study.

3.3 Token versus genuine participation

For the purpose of analysing the concept of participation, provisionally it can be viewed as either token or genuine according to Hart (1992), who uses a metaphor of a ladder as a model in which he sets up more procedural democratic criteria for distinguishing participation from non-participation by describing different degrees of participation ranging from 'non-participation' to several forms of 'real participation'. The model focuses on the quality of participation in varying positions on the ladder from non-participation and token participation at the bottom to real or genuine participation at the top within a normative and linear frame (see Figure 3.1).

```
┌─────────────────────┐
│ Child initiated     │
│ Shared decisions    │
│ with adults         │
├─────────────────────┤
│ Child initiated and │
│ directed            │
├─────────────────────┤              ⎫
│ Adult initiated     │              ⎬ Degrees of participation
│ shared decisions    │
│ with children       │
├─────────────────────┤
│ Consulted and       │
│ informed            │
├─────────────────────┤
│ Assigned but        │
│ informed            │              ⎭
├─────────────────────┤
│ Tokenism            │              ⎫
├─────────────────────┤
│ Decoration          │              ⎬ Non participation
├─────────────────────┤
│ Manipulation        │              ⎭
└─────────────────────┘
```
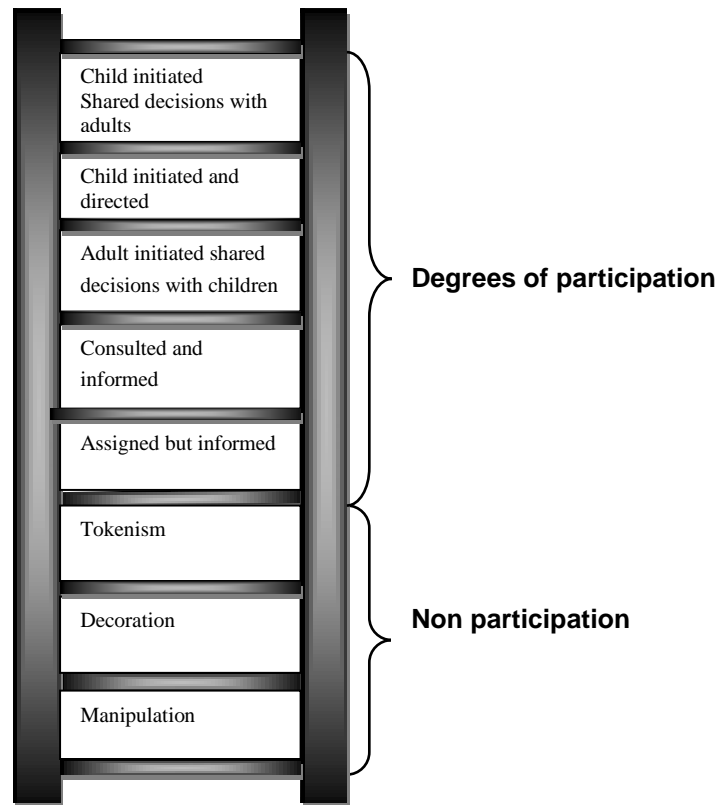
Figure 3.1: Hart's ladder of children's participation *(Source: Hart, 1992)*

According to Hart, token participation is where adults use children to support causes and pretend that the causes are inspired by children when in fact children have little or no choice about what they do or how they participate (ibid.). This form of participation is consistent with Rahnema's (1992) critique of token participation in which children "are asked or dragged into partaking in operations of no interest to them in the name of participation" (p. 116). In genuine participation, children's initiated and shared decisions with adults, form the top category of children's participation in the ladder. In spite of some critiques on the linear nature of Hart's model (Reddy & Ratna, 2002), I contend that the binary distinction of two forms of participation is a useful tool to help clarify Botswana schools' teaching aims when working with participatory approaches with children. If schools hope to move from the traditional normalised pedagogical approaches that are still so prevalent in the teaching of environmental education to authentic learner participation, an essential element of personally meaningful learning and capability development in response to social ecological risk as argued in Section

2.3.1, then Hart's model provides a basic framework for such an analysis and distinction.

3.3.1 Token participation

In token participation Hart (1992, 1997) observed that most projects in which children are involved under the guise of participation are normally designed and run by adults, with children merely acting out predetermined roles that are seemingly positive to both teachers and children, such as picking up litter, cleaning classrooms and sorting and recycling waste. These may just be mere performances as indeed the "children's involvement is ambiguous or even manipulative" (Hart, 1992, p. 9). He contends that there are many more instances of tokenism than there are genuine forms of children's participation in most school projects. Schools seem to show little evidence of learners participating in decisions on their participation in these practices, as most delivery plans are drawn up by teachers with little or no consultation with learners. Learners are mostly passive recipients of the curriculum, with few, if at all any, genuine opportunities to contribute to any action in these activities (Hart, 1992, 1997; Barratt Hacking et al., 2007; Clark & Percy-Smith, 2006). This limited form of participation is consistent with moralistic participation (Simovska, 2004, 2008; Schnack, 2000; Jensen & Schnack, 2006). These scholars view moralistic participation as falling short of creating and developing learners' skills to exercise and exert their influence and competencies as qualified participants in democratic environments.

3.3.2 Genuine participation

Hart (1992) regards genuine participation as a process of sharing decisions which affect children's lives in their communities because according to him

> it is unrealistic to expect children to suddenly become responsible adult citizens without prior exposure to the appropriate skills and responsibilities which foster competence to participate in the day to day management of their immediate environment which includes school, family, neighbourhood and community (p. 5).

What one gathers from this statement is that children's participation is important as a right that enables them to learn their responsibilities and develop the action competence necessary for dealing with socio-ecological risk (see Chapters 1 & 2). In order to achieve this, they "need to engage in collaborative activities with other persons

including those who are older and more experienced than themselves" in addressing problems that face them in meaningful ways (Hart, 1992, p.7). This requires co-engagement in deliberative practice around context and children's capabilities (see Section 2.3.2). Genuine participation, according to Simovska, (2004) "is seen to be conducive to the personally meaningful learning and development of action competence" (p. 204). There is therefore a need to promote children's participation, and the school offers an ideal forum for their active participation in environmental sustainability issues like climate change, that affect their daily lives. It provides them with a role to play in shaping their future by doing things differently so that new thinking emerges in dealing with these challenges (Simovska, 2004, 2008; Hart, 1997, 2008; Chawla & Cushing, 2007).

Simovska (2008) goes further than Hart to qualify and emphasise that genuine learner participation is distinct from the token participation that is evident in the strategies of learner participation in Botswana schools' environmental education processes in that it focuses on *the quality of participation,* not on individual learners and modification of their lifestyles that results in normalised self-governing practices (see Sections 1.6 & 3.2). She does so by identifying three main points that distinguish genuine from token participation (p.65). These points are illustrated in figure 3.2. Furthermore she argues that genuine participation

> deals with values which are often implicitly embedded in socially organised participatory activities involving students at school but repeatedly neglected when researching the processes of teaching and learning. The underpinning values or principles that this distinction endorses as essential to participatory health and environmental promoting schools include self-determination, democracy, and diversity (ibid.).

Simovska highlights the three points in distinguishing between token and genuine participation of learners in ways outlined in the figure that follows.

Token Participation	←→	Genuine Participation

Focus

Environmental information	Process of knowing
Consequences	Personal meanings

Outcomes

Convergent	Divergent

Target of Change

Individuals	Individuals-in-context
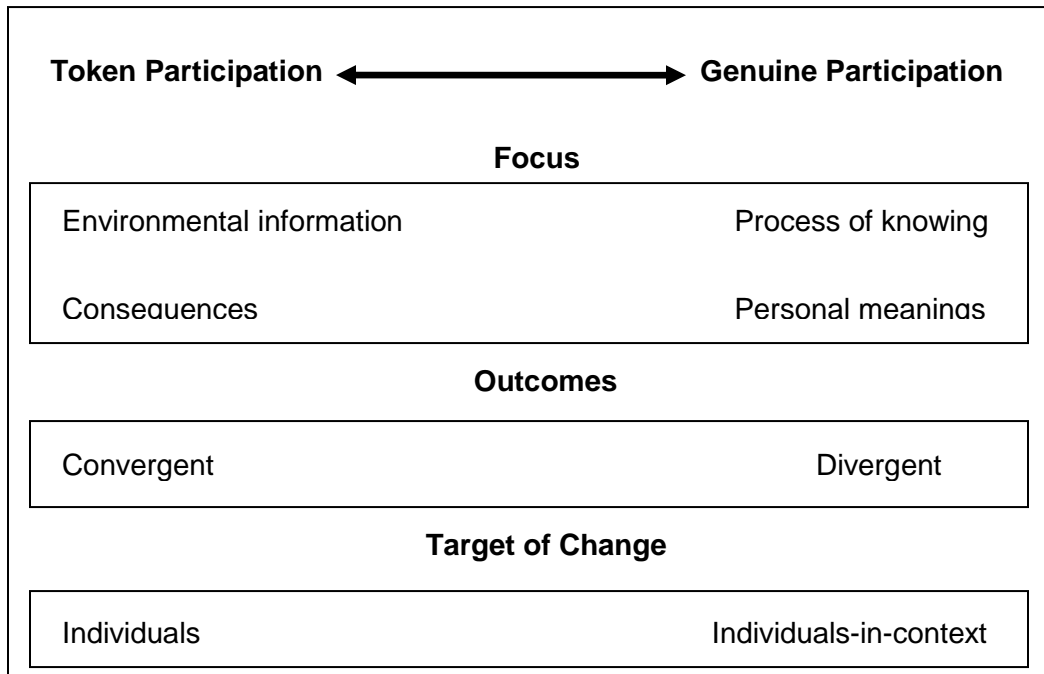
Figure 3.2: Genuine versus token participation
(Source: Simovska, 2008)

Firstly, while the focus in token participation is environmental knowledge acquisition and building, genuine participation goes further. It focuses more on knowledge building through reflection on meanings and on different ways of constructing this environmental knowledge through social and relational processes. Secondly, the outcomes of token participatory processes are closed and convergent in that they are a product of prescription of rules by teachers who are 'experts' who base their knowledge on scientific evidence. These teacher experts do not create opportunities for learners to make choices that develop personal social skills of assertiveness for making informed decisions to identify and select issues that concern and affect them. This is how waste management activities are generally undertaken in the schools. On the other hand in genuine participation, outcomes are divergent and open, allowing for learners' autonomy and potential to deal with complex issues in these activities. Learners develop creative and socially responsible ways of dealing with issues which consider power relations, their needs and possibilities within their socio-ecological contexts. Thirdly, she suggests that the target of token participation is to change the learners' lifestyles while in genuine participation the target is collective individuals in their social context where the learners'

competencies are not their own property. The development of skills and competencies includes processes that occur at three levels - personal, interpersonal, and cultural. Students are as competent as their context (schools for instance) affords them the opportunity to be…and at the same time, they are able to influence these circumstances and to initiate positive change. Therefore, it could be argued that if students have opportunities to participate actively in improving their surroundings as part of their education and thus be agents of their own learning, they are enabled to assume responsibilities of their own lives, to deal with change, and also to participate competently in the social web (p. 67).

Participation of learners in environmental education activities should contribute to learners' ability to act and effect change as well as to develop action competence or civic agency. In this regard, Uzzell (1999) argues against the traditional approach of teaching environmental education that simply involves learners in waste management activities through normalized strategies (Ketlhoilwe, 2007a, 2007b). It then follows that any associated knowledge and insight that they acquire during their participation in these activities, should in essence bear some element of action competence in being action oriented (Jensen, 1997; Jensen & Nielsen, 2003; Jensen & Schnack, 2006; Carlsson & Jensen, 2006).

3.4 Participation within an action competence framework

The concept of *action competence* pioneered by Danish researchers concerned with children's democracy and decision making in environmental and health issues, is well articulated by Jensen (1997, 2000, 2002, 2004), Jensen & Schnack (2006), Breiting & Mogensen (1999), Schnack (2000), Carlsson & Jensen (2006) and Breiting, Hedegaard, Mogensen, Nielsen & Schnack (2009).

Within this concept they argue that solutions to environmental problems must be sought at the cultural, structural, societal and political level of living conditions as well at a personal/lifestyle level. If learners are to contribute to the solutions of waste management problems, they have to be able to identify both personal/collective and structural/cultural causes, and to develop their own abilities to influence and change these conditions (Jensen, 1997). Jensen continues to suggest that

> as institutions for general education, schools have a responsibility to help equip the members of society in their charge, their pupils, with the knowledge and commitment to make personally meaningful decisions and actions to address the challenges posed by

both lifestyle and societal conditions. Consequently, the overall aim of school health education is to develop the abilities of pupils to act at the personal and societal levels, i.e. to increase their action competence (p. 422).

Jensen and other scholars listed above see action competence as central to participation in environmental education in schools and view it as a departure from the traditional science-oriented approaches of knowledge transfer and behaviour change as reflected in the strategies associated with waste management activities adopted by Botswana schools (see Section 1.4 & 1.6).

They further perceive action competence as *a conscious action by an individual/group* that is *targeted towards solutions of the problem that learners are working with (my emphasis).* This means there has to be *a deliberate, conscious desire and purpose on the part of the learner* to participate in these waste management practices. The learners need to *fully understand the causes* of the waste problem, who and what it affects, as well as the socio-cultural factors around their participation. They need to be able to consider change strategies and *generate solutions to the problem* coming up with *alternatives and new visions* to the way in which they participate in these practices (Jensen, 2002, 2004; Jensen and Schnack, 2006). These (*highlighted*) are all aspects of the participatory process focussed on in this research (see Chapters 4 & 9).

The main goal of environmental education can be considered as the development of learners' ability to act and effect change as well as the development of civic agency in learners through the action competence participatory approach as argued by Jensen (2002, 2004), Jensen & Schnack (2006), (Breiting et al. 2009) and Carlsson & Jensen (2006). A genuine participatory approach should provide possibilities for learners to develop, promote, exercise and exert their competencies to be qualified participants in democratic environments (Jensen, 2002, 2004; Jensen & Schnack, 2006; Breiting et al. 2009; Breiting & Mogensen, 1999; Simovska, 2004, 2008).

Uzzell (1999) argues that the traditional approach of teaching environmental education by simply involving learners in waste management activities through normalized strategies results in fragmented experiences in which learners are only engaged in looking for immediate or short term solutions to environmental problems - a "technological fix within a framework that is mechanistic and piecemeal" (p. 402). According to him, these strategies impart knowledge that is not action oriented with schools mainly focusing on transmitting knowledge to learners, "who have thus not been

afforded the possibility of *actively appropriating and internalizing that knowledge*" (ibid., my emphasis). I also focussed on this aspect of participation in this research (see Chapter 9).

Jensen and Schnack (2006) concur with Uzzell by arguing that a school cannot assume to be environmentally effective by routinely cleaning, sorting waste, recycling, engaging in litter campaigns; rather "the crucial factor must be what the students learn from participating in such activities, or from deciding something else" (p. 165). Such activities, according to them, "are obviously valuable and productive to the extent that they facilitate motivation and acquisition of knowledge" (p. 168) about the waste problem, but in order to be characterized as actions that bring about competence and civic agency, they must be targeted at effecting real change regarding the waste problem. This can only be realized when learners are "*purposefully and systematically given time and space*" and opportunity to participate in order for them "*to develop their visions*" (Jensen, 1997, p. 423, my emphasis). This has been found to have a very positive effect on the level of the learners' engagement in issues that affect them (ibid., my emphasis). He goes on to argue that

> the fact that they have been given the opportunity to develop, discuss and share their visions with others or participating in developing a common vision is perhaps one of the prerequisites or precursors of the desire to act … (ibid.).

It is here, according to Jensen, that the ideas and creative processes in children are developed, and this empowers them to play an active role in making informed decisions about their participation in the waste management practices. But schools seem to lack practice and structures to ensure popular and genuine participation of learners on such issues that affect them, he argues. In this research I also investigated the *opportunities and time* that learners were given to participate in waste management practices (see Chapters 6 to 9).

3.5 Philosophical underpinnings of action competence

The concept of action competence has its roots in the German philosophical concept of *bildung* which translates to 'general education' a form of liberal education that entails notions of self-determination, co-determination/participation and solidarity (Schnack, 2008, p. 188). This is a kind of education that, according to Mogensen and Schnack (2010),

> cannot be reduced to mere education in the sense of cultivation, normalisation, or traditional socialisation. On the contrary and in concert with the utopian dimension of critical theory, it has as its aim the fulfilment of humanity: full development of the capacities and powers of each human individual to question preconceived opinions, prejudices, and 'given facts', and intentioned participation in the shaping of one's own and joint living conditions (p. 61).

What this means is that there is a clear distinction between participation as taking part in an activity, and participation as having an influence and being in involved in decision-making, according to the Danish researchers. This view is held by others (see Section 3.3) who have questioned the form of participation that characterises Botswana schools (see Sections 1.4, 1.6 & 2.6). The Danish researchers therefore see the action competence concept as philosophically and educationally residing within the ideal notion of *bildung* (Schnack, 1995, 2000, 2008; Mogensen & Schnack, 2010) and *democratic processes* are key to the concept. According to Schnack (1995, 2000, 2008) and Mogensen and Schnack (2010), action competence is both a political and democratic ideal which is a characteristic of liberal education. It is also key to the development of critical thinking (Mogensen, 1997) in learners where it is equated with such concepts as democracy, human rights, sustainable development and equal communication (Schnack, 1995, 2000, 2008; Mogensen & Schnack, 2010). In this regard, Mogensen & Schnack (2010) view the concept of action competence in a broad sense as referring to an educational approach that:

- is critical of moralistic tendencies in environmental education and health education;
- emphasises the educational aims of environmental education and health education, instead of reducing education to a technical means to solve certain political problems;
- works with democratic and participatory ideas in relation to teaching– learning;
- conceives of environmental education and health education as problem-oriented and cross-curricular, even holistic, without losing interest in

academic knowledge and fundamental concepts;
- regards environmental problems as societal issues that involve conflicting interests;
- works with a positive and broad conception of health, including not only lifestyle, but also living conditions;
- looks for relationships between environmental education and health education (p. 60).

The action competence concept has formed the basis for the Danish philosophical ideology of approaching environmental and health education within a liberal democratic framework. It has developed out of the belief and tradition of democratic education that involves the development of learners' abilities to act at personal and societal levels (Jensen, 1997). If learners have to contribute to the solution of contemporary environmental and health problems, Jensen contends that they have to identify personal and structural causes behind the environmental and health problems and to develop their own possibilities to influence and change these conditions around them (ibid).

This school of thought views action competence as a central feature of *democratic* environmental education as it attempts to break free from moralising behaviour modification which is characteristic of traditional approaches as seen in the Botswana schools' normalised participatory discourses. Within the action competence framework children are encouraged to identify and act upon their own visions of a healthy life and healthy environment by determining how to participate in the process. To do this the children need to develop the following skills: knowledge/insight, commitment, visions, action experiences as well as more general skills such as co-operative skills, communication skills, planning skills and so on (Colquhoun, 2000) underpinned by a critical pedagogy and critical thinking perspective (Mogensen, 1997) all of which can only be possible within a democratic learning environment.

3.6 Action competence as a tool for democratic processes in learner participation

The main idea of action competence as an eduactional ideal is democratic participation, even within a prevaling authoritarian culture in a society like Botswana in which democracy is an enshrined principle in the nation's education philosophy, *Kagisano*, (see Section 1.5.1) and where there has been a history of continuous normalizing strategies in waste management activities in schools under the banner of participation taking place (see Sections 1.4 & 2.6).

The development of action competence as a concept to guide democratic approaches to environmental education has seen discussions involving the following: action vs activity; individual vs group action competence; action vs behaviour; democratic pedagogical considerations; a critical approach to action competence; and learner/teacher motivation and participation in communities (Jensen, 1997; Jensen & Schnack, 2006). It would be fair to say that most other countries, Botswana included, have not engaged to this extent with their participatory approaches in environmental education school programmes, although there is evidence of similar or related debates in other contexts which encountered some contextual and structural constraints (Barrett, 2006; Ferreira & Welsh, 1997; Mokuku, Jobo, Raselimo, Mathafeng & Stark 2005).

Barrett (2006), drawing from a teacher's narratives in a Canadian context on employing the action competence framework in his teaching, found that when it came to supporting learners to take action, dominant normative "educational discourses (for example, learning as knowledge acquisition, and the teacher as provider of that knowledge) remained a dominant, and disciplining, force" (p. 508). This constrained the teacher, making it difficult to move beyond his conventional focus on content acquisition, and use the action competence approach (ibid.). In an Australian case study Ferreira & Welsh (1997) examined a teacher employing the action competence approach using the Investigation-Visions-Action-Change (IVAC) model developed by Jensen (see Section 4.5.1). They identified other constraints to implementing the IVAC model. Curricular responsibilities did not easily fit into the IVAC model and the value of one teacher utilizing the model as opposed to the whole school compromised the benefits for sustained educational experiences (p. 477-478). In an effort to implement learner-centred pedagogy in schools in Lesotho, in 2001 a Danish funded project, the Lesotho Environmental Education Support Project (LEESP) was commissioned to introduce

action competence as an integral part of environmental education (Mokuku *et al*., 2005). Upon evaluating the early phase conceptualisation of the project about its practicality, Mokuku *et al*. (2005) speculated that implementation of the action competence philosophy would encounter problems given the specific contexts of schools in Lesotho, e.g. the examination-oriented syllabus and some of the embedded modernist aspects of the education system such as the vertical top-down culture. This speculation was confirmed by Raselimo (2010) where, from his classroom observation to investigate the integration of environmental education underpinned by action competence, he reports that learners could not engage in critical discussions among themselves and their teachers as was envisaged. This lack of critical engagement points to a missing crucial component of action competence, i.e. reflexive co-engaged dialogue (see Chapters 8 & 9). With respect to participation in environmental education, he further reports that there was no learner volunteerism in participation in the activities which were teacher-led. He notes that although this finding is derived from the analysis of teachers' perceptions, it nonetheless illustrates the complexity of implementing action competence which operates within liberal democratic values in an African context (see Section 3.5). What is noteworthy in how action competence was applied in all these frameworks is that, like the studies done in Botswana on the reviews of learner-centred pedagogy, these studies do not address the historical development or the social nature of how learners themselves participate in these activities as agents of change by examining their perspectives. These studies have not explored the inherent potential of learners' initiatives as drivers of change and the implications that this could have for pedagogic reform and change (see Section 1.8.2). This study is intended to address this gap by exploring how learners drawing from their capacities can participate genuinely to bring about change while learning (see Chapter 4 & 5).

The action competence approach as used in this study provides a framework for revealing the nuanced nature of underlying realities of the cultural and historical power of subjugation and exclusion of learners from processes of genuine participation across societal institutions like schools in Botswana (see Sections 1.4 & 1.6). It further provides opportunities to challenge the dominant authoritarian cultures and normalizing technologies of governance by bringing to the fore learners' subdued voices and subjugated capacities and capabilities. It also builds resilience in their social ecological systems and citizenship (see Sections 2.3.2 & 2.5). The Danish analysis of action competence provides a transect that dissects across this concept, revealing the shifts and transformations that are possible in environmental education pedagogies that have

developed over time. Carlsson and Jensen (2006) in their argument for the development of children's citizenship, which in a way is similar to action competence, argue that development of children's citizenship provides "an arena of power with different interests, wishes and needs" (p. 243) it is also an arena for action which should comprise mutuality, equality, collaboration and dialogue. The arena should make

> it possible for students to experience essentially political situations, and thereby to develop the ability to identify and analyze conflicting interests in relation to environmental problems. Among other things, this involves working with questions such as: Who makes decisions? Who was for and against, and why? How can we as young people gain influence in relation to environmental issues and with whom can we ally ourselves? (p. 243).

These are all questions central to democratic practice which, as one of the main principles and pillars of Botswana's education philosophy, is supposed to permeate through all institutions of the society including schools. These questions are connected with participation, freedom and self-determination, (Schnack, 2000, p. 110). While advocating for such an action competence ideal might seem to pose a paradox in an authoritarian culture (Tabulawa, 1997; Maundeni 2002) and African contexts as observed by Raselimo (in progress, this section), it has to be recognised that the ideal is

> not so much to do whatever one feels like here and now, which is more like self-important egoism, but ability and the will to take responsibility for one's own life...When the self-determining individuals freely exercise their right to participation in decision-making, solidarity must be in the forefront (Schnack, 2000, p. 110).

This points to the need to create the best conditions and opportunities for learners to realise themselves, their potentials and unfold those characteristic traits of their human nature of being agents in their own right in social context within any enabling or constraining circumstances. Seen from a philosophical point of view, the main point of action competence is the idea of action (Mogensen & Schnack, 2010, p. 61). Jensen (2004a) qualifies the need for foregrounding the concept of action in developing action competence for different reasons, as indicated below:

- The 'scientific' focus on giving students knowledge about the seriousness and extent of environmental problems has not been able to incorporate the social and societal perspectives involved in questions about action possibilities, for society and for the individual.

- Moralizing, behaviour-modifying teaching never—or only very rarely—leads to the intended behavioural changes. This has brought about a new focus on 'student action'.
- The growing criticism that schools give priority to the 'academic' at the expense of the more practical has led to increased interest in the 'action-oriented'.
- Criticism of the schools' work with artificial 'as if' situations, e.g. role-playing, has led to demands for authenticity and for participation in the reality of society as part of teaching. (Jensen 2004a, p. 411).

The action competence approach seen in this perspective also challenges self-governing strategies observed in environmental education activities in Botswana schools as these tend to perpetuate moralistic tendencies which conceal preconceived ideas and hidden agendas when dealing with socio-ecological issues within environmental education, specifically waste management (see Sections 1.4 and 1.6). Hence action competence calls for participatory approaches as outlined by SADC REEP (see Section 2.5) and as advocated by the Botswana infusion policy (see Section 2.6.4) to give rise to teaching and learning sequences that deal with societal issues involving conflicting interests within school communities between learners and teachers, learners and learners and other stakeholders. Understood this way,

> ... the action competence approach points to democratic, participatory and action-oriented teaching–learning that can help students develop their ability, motivation and desire to play an active role in finding democratic solutions to problems and issues connected to sustainable development that may even consist of the aforementioned tendencies, ideas and agendas (Mogensen & Schnack, 2010, p.62).

The action competence philosophy is critical towards any reductionist tendency (Breiting, 1993) in environmental education as observed in the technicist waste management activities in Botswana schools where the goal of such activities is to change the learners' behaviour (Jensen & Schnack, 2006). This is the very reason why participation of learners in these activities within the ESD agenda as proposed by SADC-REEP and the infusion policy must also be critically explored when seen from the philosophical perspective of the action competence approach (Schnack, 2000, 2008; Mogensen & Schnack, 2010). ESD without a democratic action competence perspective which is *action-oriented* very easily becomes dogmatic and moralistic according to Mogensen and Schnack (2010, p.62).

3.7 Action-oriented learner participation

As discussed above (see Sections 3.4, 3.5 & 3.6) Jensen and Schnack and other proponents of the action competence approach qualify that if the main goal of environmental education is to develop the learners' ability to act and effect change as well as develop civic agency in environmental activities such as waste management activities, then it follows that any associated knowledge and insight that they acquire during their participation in these activities should be *action oriented*. Mogensen & Schnack (2010) make it clear that "action differs from, or is a special kind of, mere behaviour and activity. Not only are actions intentional, the intentions, motives and reasons all have an intrinsic relation to the actions" (p. 61). There is therefore a need to distinguish activity from action.

This section discusses issues related to the action concept in learner participation in environmental activities, based on action competence analysis. Quite often, because of the normalising effects resulting from the networks of governance in these activities (see Section 1.6), the action concept is synonymously equated to the concept of activity. This calls for the need to qualify the implication of making an activity more action-oriented, because action competence entails much more than behaviour and activities (Jensen & Schnack, 2006; Jensen, 1997, 2000, 2002, 2004a; Carlsson & Jensen, 2006). Jensen, (2004a) sees the concept of activity as just 'doing something', even though some activities can still bear the character of action as when learners have an influence on what is to be done and why it should be done. Simply, the desire for learners to have an intent to do something about the issue at hand, qualifies it as an action. Jensen (2004a) explains this clearly.

> All actions will also be activities, but all activities, however significant they might be from a pedagogical point of view, are not actions. Environmental actions not only aim at solving a problem but aim at solving the specific environmental problem being worked on (p. 412).

What emerges from this analysis is the insight that the action concept implies the deliberate commitment of the acting learner, where the learner has considered the matter and decided to act (Breiting et.al. 2009). Often, the activity concept will not always or necessarily encompass this aspect as illustrated in Figure 3.3 below.
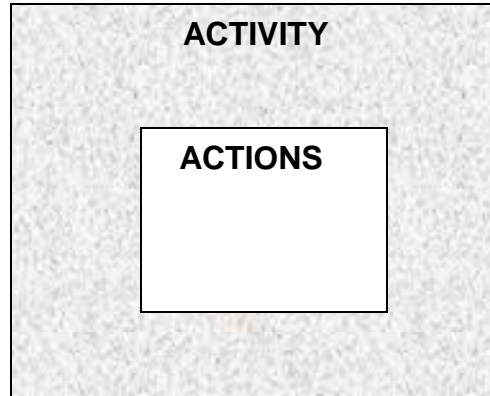
Figure 3.3: Actions and Activity *(Source: Jensen, 2004a)*

Uzzell (1999) reflects a similar view to Jensen when he emphasises that actions within the action competence approach are more than simply learners being aware of or having an attitude towards waste management problems or even acquiring a set of skills by participating in accordance with particular norms as evidenced in Botswana schools. Although the learners' participation is a conscious solution-oriented approach to the waste problem, it should also assume much more. If it is to achieve the action competence ideal as proposed by Jensen & Schnack (2006) and others cited in the earlier sections of this chapter, it "requires a positive approach to cooperative decision-making, a respect for democracy and an understanding of participatory processes" (Uzzell, p. 403).This forms the crucial aspect distinguishing it from activity as portrayed in the normalised activities. Mogensen and Schnack (2010) see actions as a special kind of behaviour:

> (a) qualified by the intentions of the agent, and in principle, not by someone else… (b) qualified by being conscious and purposive, seen from the point of view of the agent, which also challenges the discussion of success criteria in education. This latter perspective on the notion of action also means that the action must be addressed to solving the problem or changing the conditions or circumstances that created the problem in the first place. In adding this aspect to the action concept, this can be qualified in relation to the concept of activity. Hence, actions can be seen as specific activity (p. 61).

This concept of action is consistent with Mogensen (1997) who views it as being integral with critical thinking in the learner so that whenever learners participate in these normalised activities, the important task of their participation should be

> to help pupils realize that it is crucial to their lives to be curious, and be able and committed and question things around them, scientific phenomena as well as societal structures and conditions. On a concrete level, this entails asking for reasons why things

83

are the way they are and why others (and oneself) act as they do. In other words, it entails developing the children as critical thinkers (p.430).

Caution has to be exercised however in qualifying the element of participation of learners which tends to signal an education paradigm based on moralising and behavioural modification (Simovska, 2004), rather than on democratic elements of dialogue, collaboration, collective decision-making and co-influence (Breiting et al. 2009). Another distinctive feature of the action concept is that whatever action that the learners choose should address solving the waste management problem or changing the conditions and circumstances that first created the problem.

> In adding this aspect to the action concept, this is qualified in relation to the activity concept. Hence, actions can be seen as specific activity. This criterion has to be included, since there is a tendency for any education involving activity, in which students perform a number of practical tasks (e.g. excursions, measurements) to be considered 'action oriented'. Such initiatives are often quite valuable and necessary in education; however, we choose to not consider them as actions in a narrower sense (p. 54).

What one gathers from this argument is that action should be "*directed at solving a problem* and it should be *decided upon by those preparing to carry out the action*. In other words, an action is targeted at a change: a change in one's own lifestyle, in the school, in the local or in global society" (Jensen, 2002, p. 326, emphasis original). These criteria of qualifying action versus activity, according to these authors, points towards the aspect of intentionality/deliberate commitment and addressing the root of the problem which makes the action concept quite exclusive (Breiting et al. 2009, p. 55). This clear qualification of the concept provides an indicator which allows a meaningful identification of, and an ability to specify the action concept in the context of actions in waste management activity. Understanding action as something that is goal directed concurs with the distinction of action and activity which evolved within the cultural-historical psychology tradition which will be discussed later in Chapter 4 (see Section 4.2.3.2). But action is more intentional and conscious in the action competence framework than in the cultural-historical analysis (see Section 4.2.3.2).

3.7.1 Operationalising action within the action competence approach

Drawing from the models that Jensen (1997, 2004a) and his colleagues (Jensen & Schnack, 2006) developed to inform a number of projects in Denmark in the areas of environmental and health education to operationalise action within the action

competence approach, Uzzell (1999, p.402) suggests that the following dimensions should serve as a framework:

- Choosing the subject or problem of concern by learners.
- Specifying the specific nature of the problem. This involves being able to move from a generalised understanding of waste and its management as a problem to specifying the problem. It must be made clear exactly why and for whom the conditions present a problem.
- Identifying the causes and consequences of the problem. This requires both a natural and social science critique. Learners need to understand and be aware of the range of possible scientific and social, economic, political and cultural explanations for the waste management problem. Even if the problem manifests itself in the school, the underlying causes will often show themselves to be outside these domains. It is essential to examine the society as a whole, where health and environmental problems are revealed in the economic, cultural and social structures in which they develop.
- Identifying the relevant attributes and conditions to be changed. Once the causes of the problem are identified learners need to formulate ideas about what is needed for sustainable waste management changes.
- Identifying action possibilities. At this point learners need to develop an understanding of potential action strategies to tackle the waste management problem. This is the stage according to Jensen (1997) and Jensen & Schnack (1997) that is concerned with the learners developing visions, ideas, aspirations and perceptions about their future life and the society in which they will be growing up.
- Specifying constraints and barriers to change. This will involve developing an understanding of the social, economic and political problems that limit the change that they want to effect in the waste management activities.
- Establishing priorities for action. At this stage learners should understand what actions are most urgently required and what actions are needed in the longer term.
- Selection of appropriate and sustainable actions. Finally, learners have to choose the most suitable and sustainable actions within the context of their life and their community environment.

These dimensions serve to highlight the key characteristics of action in any project activity in which the desire is to implement and operate within the action competence framework in environmental teaching and learning processes. Of fundamental importance is that even though action requires active learner participation, the opposite is not necessarily true, that is learner participation does not necessarily lead to action. For example, where learners would participate in classroom and litter cleaning activities in which they are actively involved but which do not aim at generating change and action. To qualify this as action, Jensen (1997) insists that they should rather

> be involved in choosing a problem, examining its causes, formulating visions and developing ideas for what they could do about it. A project such as this is based on pupil participation but would only become action oriented if the pupils also actually decide which actions they want to initiate—and then take them (p. 425).

To achieve this action requires social and structural changes in schools because action competence entails a number of social skills which include among others, self-esteem, the ability to cooperate, self-consciousness, and self-confidence (Carlsson & Jensen, 2006, p. 241) over and above critical thinking and decision-making skills as proposed by Breiting et al*.,*(2009) and Mogensen (1997). Carlsson and Jensen, (2006) further pose a challenge to teachers by reminding them of the major demands that are placed on their ability to put the learners' ability and their potential into perspective - both locally and globally, if "environmental-based action competence, among other things, means that insight into solving environmental problems requires knowledge about social and structural changes" (p. 240).

3.7.2 Direct and indirect actions in environmental activities

In operationalising actions in environmental activities through his models, Jensen (2002) together with Jensen & Schnack, (2006) further expand and qualify different categories of actions according to their focus. This section deals with the different foci of environmental actions within the action competence approach.

Jensen & Schnack group environmental action into two main categories:

- direct actions which directly contribute to solving the environmental problem that is being worked on, and

- indirect actions whose purpose is to influence others to do something to contribute to solving the environmental problem in question.

Direct actions according to them are those in which learners direct their actions to the environmental issue that they are working on, such as deciding to do litter cleaning campaigns in the neighbourhood. "Indirect actions are characterised as dealing with 'people to people' relations" (Jensen & Schnack, (2006, p. 479) and would involve the learners' influence on other members of the community to take action through "letters of protest, demonstrations, lobbying, voting, etc" (ibid.), spurring authorities to take action on the environmental problem at hand. As I see it, indirect actions are consistent with social learning in that sustainable direct actions can emerge from them. Furthermore, whether direct or indirect, actions may be undertaken individually or collectively by participants in the activity (Jensen, 2002) as illustrated in Figure 3.4.

	Direct Actions	Indirect Actions
Individual	1	2
Collective	3	4

Figure 3.4: Types of action *(Source: Jensen, 2002)*

If a learner decides to re-use his/her old incomplete exercise books in order not waste paper, that action can be characterised as an individual direct action. If a group of learners decide to do a recycling project with paper from all used exercise books, that would be a collective direct action. If the same group of learners decide to write a letter to the school head or district or city council suggesting that the school develop a political position about garbage and waste, that is a collective indirect action (Carlsson & Jensen, 2006). One could argue that though the focus for actions within environmental education processes is largely seen as environmental, indirect actions will usually, if not always, extend to indirect broader social actions. Jensen and Schnack (2006) however

caution about the need to evaluate the worth of direct versus indirect actions from two perspectives, depending on the context of action in the activity.

> Firstly from an environmental point of view, it may be discussed which of the two types of environmental action as part of class teaching can contribute best to solving the environmental problem in question and, secondly, from an environmental educational point of view, it is a question of the degree to which students can develop their action competence through both types of environmental actions (p. 479-480).

The authors are attempting to highlight the fact that while the action perspective ought to be foregrounded in environmental education processes, too great a focus on the action perspective and on specific actions should not be the central issue. This can be particularly so if actions that are set up only deal with the individual or school level because there is the risk of teaching learners a simplistic and individualistic approach to environmental problems and their causes (p. 480) without broadening the scope or contributing to the development of critical and global understanding of the environmental problem in question. This calls for continuous critical evaluation of the actions throughout the learning process.

3.7.3 Evaluation of actions

It is crucial that learners are given the opportunity to "evaluate, reflect on, and restructure their actions" (Carlsson & Jensen, 2006, p.242) within these waste management activities together with their teachers and among themselves with their peers as part of the action competence development process. It is important to realise that participation, involvement in critical investigations, action-taking, reflection and importantly evaluation can contribute to the enhancement of sustainability of learner participation in these activities. In accordance with the action competence approach, evaluation adds to the quality criteria that enable and promote learning and innovation by focusing on enhancement rather than performance and control. The evaluation criteria should reflect the democratic values that SADC-REEP ESD agenda (see Section 2.5), the nation's education philosophy (see Section 1.5.1) and the infusion policy (see Section 2.6.4) seek to promote, rather than focus on 'correct' knowledge and behaviour. Evaluation should be co-elaborated and respond to the socio-ecological contexts by teachers, learners and other stakeholders rather than directed 'from above', and it should reflect institutional as well as individual learning (Mogensen & Schnack, 2010, p. 69).

But as highlighted in earlier sections in this chapter, schools in Botswana seem to lack practice and structures to ensure popular and genuine participation of learners in such issues that affect them directly on a daily basis as Jensen (1997) argues. In this research I also investigated the *opportunities* discussed above and *time* that learners are given to participate in waste management activities in these schools by considering the social, cultural and historical contexts in which these activities were operating (see Section 3.8).

3.8 Learner participation within a broader socio-cultural context

All these insights into learner participation within an action competence framework provided by the researchers discussed in the previous sections, call for an approach that looks at the mediating factors that will remove barriers which disregard the role of learners as potentially full environmental stakeholders (Barratt Hacking et al., 2007; Barratt & Barratt Hacking, 2008) and move them from being mere actors in waste management activities to informed and full participants and action competent contributing stakeholders.

Hence, if action competence for civic agency is to be developed in learners, there is need to move from a rhetorical and normalised narrow view of participation to a broader approach that seeks to incorporate the *socio-cultural contextual factors* that influence participation of learners in these waste management practices (Jensen, 2004a, 2004b) in ways that develop their action competence. Jensen asserts that the element of action competence should be an essential component of environmental education as it brings out learners who not only have knowledge and insight about their waste management issues, but who should also show commitment through working within their *social-cultural context* with others to resolve problems around the way they participate in these waste management activities.

3.8.1 Participating and learning within a socio-cultural context

The cognitive roots of participation in the socio-cultural context can be traced back to Vygotskian cultural psychology which viewed cognitive developments to be a result of a dialectical process, where children learn by shared problem solving experiences through participation with someone else who guides the learner, such as an adult and peers within their surrounding culture (Daniels, 2001, 2008; Rogoff, 1990; Wertsch,

89

1984, 1985; Reid, Jensen, Nikel & Simovska 2008) because knowledge is culturally constituted in language and distributed across the community (Edwards, 2005; Daniels, 2001, 2008) that the child is part of. To help explain the way that this social and participatory learning takes place with children in the learning process, Vygotsky (1978) suggested that such learning occurs within the learner's zone of proximal development (ZPD) which is

> The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (p. 90).

This concept of the participatory learning process is outlined later in Section 3.8.3 and in detail in Chapter 8.

According to Vygotsky (Daniels, 2001, 2008; Cole 1995; Cole & Engeström 1993; Valsiner, 1987; Wertsch, 1985) learning in such a process cannot be understood as linear, never-changing and universal as suggested in some areas of developmental psychology, but as always depending on its specific social, cultural and historical formations. This cultural school of psychology does acknowledge that while participatory learning within this psychological framework entails both mental and physical maturation, social experience is a fundamental and crucial factor in the process. This is highlighted by Valsiner (1987) in his analysis of Vygotsky's well-known "genetic law of development" (p. 67) which emphasizes this primacy of social interaction in human development:

> [E]very function in the cultural development of the child comes on the stage twice, in two respects; first in the social, later in the psychological, first in relations between people as an interpsychological category, afterwards within the child as an intrapsychological category ... All higher psychological functions are internalized relationships of the social kind, and constitute the social structure of personality (p.67).

Vygotsky conceptualized learning and development as the transformation of socially shared activities into internalized processes (ibid.). Research in Botswana schools has repeatedly revealed that the learning process has consistently followed the linear approach in that schools have traditionally adhered to teaching and learning that follows transmissionist or instructionist and normalised models (Tabulawa, 1997; Ketlhoilwe 2007a, 2007b) in which the teacher 'transmits' information to learners (see Section 1.6 & 1.8.1). Implicit in this approach is that development precedes learning (Vygotsky, 1978; Daniels, 2001, 2008). In contrast to this approach, Vygotsky (1978) argued that

participatory learning is a "necessary and universal aspect of the process of developing culturally organized, specifically human, psychological functions" (p. 90) meaning that learning in which learners play an active role by participating in context, is what leads to the development of higher order thinking in learners (Daniels, 2001, 2008; Wertsch, 1985; Rogoff, 1990).

3.8.2 Mediated learner participation

As the leader of this learning perspective, Vygotsky (1978) attempted to explain participatory learning as a mediated action. In his terms, learners construct meaning while they interact with artifacts and social others in their environment (Wertsch, 1985; Valsiner, 1987; Cole, 1995; Daniels, 2001, 2008; Moll, 1990).

Vygotsky (1978)'s learning by participation centres around three central themes:

- Learning by participating through social interaction plays a fundamental role in the process of cognitive development (Rogoff & Wertsch, 1984).
- Learning by participation can be enhanced through social interaction with a more knowledgeable others (Vygotsky, 1978; Wertsch, 1985; Valsiner, 1987; Daniels, 2001, 2008; Rogoff, 1990) who has a better understanding or a higher ability level than the learner, with respect to a particular task, process, or concept. This more knowledgeable other could be the teacher, peer, adult, or any other person that could enhance the child's learning.
- Learning by participation should be supported, scaffolded or guided (Rogoff, 1990; Wertsch, 1985; Rogoff & Wertsch, 1984) within the learner's ZPD.

According to Vygotsky (1978), the learner's new knowledge which is learned socially through interaction with others (inter-psychological) can later become intra-psychological within the learner when the new knowledge or skill is mastered on an individual level.

He viewed the overall goal of participation in learning being to generate and lead learner development which is the result of social learning through internalization of culture and social relationships against the history within which these have evolved (Cole, 1995; Moll, 1990; Cole & Engeström, 1993; Wertsch, 1985; Daniels, 2001, 2008). He repeatedly stressed the importance of past experiences and prior knowledge in making

sense of new situations or present experiences (Moll, 1990; Hatano & Wertsch, 2001; Wertsch, 1985; Cole & Engeström, 1993). Therefore, all new knowledge and newly introduced skills are greatly influenced by the learner's cultural environment, social context and history of these experiences. Hatano & Wertsch (2001) go on to emphasize that,

> from this perspective, participation in practice does not merely facilitate or inhibit some kind of fixed course of cognitive development that would occur otherwise. Instead, it gives rise to cognitive development and defines what cognition is by providing participants with materials with which they can reconstruct the knowledge and skills available in the community. At the same time, however, participation in a given practice is not assumed to induce uniform cognitive effects. In this sense, the practice account does not involve some form of simple, mechanistic transmission. Instead, it allows for the active role of unique agents carrying out unique actions. However, these unique agents and actions are always shaped by shared cultural tools such as language, hence providing a commonality among members of a group, even in cases where they do not immediately recognize this (Hatano & Wertsch, 2001, p.79).

Communication and collaboration are particularly critical for creating meaningful learning and linking new ideas to past experiences and prior knowledge. According to Vygotsky, internalized skills or psychological tools are used by learners to gain mastery through this collaboration over their own behaviour, practice and cognition (Moll, 1990; Cole, 1995; Rogoff, 1990; and Rogoff & Wertsch, 1984; Hatano & Werstch, 2001). Primary among these tools is the language that is used in engaging learners as it plays a central role in cognitive development (Vygotsky, 1978). Though Vygotsky identified language to be one of the primary tools used to mediate this collaborative learning he was trying to highlight the crucial role that communication with learners plays to promote learning by participation. He asserts that the use of language therefore makes it possible for a child to communicate and share his/her experiences within his/her socio-cultural context dialogically.

Hatano and Wertsch (2001) consolidate this argument on socio-cultural learning by submitting that 'participation in practice' (p. 79) is the key concept linking the social and cultural setting with the learners' cognitive development (ibid.) which should equip learners with skills both socially and cognitively to be fully action competent stakeholders in their community. They assert that because what is acquired through participation in a specific activity or practice is the set of skills needed for performing competently well in it, the cognitive consequences of an activity must be seen to vary as the activity does, as it is obvious that activities in different socio-cultural contexts

produce different outcomes. Whether or not an activity in which learners participate induces highly productive and action oriented learning, depends on whether learners "are expected to encounter novel problems continuously, (and) how much social interaction is permitted" (p.79).

3.8.3 Scaffolding learner participation within the ZPD

In Sections 3.8.1 and 3.8.2 we saw that the ZPD provides construction zones of learning (Newman, Griffin & Cole, 1989; Russell, 2002) where the learning process can be expanded (Engeström, 1987) under adult guidance or in collaboration with more capable peers. Within these construction zones learners can solve problems which they would otherwise have been unable to independently (Vygotsky, 1978). Vygotsky would posit that within this ZPD, the potential for developing learner agency through participation is theoretically limitless and that this potential depends upon quality social interactions between the learners and their teachers, for example. In theory, what this means then is that when learners have access to their teachers or a more capable other, they can solve any waste management problems that they face in their schools, assuming the teachers have the knowledge and expertise to provide such guidance. Enhancing these social interactions and expanding learner participation within the ZPD can be achieved through scaffolding (Palinscar, 1986, 1998) and guided participation (Rogoff, 1990, see Chapter 8). Scaffolding is an approach to assisting learning and development of learners by the more knowledgeable other through participation within their ZPD. Knowledge, skills and prior experiences, which come from the learner's social context, culture and history create the foundation of scaffolding and guided participation by teachers for potential development and learning. Teachers or more capable peers can enhance the learners' action competence by providing such a scaffold within the ZPD. Guided participation according to Rogoff (1990) does not focus on instruction or guidance, but rather it is:

> … jointly managed by children and their companions in ways that facilitate children's growing skills and participation in the activities of mature members of the community. The process of guided participation --- building bridges between what children know and new information to be learned, structuring and supporting children's efforts and transferring to children the responsibility for managing problem solving---providing direction and organization for children's cognitive development… (p viii).

What this means is that learners need to interact with teachers and/or peers to accomplish a task which could possibly not be completed independently as "shared

problem solving, in which children can participate in collaborative thinking processes, appears central to the utility of social interaction for children's development" (ibid.). This, according to Rogoff, offers unique possibilities for discussion and collaboration between these parties when they consider each other's perspective. Teachers and more capable peers can serve as highly active companions, providing each other with motivation and opportunities for the learners' participation creatively in dealing with the waste management issues and their solutions in relation to their socio-ecological contexts (see Chapter 8).

3.9 Chapter summary

The aim of this chapter was to conceptualize participation by providing a broader and context based analysis against the rhetorical and narrow emphasis on participation as it still appears to be interpreted within the Botswana schools' environmental education processes. The analysis provides theoretical insight into how learners can be engaged in broader expanded participatory learning processes that are meaningful, purposeful and that broaden their action competence by taking into consideration their social and cultural contexts. Conceptualising participation in this way provided me with general theoretical intellectual tools for understanding and analysing participation in a broader sense (Valsiner, 2009).

The implications of these theories and observations by several other theorists discussed in this chapter in conceptualizing participation are particularly significant; they bring to the fore the importance of action competence development in learners and interpersonal relationships in facilitating relevant learner participation in school environmental education learning processes. The action competence framework highlights the importance of democracy and action in environmental education learning processes while the socio-cultural theories of learning particularly highlight the importance of relationships between teachers and other adults, or 'more experienced participants' (Simovska, 2004, p. 203) with learners as they play important roles as facilitators of learning in the learners' ZPD. Such relationships form a kind of action competence developmental infrastructure on which learners' social and cultural experiences can be built. Therefore, there is need to be

> aware of educationally critical aspects of students' experiences and build participatory
> situations around them. In other words, relationships constitute part of a specific quality of

the ZPD, which could be more or less conducive to learning and enhancing students' competencies (Simovska, 2004, p. 203).

It is important to note that the more knowledgeable participant does not control the activities with rule and structure; rather, this participant collaborates with learners and provides support and direction through dialogue and provision of space, new knowledge resources and opportunities for learners to generate their own ideas and initiatives in how they can participate in the environmental education activities. The theories provide a framework within which participation by learners in waste management activities can be probed and action competence developed. This conceptual analysis provides an opening for finer theoretical and methodological frameworks within which probing learner participation and developing action competence can be operationalised. This is explored further in the next chapter.

CHAPTER 4: LEARNER PARTICIPATION – A THEORETICAL FRAMEWORK

4.1 Introduction

This chapter covers the theoretical frameworks employed in the study and these frameworks are informed by the conceptual analysis of participation provided in Chapter 3. I begin by providing the rationale behind their selection and use.

As mentioned earlier, my primary concern in this study was how learners participate in schools' waste management activities against the historical background of the way their participation has come to be normalised in the schools' mediation culture of environmental education (see Section 1.6). In order to work towards the children's action competence development as argued in Chapter 3, one must understand "where they are coming from," the history of their previous involvements (see Chapters 1, 2 & 6), so as to understand and create necessary structures for their learning through participation in these activities. In this regard, on one hand I was interested in understanding how learners actually participate in order to identify any existing contradictions and tensions associated with these processes, while on the other I was interested in exploring available opportunities for enhancing/developing their action competence. The theoretical frameworks worked with in this study were influenced by the need to comprehensively meet these two major goals which form the purpose of the study (see Section 1.9). The primary aim was to understand participatory practices within the socio-cultural context of the schools, consider the historical influences on the manner in which learners were participating and unearth contradictions and tensions henceforth opening up democratic processes by giving voice, opportunities and space for learners to develop action competence for civic agency (Schnack, 2000; Mogensen & Schnack, 2010).

In this study I draw upon tools emerging from critical theories discussed in Chapter 3 which offer an in-depth and broad approach, both epistemologically and methodologically for analysing learner participation and providing a framework for expanded learning opportunities for learner participation in waste management activities. The selection of these theories was based largely on their ability to investigate

and challenge dominant narrow views on children's participation which marginalise and subjugate learners as a result of the legacy of the history of authoritarianism (see Section 1.8) and the interpretation and response to infusion policy through normalising strategies (see Section 1.6 & 2.6.4). The aim was to allow for learners' perspectives, capabilities and social capital (see Section 2.3.2), and give them voice in a context where practices and epistemologies in environmental education have been prevalently didactic, hegemonic and normalised, thereby marginalising and excluding the learners from genuine participation (see Chapter 3).

4.2 Cultural historical activity theory as a methodological and analytical tool for exploring learner participation

Learner participation in waste management activities in schools and the potential for developing action competence for civic agency within a socio-cultural and historical context can further be understood and/or analyzed through *Cultural Historical Activity Theory* (CHAT), which places greater emphasis on situated (Lave & Wenger, 1991) and socio-cultural approaches to learning (Engeström, 1999, 2000, 2001; Edwards, 2005; Reid et al., 2008; Jensen, 2004a; Chawla, 2008; Roth, 2004; Yamagata-Lynch, 2003).

The theory provides a robust conceptual framework, both epistemologically and methodologically for analysing and exploring learner participation; it also offers a broad approach, and provides opportunities for expanded learning opportunities for learners in activities. Participation according to this theory, or the 'participation metaphor' (Edwards, 2005) in learning has generally been perceived to be a non-cognitive option in learning that has been confined within a learner instead of being placed on the capacity of a system in which learning is supported by complex forms of engagement (Edwards, 2005). According to Daniels (2001) the theory provides a view of developing cognition and its relationship between societal, cultural and historical factors from the notion of the prevailing context. Daniels goes on to recognise that "cognition is distributed among individuals, that knowledge is socially constructed through collaborative efforts to achieve shared objectives in cultural surroundings and that information is processed between individuals and tools and artefacts provided by the culture" (p.70). CHAT's focus on cultural history and tools makes it ideal for exploring interaction among multiple participants in an activity.

Edwards (2005) argues for the potential inherent in the socio-cultural nature of participation in the learning process and how it can be supported in a complex system in which participation of learners are operating (Edwards, 2005; Daniels, 2001). This theory provides the potential to understanding learners' participation in waste management activities and how mediating tools, within a socio-cultural context of the learners, influence their participation and how this affects the way the object of their participation is interpreted. The central role for contextualising the activities is that when analysing learner participation in these activities, it is not only the activities that are analysed, "but also who is engaging in that activity, what their goals and intentions are, what objects or products result from the activity, the rules and norms that circumscribe that activity, and the larger community in which the activity occurs" (Jonassen & Rohrer-Murphy, 1999, p.62). It is therefore important to analyse waste management activities within their context, as this provides a useful framework for understanding the totality of learner participation and praxis in context (Jonassen & Rohrer-Murphy, 1999).

To understand learner participation and to identify tensions in participatory practices, I drew on Engeström's (1987) CHAT mediational model of human **activity systems** which I discuss in the next section. I also explored expansive learning opportunities with learners to enhance and extend their participation in waste management activities, with the intention of enhancing and developing their action competence to enhance civic agency. For the expansive learning processes, I drew on Jensen's (1997, 2000, 2004a, 2004b) models of action competence development which will also be discussed later in this chapter (see Section 4.5.1).

4.2.1 Activity systems

Drawing on Marxist psychology, Vygotsky (1978), argued that learner participation is mediated by **artefacts or tools** which modify how the individual **subjects** (**learners)** will achieve their **object** (Daniels, 2001, 2008; Engeström, 1987, 1999, 2000, 2001). Artefacts or tools are created by individuals and social groups of which the learner is part, in order to interact with their world (Daniels, 2001). Viewed this way Vygotsky essentially enables us to conceptualise participation of learners as mediated through socio-historical cultural tools. This basic interaction forms an **activity system** (Daniels, 2001, 2008). Figure 4.1 illustrates the first generation Vygotskian activity system which is a representation of mediation, where the subject acts on the object using mediational means (tools).

Mediational means **(Tools)**
(machines, writing, speaking, gesture, architecture, music, etc.)

Subject(s)   Object/Motive → Outcome(s)

Subject(s)
(Individual, dyad, group)
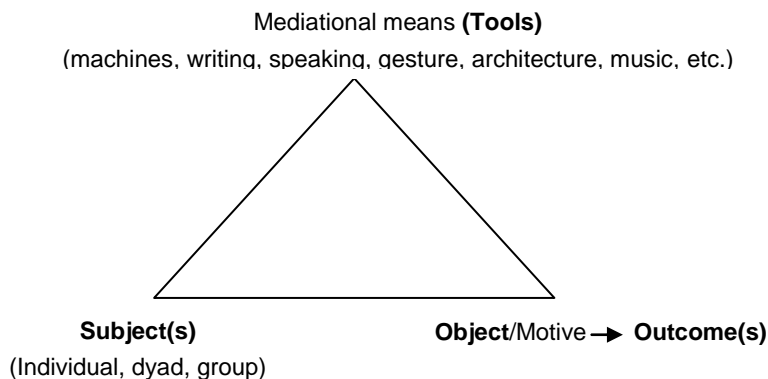
**Figure 4.1: Basic Vygotskian triangular representation of mediation
(First generation activity system)**

While this basic representation opens the way towards an understanding of mediated participation, it lacked an articulation of the individual subject and his/her role in the societal structure. One of Vygotsky's colleagues, Leontiev (in Daniels, 2001, 2008) went on further to develop Vygotsky's tool mediation by focusing on the object (e.g. participation in a particular waste management activity) and how it is interpreted and what actions it elicited in learners (Edwards, 2005). This system formed the second generation activity system illustrated in Figure 4.2. Engeström further extended and developed the second generation activity system by taking the object-oriented, tool mediated collective activity system as the unit of analysis, thereby bridging the divide between the subject and the societal structure (Engeström, 1987, 1999, 2001; Daniels 2001, 2008). This theoretical framework offers a more viable root model of participation by focusing on object transformation which helps map relationships between learners (subject) and their participation in waste management activities (object) (Engeström, 1987, 1999, 2001; Daniels 2001, 2008; Roth, 2004; Sandars, 2005). Engeström argues that the object can be seen as being complex and can be viewed differently by others such as teachers and others in the school. In developing and expanding the concept of the activity system, Engeström (1999; 2000; 2001) proposed that an individual activity system is an integral part of a much larger and expanded collective activity system. This expanded model considers the social, cultural and historical context within which the activity system is operating. The additional dimensions of this second generation activity system include **community, rules** and **division of labour** (ibid.).

99
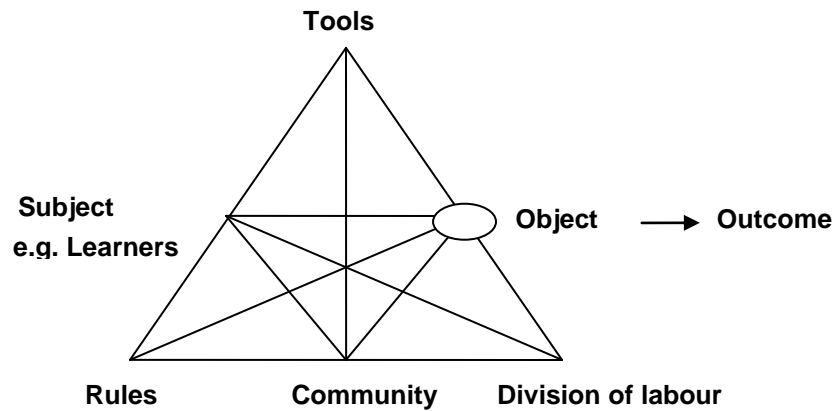
Figure 4.2: Second generation activity system *(Adapted from Engeström,1987)*

Engeström (1987) went on to develop third generation cultural historical activity theory, which involves interacting activity systems (see Figure 4.4 in Section 4.2.3.3). Third generation CHAT focuses on the interaction between the central activity system (e.g. the learner participation activity system) and one or more activity systems that have a shared object (see Figure 4.4). Because of the shared nature of the object between activity systems in third generation CHAT, participation and learning between such systems involves boundary crossing where subjects seek to work towards a co-constructed object. This boundary crossing concept is central to expansive learning in third generation CHAT. For the purposes of this study since the main unit of analysis was learners' participation, expansive learning was guided by the action competence framework. The rationale for opting for an alternative expansive learning framework is provided in Section 4.4.1.

4.2.1.1 Some basic principles of CHAT

While CHAT is best understood as a developing theory, some of its basic principles are shared by those working within the field. Drawing primarily from Cole & Engeström (1993), Cole (1996), Russell (2002) and Hardman (2005) I outline these principles:

- Human activity is collective and human behaviour is social in origin (Cole & Engeström, 1993). Even when a learner apparently undertakes a solitary task such as picking up litter it is a collective activity because his or her actions are

100

mediated by a complex network of socio-historically embedded tools, such as the rules that govern his actions.

- The human mind is social and it grows out of joint activity with shared tools. For example, in collective activity, the learners' involvement is influenced by the history, values, norms and social relations embedded in the shared cultural tools used by that community.

- Tools, which carry socio-historical meanings, mediate participation.

- CHAT studies development and change, which is understood to include historical change, individual development and moment-to-moment change (Russell, 2002). When studying mediated participation it is important to focus on all three levels of change in order to construct a picture of learner participation in the waste management activity system.

- CHAT theory assumes that learners are active cognising agents but that they act in sites that are not necessarily of their choosing with tools that constrain and afford their actions (Hardman, 2005).

- Methodologically, CHAT rejects cause and effect explanatory science in favour of 'a science that emphasises the emergent nature of mind in activity and acknowledges a central role for interpretation in its explanatory framework' (Cole 1996, p. 104). Consequently, CHAT makes use of a contextualist methodology where learners participate in contexts that involve others and their participation is mediated by tools that both enable and constrain their actions.

- Multi-voicedness is another key element in activity systems (Engeström, 2001). This is because meaningful participation, for example in the waste management activities can only be accomplished collectively rather than individually. An activity system is always a community of multiple points of view, traditions and interests (Engeström, 2001). This should allow the participants within the school community to negotiate and mediate rules and customs that describe how the school community functions in relation to these activities, what it believes, and ways that each participant can support different activities in the practices. The multi-voicedness "is a source of trouble and a source of innovation, demanding actions of translation and negotiation" (Engeström, 2001, p. 136).

- Activity systems are constantly subject to change and activity theory sees these changes as driven by contradictions (Engeström, 1987). Contradictions can arise within and between systems (ibid).

These basic principles form the basis of the second generation cultural historical activity theory, drawn on by this study. In this study the learner participation activity system forms the unit of analysis (Engeström, 1987, 1999, 2001). Learner participation in waste management activities can be transformed into action competence for civic agency through engaging various mediating **artefacts/tools** which are the available resources influencing the learners' participation. The **division of labour** refers to both how the roles, tasks and duties between the members of the school **community** (learners, teachers, cleaners etc.) are defined and also how power and status are divided as described by (Sandars, 2005):

> The rules refer to explicit and implicit regulations, norms and conventions that constrain actions within the activity system. The overall importance of this model of a second generation activity system is the recognition that all outcomes are determined by a complex mix of culturally and historically derived mediating influences, which comprise mental models held by each individual (subject) and more wider socially embedded influences within the community of which each subject is a part. There is a constant dynamic interaction between the internal and external mediating influences (p. 194).

Tools, community, rules, and division of labour are the structures that can both enable and constrain learner participation in the activity system as their participation is mediated by these structural and socio-cultural dynamics in order to achieve an outcome (Engeström, 1999, 2001; Roth, 2004, 2007; Edwards, 2005). Outcomes (e.g. meaningful participation in waste management activities in a school that show evidence of action competence development), can be brought about by features of the learners themselves (i.e. characteristics of the **subject**), the nature of the **objects** that motivate their participation, the **mediating tools** they use (e.g. what conceptual and material facilities they use to support them), the **community** of which they are part (their peers, teachers, parents, and others), the **rules** that pattern their participation (e.g. norms and rules in the school and community related to waste management), and the **division of labour** (how they divide up tasks and who does what) (Engeström, 1987, 1999; Edwards, 2005; Roth et al., 2004). These structural elements of an activity system form nodes of an activity system (Russell, 2002).

4.2.2 Expansive learning opportunities

Each of these nodes is understood not as a constant entity but as undergoing continuous change, which in part is brought about in the system's response to **contradictions** or inconsistencies (Engeström, 1987, 2000, 2001; Roth, 2004). The identification of contradictions within and across activity systems is a central component (Engeström, 2000; 2001; 2004) of the activity system, as arising tensions and contradictions offer expansive learning opportunities for learners in activity systems (Engeström, 1987, 1999, 2000; 2001; 2004). Engeström (2001) explains expansive learning as a historically new type of learning which emerges as participants struggle through transformations in their activity systems, moving across the learners' collective ZPD (Engeström 2001, p.137). The ZPD (see Section 3.8.3 & Chapter 8) is according to him:

> the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions (ibid.).

This can be seen as the distance between the point at which learners are engaged in school routine waste management activities and where they envision to be, given collaboration with a more experienced other such as their teacher (Vygotsky, 1978; Rogoff & Wertsch, 1984, see Section 3.8.3 & Chapters 8 & 9).

As mentioned in Chapters 1 and 3 in this study I used participatory approaches to work with learners to identify such tensions and opportunities for expansive learning that allowed them more varied forms of participation than those normally practised in the normalised procedures of the school. Through enabling such a process, I used this theory to investigate *how* learners could reposition themselves in relation to waste management activities in the school, and to see whether and how their participation and motives could be re-conceptualised to embrace a wider horizon of possibilities than in the previous mode of their participation (Engeström, 2001, p. 137). This for example could be how observed tensions in the learners activity system exist in relation to **rules** (what teachers tell learners to do), and *how they perceive the object.* This tension could create possibilities for learners to, for example, develop explanations for why they are participating in waste management activities which would be evidence of an expanded learning opportunity and wider participation in the process. This could contribute to the process of participation in decision making and the development of action competence,

as explained by Hart, Jensen and Schnack and other theorists noted in Chapter 3. As Engeström (1987) explains, contradictions "are potential growth points that allow the system to improve while affording the making and remaking of the participants and their identities" (p. 176), allowing for expansive learning.

4.2.3 Some important operational aspects about CHAT

I have shown how CHAT offers a powerful conceptual analysis of systems which takes us beyond what most 'situated' social practice theories provide (Williams & Wake, 2007). Engeström (1987, 1999, 2000, 2001) argues that unlike other theories of learning which have placed their emphasis on knowledge and skills that already existed in the learners, the strength of this theory lies in its ability to focus on something that did not exist at the beginning of the learning process in any activity. It does this by looking deeper within its broader context because mediating tools place any activity in a socio-cultural and historical context. Important aspects of the theory that gives it its strength for looking deeper into any activity worth noting are discussed in the next section. These include the historicity of activity systems, the object of activity and contradictions and tensions.

4.2.3.1 The importance of history in human activity systems

Mediating cultural tools are important elements of activity which are perceived as historically developed or shaped (Engeström & Miettinen, 1999). The important starting point in an activity is to identify who is acting, how, with what and why, all of which can be premised around Engeström's (2001) principles that help analyse human activity systems, one of which is the importance of the historicity of activity systems.

> Activity systems take shape and get transformed over lengthy periods of time. Their problems and potentials can only be understood against their own history. History itself needs to be studied as local history of the activity and its object, and as history of the theoretical ideas and tools that have shaped the activity (p. 136).

He goes on to note that even

> the division of labour in such an activity creates different positions for the participants, the participants carry their own diverse histories, and the activity system itself carries multiple layers and strands of history engraved in its artefacts, rules and conventions (ibid.).

Thus, waste management activities needed to be analyzed against the history and culture of the school procedures and processes of managing waste and tools employed and accumulated in their local activity (Jonassen & Rohrer-Murphy, 1999). This is because activities evolve over time within a certain culture and in order to understand the dynamics of waste management activities in schools, it was necessary to grasp their evolution over time. The history that influenced learner participation in environmental education in schools could be at a macro-level, for example, how the infusion policy had come to be interpreted and represented through the prevailing normalised approaches (see Section 1.6) and the Ministerial directive (see Section 2.6.5). It could also be at a micro school level (see Chapter 6).

4.2.3.2 The object of activity in activity systems

The object of an activity system represents that problem space that the teachers and learners are working on in waste management activities (Leontiev, 1978, 1981; Engeström, 1987; Kaptelinin, 2005; Hardman, 2005, 2007; Foot, 2002; Miettinen, 2005). For Engeström (1987) the object refers to

> the 'raw material' or 'problem' space' at which the activity is directed and which is moulded and transformed into outcomes with the help of physical and symbolic, external and internal mediating instruments, including both tools and signs (p. 79).

The object of activity can also be considered to be the "ultimate reason" (Kaptelinin, 2005, p. 5) behind various actions by learners and other subjects in the waste management activity system. In other words, according to him, the object of activity can be defined as the

> analytical tool providing the possibility of understanding not only what people are doing, but also why they are doing it. The object of activity can be considered the "ultimate reason" behind various behaviours of individuals, groups, or organizations. In other words, the object of activity can be defined as "the sense-maker," which gives meaning to and determines values of various entities and phenomena (p. 5).

Engeström and Kaptelinin's conceptualisation of the object of activity developed from Leontiev's (1978, 1981) analysis of human functioning in the structures of an activity. Leontiev qualified the object of activity by looking deeper into the structures of human activity which according to his argument, is driven by an object which is seen as the main focused aim by any individual or collective participating in any activity. The object gives the activity its determined direction and its true motive according to him. Motives

are driven by the needs of human communities and societies (Leontiev, 1978). Therefore the concept of the object is inherently present in the concept of the activity (Hardman, 2007) and it is what drives all human actions. A similar point is made by action competence researchers as discussed in Chapter 3 (see Section 3.7). In order to account for individual actions within social activities, Leontiev extended activity theory to develop a hierarchical model (see Figure 4.3) of functioning that depicts the notion of hierarchical levels of human action in an activity, which conceives of activity as driven by the object, while individual actions are directed at goals (Engeström, 1987; Leontiev, 1981).
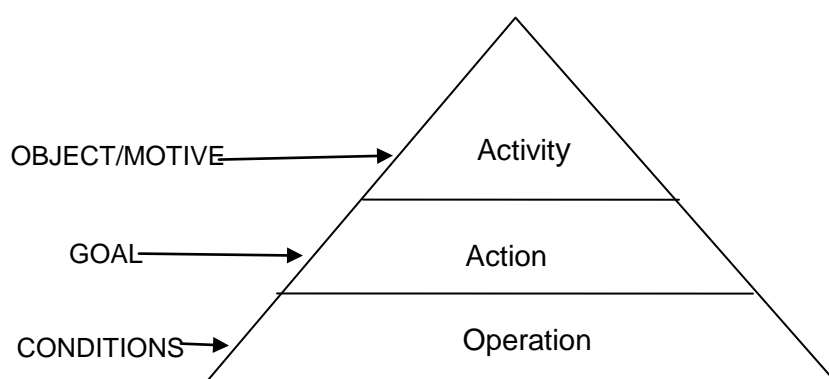
Figure 4.3: Hierarchical levels of human action in an activity *(Source: Leontiev, 1981)*

The importance of this distinction of actions and their goal directedness from an activity and its object-orientedness in the notion of hierarchical levels is foregrounded by Mwanza, (2002) who highlights the fact that while,

> the concept of tool mediation is central to the whole theory, in the meanwhile, [*the object of*] activity is realised through various *actions* that are targeted towards the achievement of conscious *goals*. At the same time, actions are accomplished through a series of unconscious *operations* whose successful execution is dependent on the *conditions* that exist in the context in which activity is carried out (p.85) (my emphasis).

For example, in a school waste management activity, conditions can be reflected in the formal or informal *rules and division of labour* specifying the procedures for learner participation in the waste management activity. Conditions therefore, form the social and cultural structure of the waste management activity in the school. The social and cultural structure of the school (*community*) can constrain, enable (Engeström, 2001) or influence the extent to which the activity is successfully carried out to achieve its object.

As a result of these constraints and influences, the waste management activity would not be static; instead it would continuously evolve, triggering changes in the waste management activity and also in the tools used to mediate that activity and at each stage participants' actions in the activity will be driven by different motives.

Leontiev illustrates how motives are social endeavours that are continuously at play in actions within an activity through his well-known example of the primeval hunt, where he demonstrates the weaknesses inherent in focusing only on tool-mediated, individual actions which in a way is in concert with reductionist tendencies (Breiting, 1993) as a unit of analysis without looking at the nuances in the different components of the activity in its broader context.

> When a member of a group performs his [sic] labour activity he also does it to satisfy one of his needs. A beater, for example, taking part in a primeval collective hunt, was stimulated by a need for food or, perhaps, by a need for clothing, which the skin of the dead animal would meet for him. At what, however, was his activity directly aimed? It may have been directed, for example, at frightening a herd of animals and sending them toward other hunters, hiding in ambush. That, properly speaking, is what should be the result of the activity of this man. And the activity of this individual member of the hunt ends with that. The rest is completed by the other members. ... What the processes of his activity were directed to did not, consequently, coincide with what stimulated them, i.e., did not coincide with the motive of his activity; the two were divided from one another in this instance. Processes, the object and motive of which do not coincide with one another, we shall call "actions". We can say, for example, that the beater's activity is the hunt and the frightening of game his action (Leontiev, 1981, p. 210).

What one gathers from the above quotation is that though the activity is always social and seemingly collective, the motive is not necessarily always collective as Hardman (2007, n.p.) attempts to put this quotation into perspective by clarifying it to mean that

> The object of activity for Leontiev, then, is not collectively shared; the object of activity is individual and it is '[the] true motive. It is understood that the motive may be either material or ideal, either present in perception or existing only in the imagination or thought' (1975/78: 62). For Leontiev studying the object of an activity, then, is primarily about understanding what motivates the actors.

The way I understand it is that in waste management activities, for example, while teachers and learners might appear to be materially working on the same object, ideally they might be working on different objects. Theorists such as Engeström (1987, 1999) and Daniels (2001, 2008) have used this quotation to suggest that Leontiev draws a distinction between individual actions and collective activities. Kaptelinin (2005),

107

however, argues that Leontiev's notion of activity is to dissociate between "individual's activities and actions, that is, between motives and goals, [which] initially emerges as a result of division of labour in collective activities" (p. 12). But whichever way one chooses to understand and conceptualise Leontiev's notion of object of activity in his hierarchical levels of human functioning in the activity,

> Leontiev's theory does not go far enough to situate human functioning in context, illustrating how individual actions are transformed into shared, collective objects through interactions with community members or indeed how division of labour impacts on individual actions in a collective activity (Hardman, 2007, n.p.).

In other words he does not put the object of activity in its broader context. Engeström's (1987, 1999) mediational triangle model which conceptualises an activity system (see Figure 4.2) as the basic unit of analysis serves as a useful heuristic (ibid.) for situating learner participation in context. While he accepted Leontiev's hierarchical levels of human functioning in an activity, Engeström extended the theory by situating it more fully in context and focusing on the collective nature of activity by succinctly including components of the community, rules and division of labour (see Section 4.2.1), which provides, methodologically, some clarity on the analysis of activity systems. For the purpose of this study this conceptualisation of the object of activity provided an appropriate analytical tool for understanding not only what learners were doing in their participation in these waste management activities, but also why they were doing it. Kaptelinin (2005), sums up the importance of this conceptual analysis and its methodological implication by comprehensively stating that,

> identifying the object of activity and its development over time can serve as a basis for reaching a deeper and more structured understanding of otherwise fragmented pieces of evidence ... the concept of the "object of activity" is employed as a useful conceptual tool helping to structure and interpret otherwise fragmented and confusing empirical data (p. 5).

Therefore the nature of **objects** that teachers and learners were working on, and what motivated learners to participate, was a crucial aspect of this study.

4.2.3.3 Contradictions and tensions in activity systems

It has been noted in section 4.2.1 that third generation activity theory is represented by multiple second generation activity systems. In relation to the central activity system, in the case of this study, the learner participation activity system, the other activity systems could be responsible for producing the components of the central activity system e.g.

rule producing or tool producing activity system (see Figure 4.4). Related to this aspect of cultural historical activity systems, is that they are dynamically unstable in response to efforts to manage contradictions within and between systems (Engeström, 1987, 1999). The central role of contradictions is that they are sources of change, transformation and action competence development. Contradictions are historically accumulating structural tensions (represented by lightning arrows) within and between activity systems (Engeström, 2001) as illustrated in Figure 4.4, below

Cultural & historical **tools** that are used to mediate learners' participation in WMAs (e.g. teachers, timetables etc)

Teacher/ Other (could be tool or rule producing activity system for the central activity system)

Shared Contradictions **Object** emerging between the activity systems and **outcomes**

Learners

Expansive learning (ACTION COMPETENCE)

Rules
Cultural & historical norms & rules that govern WMAs in the school and their sources e.g policy

Community
All subjects that are involved in the WMAs

Division of labour
Tasks and duties

Figure 4.4: Contradictions within and among activity systems

Such contradictions and tensions within and between the school waste management activity systems according to Engeström, can generate disturbances and conflicts, but can also be opportunities for innovative attempts to change these activities (Engeström, 1987, 1999, 2001). These tensions arise when the conditions of components cause the learners in the waste management activity system to face contradictory situations that hamper the attainment of the object. Taking the second generation learner participation activity system discussed earlier (see Figure 4.2), third generation CHAT would emerge from the interaction of the learners' activity system with their teachers as a tool producing activity system, as they are the main mediating tools in learner participation. In other words, the operational working conditions that learners face in an activity system may not favour the attainment of their object because of the conditions that one

component of the activity system, say the policy as a rule and how it is implemented by teachers as a mediating tool, creates tensions for other components in the system (Yamagata-Lynch, 2003). As active cognising agents, who act in contexts in which their actions are mediated by historically developed cultural tools that are sometimes beyond their control, these conditions can constrain or afford their actions in their attempt to work towards their object, which could be another central source of a contradiction within components of the activity (Engeström, 2001). Another important aspect about contradictions is the level or the types within and among activity systems. There are four levels of contradictions (Engeström, 1987):

Level 1: Primary inner contradictions occur within each constituent component of the central activity, for example between the infusion policy imperative as a rule and the traditional authoritarian culture, which then creates a tension for achieving the object of learner participation.

Level 2: Secondary contradictions occur between the constituents of the central activity, for example between the infusion policy imperative as a rule and its interpretation and representation by teachers as the main mediating tool in the waste management activity system of learners.

Level 3: Tertiary contradictions occur between the object/motive of the dominant form of the central activity e.g. the object/motive for learner participation in the normalised activities and the object/motive of a culturally more advanced form of the central activity which would be the object motive of the envisioned or ideal learner participation within an action competence framework

Level 4: Quaternary contradictions occur between the central activity and its neighbouring activity systems for example the contradiction between the object of the teacher activity system and the learner activity system.

4.3 Building a Waste Management Activity Picture

Drawing on activity theory as discussed in Section 4.2 above, specifically Engeström's second generation meditational model of activity system illustrated in Figure 4.2 (see Section 4.2.1), the first phase of the study sought to establish an in-depth picture or understanding of existing waste management activities in schools involving learners and how they participate in these practices within the context of the school. This was done by mapping out a school waste management practice activity system using components of the second generation activity system as a framework of analysis. This was quite

fundamental to the study as it provided a rigorous language of description for explaining what was taking place on the ground as far as learner participation was concerned. By looking at the division of labour in these activities, roles and tasks between members of the school community were revealed and defined showing how power relations and status were distributed among them (Engeström, 2001; Sandars, 2005). Rules guiding explicit and implicit school regulations, norms and conventions that govern (afford and constrain) waste management practices within the activity system (Sandars, 2005; Edwards, 2005) were also revealed as described above and the object of activity was tracked.

To build a picture of the learner waste management activity (WMA) systems in the school, I started by identifying each component by posing questions as identified in Figure 4.5 that follows.

What cultural & historical **tools** are used to mediate learners' participation in WMAs (e.g. teachers, councils, time-tables? etc)

Subject Which learners are involved in the activity and what are their characteristics (e.g. their concerns, age etc.)?

Object What WMA are evident and how are the learners participating? (e.g. cleaning and litter picking). What are the **outcomes**?

Rules
What cultural & historical norms & rules govern WMAs in the school and where do they come from? (e.g. infusion policy Ministerial directive)

Community
Who else is involved and why?

Division of labour
Who does what & why?

Figure 4.5: School waste management activity system (*Adapted from Engeström's (1987) second generation cultural historical activity theory)*

In each case study, the learner participation activity systems, contradictions and arising tensions had to be identified (e.g. participation expected of learners in waste management activities and norms and rules of the school; or learners' characteristics,

learners' concerns and division of labour etc.). This analysis of tensions and contradictions within activity systems as shown in Figure 4.4 aided in developing conceptual tools to generate dialogue, multiple perspectives from learners and networks amongst learners, teachers and other subjects involved in the waste management practices of the school (Engeström, 2001) as well as any others that seemed relevant to the learner activities e.g. the cleaners and learners' peers (see Chapters 6 & 7). This was achieved through a collectively meaningful, shared or jointly constructed object that was to be collaboratively (Edwards, 2005) constructed through engagement of these tensions in relation to the object (e.g. new waste management practice) with learners.

Mwanza (2001, 2002) offers a useful operational framework of analysis based on Engeström's second generation activity system by providing an eight step model which considers each component of the activity system. I adapted and modified this framework to operationalise my analysis as reflected in Table 4.1 below.

Table 4.1: The Eight step model of analysis *(Adapted from Mwanza 2001, 2002)*

The Eight-Step Model of Analysis		
Step	*Activity System Component*	*Question to ask*
1	*Activity* of interest	What activity are learners participating in?
2	*Subjects*	Who is involved in carrying out this activity?
3	*Community*	What is the relational environment in which this activity is carried out?
4	*Object of activity*	Why is the activity taking place? What is the object of interest?
5	*Tools*	By what means are the subjects performing this activity?
6	*Rules* and *Regulations*	What are the cultural norms, rules or regulations governing the performance of this activity?
7	*Division of labour*	Who is responsible for what, when carrying out this activity and how are the roles organised?
8	*Outcome*	What is the desired *Outcome* in carrying out this activity?

The building of the picture in phase one provided initial data to move from the second generation systems' "initial state of unreflected, situationally given 'raw material'"

(Engeström, 2001 p. 136) to identifying contradictions and tensions in the activity system. The identification and surfacing of tensions led to the exploration of **learning opportunities** with learners within the **action competence** framework (see Chapters 7 & 9).

4.4 Exploring the potential of expansive learning opportunities for developing action competence

The **second phase** of the study explored expansive learning opportunities with learners to develop and enhance action competence through access to language, cultural capital and scaffolded pedagogical processes (Chapters 3 & 9). At this point it is crucial to note that an important extension of the concept of an activity system is Engeström's (1987, 1999, 2001) notion of `**expansive learning'**. The role played by expansive learning can also be explored within the premise of Engeström's third generation cultural historical activity theory (Engeström, 1987, 1999, 2001) which looks at contradictions among various activity systems. This generation of CHAT aids in developing conceptual tools to understand dialogue, multiple perspectives and networks of interacting subjects (learners, teachers etc.) in the waste management practices of the school (Engeström, 2001). According to Engeström,

> As the contradictions of an activity system are aggravated, some individual participants begin to question and deviate from its established norms. In some cases, this escalates into collaborative envisioning and a deliberate collective change effort (p. 137).

This concept of expansive learning, replaces Vygotsky's focus on the individual attainment of higher psychological functions (Vygotsky, 1978) with the idea that the group of subjects in the activity system participate as a whole by sharing experiences across the boundaries imposed by the division of labour. According to Engeström (2001), the *"expansive transformation is accomplished when the object and motive of the activity are re-conceptualized to embrace a radically wider horizon of possibilities than in the previous mode of the activity"* (p. 137, my emphasis). This expansive transformation can be achieved as a collective journey through the ZPD of the activity which, in the cultural historical activity context,

> is the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions. (Engeström, 1987, p. 174).

Boreham and Morgan (2004) remind us that the stimulus to expansive learning is typically a perceived failure of the activity system to achieve the object of its activity hence creating contradictions.

> Expansive learning occurs when the group constructs new working practices by reacting collectively on the historically-determined contradictions in the activity system that led to the failure, and by expanding its collective understanding of both the object of its activity and the means of attaining it (p. 310).

What they seem to be articulating in this statement is that methodologically, central to the expansive learning cycle is the importance of the concept of boundary-crossing which is normally operationalised through change laboratory workshops (Engeström, 2001). The change laboratory method is a tool that is used to respond to the various needs of different participants in an activity. In the case of this study, learners, teachers and other stakeholders would collectively identify problems and collect empirical data that would be brought to the workshops. This 'mirror data' (Engeström, 2001) was used for discussion in order to bring to the surface contradictions and tensions and develop new tools and solutions to the problems and challenges in collaboration. In this way subjects would be operating within third generation activity systems (see Section 4.2.1) with the activity boundary crossing engagement. This assumes the possibility for equalising power relations that enable such deliberative engagement between activity systems, a point I return to later.

In the second phase of this study, *expansive learning* opportunities that arose from *contradictions* identified in phase one provided potential for transformative learning with learners and new and different opportunities for learner participation. Not only do tensions and contradictions arise within the primary activity system itself, as outlined in sections above (see also Chapters 6 & 7), but these contradictions (Figure 4.4) arose because different components of the activity system had different object/motives (see Section 4.2.3.2) in these waste management activities which were not noticed at first (see Chapters 6 & 7). To note here is the importance of contradictions for putting tensions into perspective and as starting points for expansive learning as illustrated by the following studies.

Mukute (2010) in a study conducted in South Africa, Lesotho and Zimbabwe, in which he explored how farmer learning can be mediated through an expansive learning process, highlighted some contradictions that farmers encountered in their practice and

learning activity systems in sustainable agriculture. These contradictions were used as sources of expansive learning in and between the respective activity systems of farmers, sustainable agriculture facilitators, agricultural extension workers (conventional) and organic entrepreneurs. The expansive learning processes, supported by the researcher, resulted in the "modelling, implementation and reviewing of solutions to contradictions being faced in the learning and practice of sustainable agriculture" by all these stakeholders (p. ii).

In exploring the application of learner-centred pedagogy, Hardman (2005) used the second generation activity theoretical framework in a disadvantaged South African primary school as a methodological tool. Her aim was to investigate pedagogical change within a classroom to explore whether the introduction of a new tool – the computer – into the classroom shifts a teacher's pedagogical practice. She was able to bring to the surface contradictions caused by the new tool and analyse change within and between the activity systems of the classroom and the computer laboratory as a result of the tensions created by this new tool. For example, she noted a contradiction between the computer as a tool for creative learner-centred learning and the computer as a tool for lower level drill and practice skills. By focusing on contradictions as dynamic sources of change, she was able to demonstrate how pedagogical transformation within an activity system can be tracked. By tracking these contradictions she was able to illustrate how the use of the new tool potentially leads to a shift in the object of the mathematics classroom, which in turn, leads to shifts in other elements of the classroom. Bringing to the surface and tracking these contradictions and revealing the shifts in the object provided an opening for opportunities for expansive learning in order to resolve the gaps in the transformative pedagogy using the new tool because contradictions are always suggestive of change.

Krasny & Roth (2010) used cultural historical activity theory as a lens to examine the integration of environmental education, with a focus on building capacity at the level of the individual, within frameworks for resilience to examine adaptive capacity at the level of the social–ecological system in seventh grade learners in Australia. In examining the integration of environmental education, the project focused on providing learners (subjects) and their surrounding community, with possibilities for acting upon the poor environmental health of a watershed (object), through dividing responsibilities (division of labour) and using appropriate tools. Learners had two outcomes in mind, namely to increase their knowledge about the watershed's health, and effect tangible

improvements in the watershed. Contradictions appeared to be an important motivation for both the project and learner involvement in the learner activity system which was embedded in a larger system of watershed users and other stakeholders. The contradictions emerging from the discrepancy between ongoing interactions within the watershed and the need for practices of watershed users to "foster greater watershed health" (p. 552) led to expansive learning. Educators supporting the project assisted teachers and learners by helping them to learn from these contradictions through encouraging reflection and discussions, changing tools available to the learners, providing access to appropriate community members, and other means. Educators also helped learners participate in expanding activity systems, for example when data (object) uncovered by the science learning activity system was used in a community forum. Used this way CHAT

> allows us to understand how not only the (human) subjects come to be changed in the process of acting, but also how changes come about in the SES that the students constitute and inhabit. This process occurs through expanding activity systems, as artefacts and changing relations alter the available social and material resources that mediate future actions. Further, through emphasizing recursive interactions and expanding activity systems, and because of its explicit focus on the cultural–historical nature of systems, activity theory stimulates thinking about building adaptive capacity over the long term, not just among students but also within the broader system (p. 554-555).

All these studies illustrate how contradictions and tensions identified within and among the different components of the activity systems can be sources of change and expansive learning. Similarly in this study, contradictions were used as starting points for generating learner responses, alternatives, visions, decisions, and other learning activities that characterise the development of working towards action competence (see Section 4.4.1). Like in Mukute's (2010) and Krasny & Roth's (2010) studies, in this study the expansive learning process was supported in the learners' ZPD by the researcher with the help of teachers. It was also anticipated that the action competence development would enhance capacity through building adaptive capacity in learners and like in the Australian study, link the learners' participation with their resilience in the social–ecological systems of their local contexts (see Section 2.3.2).

4.4.1 Using the action competence framework for expansive learning

For the purposes of this study, I worked mainly with Engeström's (1987) second generation activity theory for understanding and representing the learners' waste

management activity systems in the schools and for surfacing contradictions and tensions (see Figure 4.2). In this process, the teacher activity system was considered mainly as a tool producing activity system that interacted with the learner activity system (see Section 4.2.3.3, Figure 4.4 and Chapter 7). It was beyond the scope of this study to look at the teacher activity system with the same level of detailed analysis and, although very crucial, such an in-depth analysis is recommended for future research (see Section 10.8).

For the learners' expansive learning, I felt that Engeström's (2001) concept of expansive learning, which is an interventionist approach that entails boundary-crossing laboratory workshops (Engeström, 2001) in which the subjects in the activity system collaborate horizontally in the same space to generate new solutions and practices, would compromise the purpose of the study which was also to investigate children's participation in some depth. Because of the developmental nature and the adult education contexts in which it was developed and consistently used, Engeström's developmental boundary crossing laboratory workshop approach under-theorizes the question of power relations that exist between teachers and children, a crucial aspect of this particular study which dealt with children. By adopting the change laboratory approach to expansive learning, the vertical power distribution would have privileged teachers' over the learners' voices in a context of the history of authoritarianism (Tabulawa, 1997; Maundeni, 2002) that characterises Botswana schools (see Section 1.8). Linked to this was the insight that I gained during piloting for the study. It became evident from the problems that learners were identifying and presenting relating to their participation in waste management activities in the schools, that they would not have presented their concerns as boldly and freely in the presence of their teachers. This was due to the highly skewed historically entrenched power structures that exist in the schools, as discussed earlier in Chapter 1.

Secondly, the context from which the concept of developmental boundary crossing was generated is generally applicable to activities which are not bounded, but "distributed in space" (Engeström, 2001) and have no "stable locus of control", and where "the centre does not hold" (Engeström, 2001, p. 140). This means that it is not limited by boundaries of the nature and social position of the subjects. But in this study context, the school activity systems operated within identifiable well-bounded communities. This research was undertaken with the view that schools were bounded or functional systems within which participants could become collaborative subjects in participation

(Engeström, 2001) with recognition that children could take charge of the transformation in the participatory process. I therefore chose to use the action competence framework of expansive learning (see Section 4.5) which allows for a broader and more flexible and open methodology for working with children as described in Chapter 3. The action competence approach provides tools to cater for the skewed power relations between teachers and learners.

Expansive learning is therefore similar to action competence. But in some ways the action competence framework provided a more refined perspective on the kinds of processes learners could engage with (e.g. vision building, framing questions, making decisions, collectively seeking solutions, trying out and reflecting on actions etc.) once the tensions in their activity systems become more visible to them, and if they were supported to use these as open-ended starting points for new opportunities for genuine participation and expansive learning, as shown in Chapter 9.

4.4.2 Expanded learning opportunities - development of action competence

Drawing on the action competence framework, learners were provided with real life experiences in which they participated individually or collectively to address waste management problems that they faced daily (see Chapter 9). Action competence development through participation in waste management activities also involved the development of social skills which included, among others, self-esteem, the ability to cooperate, collaborate, self-consciousness, self confidence (Jensen, 2002) and democracy. Uzzell (1999) notes that:

> Environmental education within an action competent framework concerns itself with the social and natural environment rather than simply acquisition of learning or opinion formation. Action competent environmental education aspires to reach the third phase of solution finding (p.402).

This implies according to him, producing a

> … political subject (the citizen), since learning will involve social and political implications as opinions are transformed into values, then decisions and, finally, actions. With action competence environmental education must have a goal related to citizenship (p.402).

According to Jensen (2004) expansive transformation which might arise from emerging and observed tensions and contradictions, should help learners to come up with

118

questions on how to do things differently to respond to the problems they identify, and change the ways that they participate in waste management activities.

4.4.3 Exploring opportunities for action competence development

Exploring opportunities for action competence development through expansive learning processes was the main goal of this phase of the study, specifically to develop the children's capacities (see Section 2.3.2) to participate in waste management activities (see Chapter 9). As discussed in Chapter 3 analysis of participation of children is quite complex. This analysis is related to the intertwined nature of the major theories that inform the multiple perspectives on children's experiences and their local context on one hand, and the socio-cultural and historical influences on these experiences on the other. It should include democratically oriented concepts of participation in learning drawing from the capabilities approach (Lotz-Sisitka, 2009; Sen, 2009). This central aspect of a broader and more inclusive participation within the action competence framework and how it can be put into operation is what the next section seeks to articulate. For operationalising action competence development, I drew largely from Jensen's (1997, 2000, 2004a) and Jensen & Schnack's (2006) models of participation and the ZPD concept for scaffolding (Palinscar, 1986) and guiding learner participation (Rogoff, 1990; Wertsch, 1985; Rogoff & Wertsch, 1984) which provide supporting tools for the operation of the models.

4.5 Using action competence models for expansive learning

In Chapter 3, Section 3.7, I explained how Jensen and other theorists have highlighted the importance of the learner action-oriented nature of activities (Jensen, 1997, 2002, 2004a; Jensen & Schnack, 2006; Carlsson & Jensen, 2006). This emphasis arises because normalising strategies have been employed in environmental teaching in Botswana and described by teachers as action-oriented (see Section 1.6). Jensen (2002) argues that learners have to have some kind of knowledge as a foundation that would steer them towards being action oriented within the context that the action competence approach envisages. The socio-ecological and cultural contexts place new demands on learners to develop appropriate and relevant knowledge. This kind of knowledge will make their action more focused and responsive to their socio-ecological problems like climate-change related issues, poverty, HIV, sanitation issues, peer pressure etc. (see Section 1.2)

It should be acknowledged that though knowledge does not per se lead to environmental action, it is an important precursor among others towards action competence development which leads to action in any activity. He suggests a model that depicts four aspects of action-oriented knowledge around different dimensions with different perspectives on the types of knowledge through which a given environmental problem can be viewed and analysed (Jensen, 2002 p. 329). These four dimensions of environmentally related knowledge are posed as questions around the problem which is being dealt with, in this case waste management as illustrated in Figure 4.4 below. Each dimension is outlined thereafter according to Jensen (2002, p. 330-331).
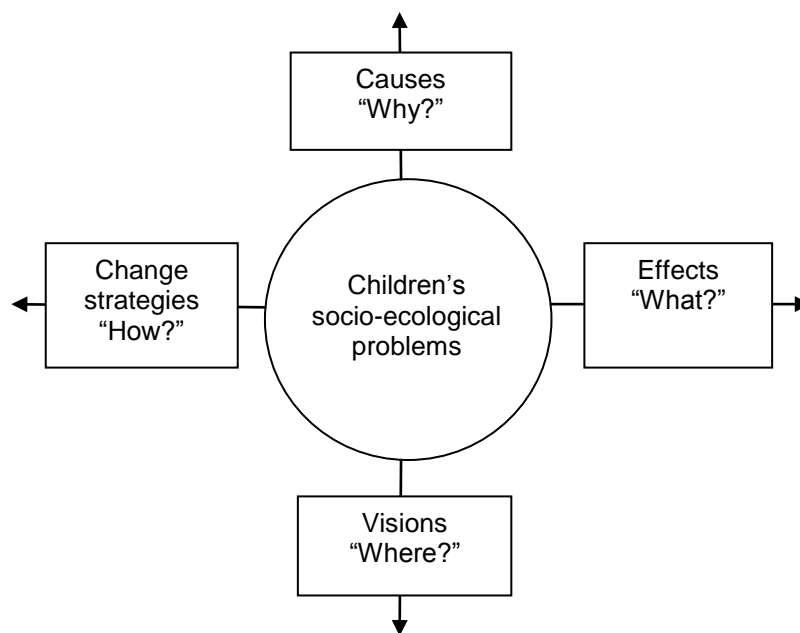
Figure 4.6: Four dimensions of environment-related knowledge (*Source: Jensen, 2002)*

1st Dimension: What kind of problem is it?—knowledge about effects
The first dimension deals with knowledge about the existence and spread of socio-ecological issues such as waste management problems. This type of knowledge would, for example, be about the effects and consequences of waste or deteriorating quality of the school environment due to waste. This knowledge is important, as it might help to rouse the learners' concern and attention, thereby creating the starting point for a willingness to act. So this type of knowledge can be one of the prerequisites for developing learners' competence to take action and change behaviour. However, this form of knowledge is mainly scientific in nature and, in isolation, it might have an adverse effect by contributing to growing concern and 'action paralysis' among learners; it affords no explanation for why the waste problems are there, let alone how learners can contribute to solving them.

2nd Dimension: Why does the school have the waste management problems it has?—knowledge about root causes of the waste management problem

This aspect deals with the 'causal' dimension of the waste management problems related to their local contexts. Such causes might include, among other things, the associated social factors influencing the learners e.g. the structural conditions such as vendors selling around the school, inadequate bins, school policies on management of waste, and rules governing waste management and how roles are allocated, etc. This knowledge belongs mainly in the sociological, cultural and economic spheres which link to their socio-ecological contexts and, for example, the system of consumerism in 'throw away' society.

3rd Dimension: How can things be changed?—knowledge about strategies for change

This dimension deals with both knowledge about how learners can have control over their own participation and how learners can contribute to changing the conditions in the school community and society at large regarding waste management. It thus embraces direct as well as indirect possibilities for action (see Section 3.7.2). This knowledge is also concerned with how learners can change surrounding structures, in the school, or their local community, who they can turn to, and with whom they could ally themselves. This type of knowledge also includes knowing how to encourage cooperation, how to analyse power relations, and so on. It is often found in psychological, political and sociological spheres and is central to an action-oriented form of environmental education (Jensen, 2004a).

4th Dimension: Where do learners want to go?—knowledge about alternatives and visions

The fourth dimension deals with the necessity of developing learners' own visions. Seeing real possibilities for forming and developing their dreams and ideas for the future in relation to their participation, and having the support and surplus energy to realise them, is an important requisite for the motivation and ability to act and change. This dimension includes broader knowledge about the waste management problem even beyond the learners' context, as knowledge about other possibilities can be a powerful source of inspiration for developing their own visions and knowledge of alternative practices and options.

These four knowledge dimensions offer a framework from which Jensen's (2004a) model of investigations, visions, actions and changes (IVAC) is developed to make expansive learning operational. It is within this framework that I employed participatory

approaches with learners towards action competence development. The action competence development cycle that I employed was adopted and adapted from the IVAC model and the evaluation component which draws from Jensen's (2004b) matrix of forms or categories of participation discussed in Section 4.6.

4.5.1 Jensen's model of action competence - the IVAC model

Drawing from the knowledge dimensions discussed in the previous section, Jensen's (1997, 2002, 2004) IVAC approach provides a practical tool for engagement with learners because it provides a more refined focus on the participatory processes that can be utilised to generate an action competence development cycle within which learners participate. The approach helps by using focussed questions which guide actions that are to be undertaken in the action competence development cycle step by step as outlined in Table 4.2 below.

Table 4.2: The Action competence development cycle model (Jensen, 2004a)

A: Selection and investigation of a theme (problem identification)
- What is the problem?
- Why is this problem important to us?
- Its significance to us/others?—now/in the future?
- What influence do lifestyle and living conditions have?
- What influence are we exposed to and why?
- How were things before and why have they changed?

B: Development of visions
- What alternatives are imaginable?
- How are the conditions in other countries and cultures?
- What alternatives do we prefer and why?

C: Action and change
- What changes will bring us closer to the visions?
- Changes within ourselves, in the classroom, in the society?
- What action possibilities exist for realising the changes?
- What barriers might prevent carrying out these actions?
- What barriers might prevent actions from resulting in change?
- What actions will we initiate?

D: Evaluation
- How will we evaluate these actions?
  (Source: Jensen, 2004a, p. 408)

The IVAC model hinges on the main aspects of action competence within the area of environmental and health education which are:

- The acquisition of coherent knowledge and insight about the problem and its possible solutions;
- commitment to promoting the learners' motivation, commitment and drive by creating a supportive environment for assertiveness and courage building;
- learners' visions, perceptions and dreams about their future;
- learners taking concrete actions experiences (Jensen & Schnack, 2006; also see Chapter 3).

A: Problem identification - *What kind of problem is it?*

The first part of the model requires learners to come up with a theme within which they have to identify the actual problems that they are facing in waste management activities and their participation in them. They are actively involved in choosing the theme and the problem and in deciding why they feel the problem is important to them. It is important that at this stage they trace the history of the problem as Jensen (2004a) proposes that they must also work with the historical dimension "in order to reach an evaluation of how present-day conditions, or a 'development', can be influenced, it is important to understand what has contributed (over time) to the development" (p. 409). This is in accordance with the key dimension of historicity in the CHAT framework (see Section 4.2.3.1).

B: Development of visions - *Where do we want to go?*

This part deals with learners developing visions and *knowledge about alternatives* on how they could participate in solving the problem. This point deals with the learners developing ideas, perceptions and visions about their future role in these activities and in the society in which they will be. It also requires encounters with alternative practices and/or new knowledge of alternatives.

C: Action and change - *What changes will bring us closer to the visions?*

At this stage, learners effect suggested new alternatives arising from their visions. This

is the stage of the action competence development cycle where Jensen (1997) contends that

> it is also important that imagination is allowed to sprout and foster a wealth of possible actions in connection with reaching some of the visions that have been drawn up. It is of great importance that all propositions are brought to discussion. The different actions are discussed in relation to their effect and the barriers that might arise, and finally one or more actions are decided to be carried out (p. 426).

D: Evaluation

Evaluation criteria can be based on the changes that learners' activities facilitated and perhaps more importantly on the development of the learners' empowerment and action competence (Jensen, 2004a, p. 421). The first criteria could focus, for example, on the affordances and constraints in the learners' activities by evaluating and reflecting upon these in order to bring them into perspective. Secondly, this evaluation must be seen in connection with whether the enabling factors and constraints in the activities have developed the learners' will and ability to be involved in these activities in a democratic way by forming their own criteria for decision making and choice of action (Breiting & Mogensen, 1999).

It is also important to note that in the development of all these steps, coupled with the historical profiling of the activities, a social science perspective which considers the political, economic and cultural perspective is important in order to clarify the causes behind the problem (Jensen, 2004a). This socio-cultural perspective suggests that

> processes of learning and development should draw attention to how personal efforts, interpersonal relationships and culturally structured activities constitute each other. This means that it would not be sufficient to focus on individual learning or competence development without any concern for the interpersonal relationships as cultural activities in which learning and development are taking place (Simovska, 2004 p. 203).

The point that Simovska is trying to highlight is that while personal or individual learning processes and action competence development of learners are fore grounded, the primary purpose is to analyse this development without losing track of the interdependence of learners with other individuals in the community, social relations, historical traditions and cultural contexts (ibid.). Approached this way, the cultural and historical context provides the starting points for generating learner reflexive co-

engagements on responses, alternatives, visions, decisions, and other learning activities that characterise the development (Jensen, 2004a).

The Danish scholars have employed this approach broadly in Danish schools through the MUVIN (Environmental Education in the Nordic countries) programme (Breiting et al., 2009). While Simovska's (2008) research pointed to the significance of the social, historical and cultural context of action competence development and Breiting's (1996) work draws attention to the significance of conflicts of interest in action competence development, they have not provided an in-depth analysis of how such tensions and contradictions arise in learner activity systems, or how such tensions and contradictions may become sources of new action competence development.

4.5.2 Supporting or scaffolding learner participation

One aspect of the interdependence and enabling learners' capability and capacity building (see Section 2.3.2) in the action development cycle is the need for consistent support which is central to learner participation and hinges largely on the teachers' scaffolding (Palinscar, 1986; Rogoff, 1990; Wertsch, 1985). Scaffolding is a major feature of the ZPD and should be seen as

> one in which tutor and learner are engaged in an exchange that aims at creating a consensus regarding, among other things, the goal structure of the problem at hand and the actions most apposite to the problem's solution (Palinscar, 1986, p. 74).

In this interaction ideally the teachers' support is

> aimed at ensuring the learner's maximal involvement in completing the task at hand, even in the absence of the latter's full understanding of the task situation, in this way, nudging the child "from one level of competence to the next and eventually to independent application of the instructed skill" (ibid.).

This scaffolding process is illustrated in Figure 4.7 that follows
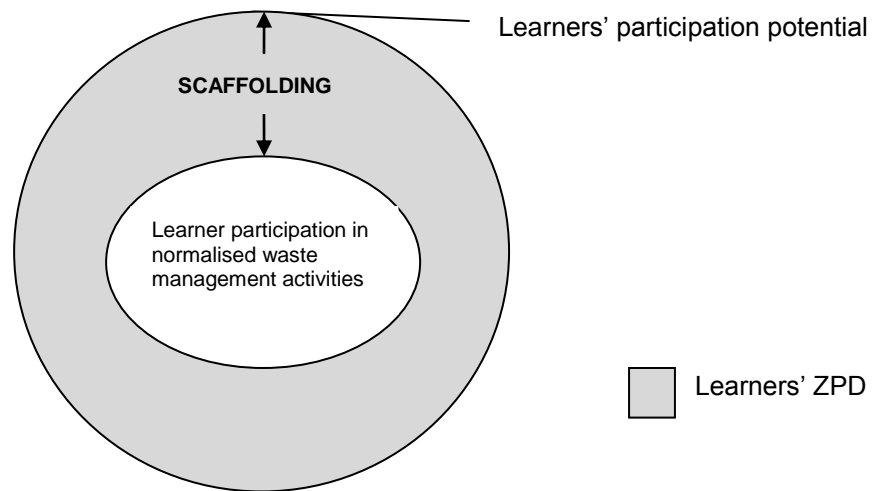
Figure 4.7: Scaffolding and guiding learner participation

The object of providing learners with the appropriate guided support is to enable learners to participate strategically in the activities of their choice even though they may not initially fully understand the activity and would most certainly not be able to exercise their alternative strategies independently. This relationship between learners and the teachers in this supportive environment is to be contrasted with that observed in normalised activities where they participate without understanding the purpose of their participation.

4.6 Forms of participation and action competence development

One final fundamental feature in the development of action competence in learners is to recognise that, as Schnack (2000) argues, the concept is an educational ideal, that is to say one can never assume that individuals will ever reach a point where they can be said to have achieved action competence. This is because it resides within the agency of human nature and some aspect of it, notwithstanding its level at any given time, should inherently be part of the learners even prior to being exposed to the expansive learning processes seeking to develop it. For this reason it became important to constantly assess evidence of action competence development in learners throughout, from the beginning of the research to the end, as learners continued to participate in their activities. For this assessment Jensen (2004b) provides a comprehensive tool for

observing participation in action competence development. This, drawing on Hart's ladder of participation and the IVAC model, provides an analytic tool, illustrated in Table 4.3, helps in identifying the forms of learner participation. I adapted and modified it to include more varied forms of participation and evidence of action competence in learners at different points in their activities (see Section 5.7.1.2, 3.3, Figure 3.1 & 4.5.1).

Table 4.3: Forms of learner participation *(Source: Jensen 2004b)*

In the project	Selecting the theme	Investigation	Vision/Goals	Actions	Evaluation/ Follow up
Pupils' suggestions Common decisions					
Pupils' suggestions Pupils' decisions					
Teachers' suggestions Common decisions					
Teachers inform Pupils accept or reject					
Teachers' decisions Told clearly to pupils					

4.7 Chapter summary

In this chapter I have attempted to outline the theoretical framework that I drew on in this study. I have argued why these theoretical and methodological lenses were appropriate for the study and I have pointed out their strengths and where appropriate, their weaknesses. I have also considered these theories in relation to the purpose of the study to strengthen internal coherence of the study. I judiciously and selectively worked with these theoretical perspectives to respond to the research questions that cover the two phases of this study. In the first phase I sought to probe learner participation in waste management activities in the schools to bring out the picture of activity systems in order to bring to the surface tensions and contradictions. For this, I drew from Engeström's mediational model which offered a suitable heuristic and language of description to meet the objectives. The model particularly highlights the fact that activities are largely driven by subjects' motives and also considers how history and culture can influence mediation in the context in which participation is taking place. The emerging contradictions and tensions help in opening up the starting point of the second phase of the study as, from them, I was able to draw on Jensen's (1997, 2000, 2004)

models of action competence development. These models support an expansive learning process and also develop a language of description and analytic process to identify and comment critically on their forms of participation in waste management activities. Drawing on these theoretical frameworks I was able to develop a research design, methods and a set of research processes to investigate the research questions, which I articulate in the next chapter.

PART III
RESEARCH PROCESS AND DESIGN

OVERVIEW

This part of the study presents the research design and methods, explaining how the study processes took place.

CHAPTER 5: THE RESEARCH PROCESS AND STUDY DESIGN

5.1 Introduction

In Chapter 1, I outlined the critical concern that motivated me to undertake this study, and in Chapter 3, I provided a theoretical and conceptual analysis of learner participation which provided a broader view of the concept. In Chapter 4 I articulated how the study has been theoretically framed in relation to this conceptual analysis. The concern highlights the need of a broader approach towards examining learner participation in constructivist learning processes through cultural capital and scaffolded pedagogical processes with the view of developing learner action competence and agency. This chapter covers the methodologies and methods applied in the study and their justification. It shares the rationale behind the choices made in their use. I also present assumptions, purposes and principles that guided the study in this chapter. These proved to be much more complex than portrayed in the literature review owing to the complex nature of the participants involved in the research, that is children as well as their contexts. Therefore I also attempt to highlight ethical and validity challenges posed by these complexities and how I dealt with them (Creswell, 2003). The methods I selected were informed by the constructivist conceptualisation of the nature of children, which perceives children "as subjective, contextual, self-determining being(s)" who are "social relational beings who are engaged in joint action" (Greig, Taylor & Mackay, 2007, p. 48).

As mentioned in Chapter 1, the study was broadly undertaken in two phases. The first phase of the study focussed on the development of a picture of the waste management activities and learner waste management activity systems in schools so as to establish how learners participated in these activities. In this phase I identified those components

of the waste management activity system that mediate learner participation as well as tensions that were evident in the learner waste management activity systems (see Chapters 6 & 7). Phase two focussed on creating expanded learning opportunities for developing action competence (see Chapter 9).

Firstly, for **phase one** of the study, the framework for understanding and discussing the picture of the children's participation in waste management activities was informed by Engeström's (1987) second generation cultural historical activity theory by adopting and adapting Mwanza's (2002) eight-step model of activity systems as described in Section 4.3. Secondly, from this data, existing and emerging **contradictions and tensions** were then identified which in turn allowed for the setting up of participatory processes and engagements with children in **phase two** of the study by providing **expanded learning opportunities** through democratic collaboration and dialogue with them (see Chapter 9). This was the initial step of enabling children to participate in waste management activities oriented towards their **action competence development.** This created a contextual and emergent research framework for analysing and exploring children's participation in waste management activities, and the dynamics that influenced their participation in these activities in practical context.

These were the main aspects that informed the decisions and choice of methods used in the study in order to respond to the research questions (see Section 1.9.1). Since this research was conducted based on socio-cultural theory, or more specifically, cultural historical activity theory for the first phase of the study, and action competence development for the second phase of the study, clarifying the unit of analysis was a crucial aspect in the dynamics of the waste management activity systems. This was the gateway for me to enter into and vicariously experience the activity of the subjects.

5.2 Unit of analysis

It is worth noting that besides learners who were the main subjects in the activity systems, there were other members in the school activity systems: teachers, cleaners, school heads, and other actors, with presumably similar objects on a social and material level, but on close analysis, different objects (see Section 4.1.4.2). My role was to identify the unit of analysis in the activity, and shift the focus of the examination to understanding the motive–goal–instrumental conditions (Leontiev, 1978) of the subjects rather than their observable behaviours (Section 4.2.3.2) and use that information to

understand the collective activity but with the focus on the object of the learners' participation in this. Since socio-cultural research takes place in activity settings rather than controlled laboratory conditions, Yamagata-Lynch (2003) has correctly observed that

> activity settings are environments that reveal an individual's activity in a specific setting, consisting of individuals with [seemingly] common goals. Individuals are not included randomly in activity settings; the goals shared in the activity setting attract membership of certain individuals. Therefore, the activity setting determines the participants of a research investigation. Furthermore, because activity settings are very complex ... it is difficult to capture all aspects of these settings in a meaningful manner (p. 104).

Given that, Rogoff (1995) recommends that it is important to isolate the plane of analysis that one is working with. Yamagata-Lynch (2003) in the citation above, is actually alluding to the fact that there are different levels of analysis in any activity, given that within complex social relationships and dynamics at play in any activity, the various subjects operate on different objects at any one time (see Section 4.1.4.2). Hence Rogoff (1995) recommends that researchers should focus on a specific level of analysis. Rogoff (1995, 1998) introduced the notion of three planes of socio-cultural analysis: the personal, the interpersonal, and the institutional-community planes of analysis. She suggested that it is the responsibility of the socio-cultural researcher to zoom in on one plane of analysis in their research and blur out the other two planes. Yamagata-Lynch (2003) goes on to emphasise Rogoff's position by stating that:

> *blurring out* is not equivalent to ignoring but rather consists of identifying the salient features of the two planes that are not being examined to help further appreciate the complex activities that take place on the zoomed-in-on plane of analysis (p. 104, emphasis original).

I therefore deliberately avoided making the analysis of the general waste management activity system needlessly complex by clarifying, for myself and the readers of this thesis, which plane of analysis is being examined. For the scope of this study this is the **learner participation activity system** within the broader school activity system. This formed the embedded unit of analysis (Yin, 2009) in which learners as subjects in the activity system were the object[2] of focus and active participants throughout the research, with teachers providing solicited guided support and scaffolding (Rogoff, 1990; Wertsch, 1985; Palinscar, 1986; Rogoff & Wertsch, 1984) to learners as and

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[2] Note that the word **object** is not used in the context of the cultural historical activity theory.

when the situation demanded (see Section 5.8.1.2). This was clearly articulated to the teachers from the start of the research and throughout the research process. The key focus of the study was to explore opportunities and create space for learners to be active agents through these activities rather than making teachers the driving agents. I therefore did not actively engage teachers as much as learners; the highly skewed power relations would interfere with the existing processes that were being investigated (Sections 4.4.1 & 1.8). Therefore the participatory methods focussed exclusively on learners. However, efforts were made to bring in and represent teachers as they were required to provide the guided support where necessary, as well as other members of the larger school community (see Chapter 9).

5.2.1 Focus in the research process

It was important to actively and robustly engage learners to elicit material which would in the future be directly used as part of an educational resource and to guide teachers in mediating participation of learners in the school waste management activities. Since the focus was to use participatory approaches to work particularly with learners to move to more varied forms of participation than those previously practised in the normalised cultures of the schools, my main aim here was to work within a democratic approach (see Section 3.6). It was therefore important that a democratic promoting perspective was kept in focus throughout in order to

> accept the challenge to revisit its structures and environment and improve its potential to enhance students' capacities for visionary thinking and social responsibility, and their competence to tackle health [and environmental] related problems. This is instead of endorsing participationism while aiming solely at knowledge transmission and behaviour change. Thus the main aim of democratic health [and environmental education] promoting schools is construed as the development of the students' action competence, that is, the ability to act and bring about positive change... (Simovska, 2008, p. 63).

This was done with regard to considering how learners could participate as a transformative process rather than conforming to the status quo as had been the case in the normalised participation that is characteristic in waste management activities in Botswana schools. This entailed

> ensuring resources and opportunities for students to develop, enhance, exercise, and exert their competences to act as qualified agents in democratic environments. This presuppose(d) fostering students' self-awareness, critical thinking, decision-making, and

collaboration skills, connecting students among themselves and with the school communities ... (ibid.).

Furthermore, through creation of an enabling process for providing democratic opportunities for developing learner's capabilities and social-ecological resilience in the face of the socio-ecological challenges in their local contexts (see Section 2.3.2), I had to, in collaboration with teachers, provide space and time for learners and investigate *how* they could reflect on how they participated in these activities. I also needed to see whether and how they could re-conceptualise their participation and motives to embrace what Engeström (2001) refers to as *a radically wider horizon of possibilities than in their previous mode of participation* (see Section 4.4). In all the stages of the research, participatory approaches were adopted to explore participants' group and individual participation in a collaborative activity development enterprise. This approach enabled participants to reflect on their experiences in their participation in the activities in order to understand and explore new activities in which they could participate differently. The two phases of the research process are represented in Figure 5.1 below.
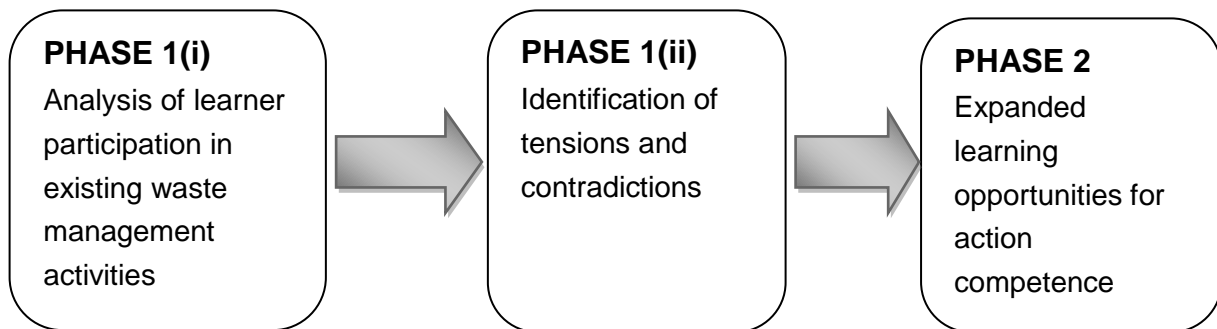
Figure 5.1: The two phases of the research process

5.3 The research design

The study was conducted using qualitative participatory case studies (Merrian, 2001) within a broadly interpretive orientation (O'Leary, 2004; Connole, 1998) and socially critical approach (Miles & Huberman, 1994; Creswell, 2003; O'Leary, 2004). It had interpretive and socially critical orientations because the objectives of the study involved seeking explanations of the activities and empowering participants to transform their social practices (Miles & Huberman, 1994). Because interpretive case studies tend to adopt a relativistic position in relation to participants' interactions and the values that underlie them (Stevenson, 2004), the focus is generally on informing rather than

changing or transforming practice. By dealing only with learners' interpretations of their participation in the waste management activities, this perspective does not embrace any moral imperatives or address the ways in which larger social, cultural and historical structures might be influencing the participants' perceptions of their situation (Stevenson, 2004, p.44). This can only encourage learners to project what they are doing, "rather than suggest ways in which they can and should change what they are doing" (Carr & Kemmis, 1983, p. 98). Complementing and extending the interpretive analysis, a socially critical approach, enabled me not only to understand or explain social reality surrounding these activities, but to explore opportunities of transforming it through recognising learners as agents of change. For Miles and Huberman (1994), this orientation holds for collaborative social action research or participatory research aimed at bringing about change or transformation within a social environment through critical enquiry. This leads to the emancipation of subjects through "unpacking taken-for-granted views and detecting invisible but oppressive structures" (p. 10). Within these orientations, the researcher

> relies as much as possible on the participants' views on what is being studied. The questions become broad and general so that the participants can construct the meaning of a situation, a meaning typically forged in discussions or interactions with other persons as the researcher listens carefully to what people say or do in their life setting (Creswell, 2003, p. 8).

Often these subjective negotiated meanings have a social and historical dimension to them because they are formed through historical and cultural norms that operate in the participants' lives, but in many participatory and action research processes these remain under-researched and unaccounted for. In this study I followed this orientation because CHAT and its expansive interest is a form of participatory action research with emancipatory interest, but which takes careful account of the socio-cultural and historical antecedents of action providing a rigorous analysis and understanding of the activity system in which the action emerges. In my view, it offers a more rigorous approach for participatory action research type studies, a point also noted by Mukute (2010).

5.4 The case studies

The study focussed on a case analysis of three primary schools across three contexts in Botswana: urban, peri-urban and rural according to the gazetted socio-economic demarcations of the country's settlements. Case studies are studies of singularities or

bounded systems (Bassey, 1999) which are in essence an enquiry of real-life context (Yin,1994; Kemmis & McTaggart, 2005). Therefore case study research is contextual and interpretive, asking how people specifically act in a concrete field of action, why they do so, and how the situations observed may be explained (Kyburz-Graber, 2004). The case study researcher observes the characteristics of the case, the purpose being to probe deeply and analyse intensively the multifaceted nature of activity in the case with the view of establishing inferences about the broader context from which the case derives (Cohen, Manion & Morrison, 2007). Each case (Merrian, 2001; Cohen et al., 2007) reflected significant socio-cultural factors that influenced and shaped learner participation in waste management activities both in the broader context of environmental education discourses in Botswana (see Chapters 1 & 2) and within the school (see Chapter 6). Each case further provided a holistic description and explanation of the activities, and detailed enough data for the identification of tensions, situations or puzzling occurrences arising from everyday waste management activities (Merrian, 2001). Case studies were used for this research as they allow for the close examination of the embedded unit of analysis under different contexts and for observation of activities and effects of these activities in their real contexts which are also embedded (Yin, 2009) within the broader socio-cultural and historical context (see Chapters 1 & 2) and as illustrated in Figure 5.2 below.
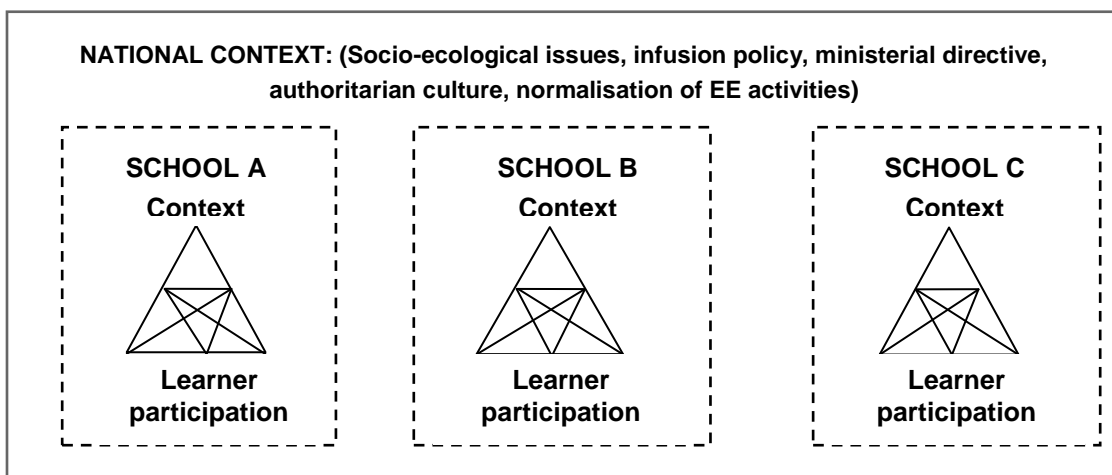
Figure 5.2: The embedded unit of analysis within a broader context

Case study methodology recognizes that context is a powerful determinant of both causes and effects which necessitates in-depth investigation (Cohen et al., 2007; Mertens, 2005). Using three sites further enabled the investigation of activities under different socio-cultural contexts and revealed their uniqueness, unfolding interactions,

relationships and mediating factors in each unique instance (Cohen et al., 2007; Mertens, 2005) taking cognisance of the fact that "while case studies capture an 'instance' of practice, this instance of practice is part of a bigger story" (Lotz-Sisitka & Raven, 2004, p. 79). The broken line around the embedded case studies and the broader context shown in Figure 5.2 above are meant to illustrate this in what Yin (1989) sees as investigating

> a contemporary phenomenon within its real-life context; when the boundaries between the phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (p. 23).

The porous nature of boundaries could be related to the historically developed cultural mediating tools that have influenced learner participation nationally. This is reflected in the history of normalised environmental education discourses in Botswana schools and traditional authority structures that have seemingly permeated pedagogical practices in the schools (see Sections 1.6 & 1.8). Corcoran, Walker & Wals (2004) see case studies approached in this way to be representing

> a method of learning about a complex instance through description and contextual analysis. The result is both descriptive and theoretical in the sense that questions are raised about why the instance occurred as it did, and with regards to what may be important to explore in similar situations (p. 9).

This particular case study research enabled me to employ varied types of data generation methods for a close-up view of the learners' reality and their lived experiences relating to their participation in waste management activities in their schools. It is important in case studies of this nature for participants that activities and "situations speak for themselves, rather than be largely interpreted, evaluated or judged by the researcher" (Cohen et al., 2007, p. 254) under these different settings.

This allowed me, together with the learners involved in the study, to examine and to get an in-depth insight into social, cultural and historical factors that influenced their participation in these activities and engage with learners to surface contradictions in these activities. Beyond that we could collaboratively, through interactive dialogue (Williams & Wake, 2007), expose and explain the existing gaps and develop a dialectic which opened opportunities for learners to develop their visions and alternatives (see Chapters 4 & 9). Through this, as a researcher, I together with their teachers, acted to scaffold their participation within their ZPD (Rogoff, 1990; Wertsch, 1985; Palinscar,

1986, see Chapter 8), and through this we tried to develop ways to build bridges between how learners were previously participating and towards new visions and practices and development of action competence. The socially critical orientation allowed for some dimension of emancipation of learners to move them from the normalised strategies of participation within an authoritarian culture, developing their action competence and capabilities (see Sections 1.6, 1.8, 2.3.2 & Chapter 9), a dimension that I discuss further in Section 5.5.

5.4.1 Research sites

As indicated in the section above, I worked on three case studies. These were drawn from **three primary schools** in Botswana, whose names have been concealed for ethical reasons arising from some sensitive issues raised by learners in the research. The selection of case studies was contextually driven as is advised in most qualitative research (Yin, 2003; Cohen et al., 2007). The selection of the three schools (urban, peri-urban and rural) was based on the diversity of the socio-cultural historical factors at play in these three contexts (Jonassen & Rohrer-Murphy, 1999). "[T]he context might consist of a number of factors (the character of the project, *the personality of the teacher*, *the "preparedness" among the students*, which other stakeholders there are involved etc.), meaning that the broader context in which participation takes place is in focus" (Jensen, 2004b, p. 2, my emphasis). I decided to use schools from the south-eastern region of the country, the region where I live and work, a choice which was made after carefully considering time and financial limitations. The schools are located within a similar broader national context (see Chapters 1 & 2) and specific local contexts which will be highlighted in the picture of the schools' activity systems (see Chapter 6). Children in that region speak either one of the two national languages of Botswana, English and Setswana, though the former, with some level of difficulty. I am well conversant with both languages. English is the main language of instruction in schools. But because the purpose of this study required deep insight, analysis and collegiality with learners, an ability to speak their home language facilitated my interaction with learners (Kamwendo, 2009; Molosiwa, 2009; Mooko, 2009, see Section 7.4.5). The full profile and contexts of the sites is provided in Chapter 6 as these form part of the data drawn from the analysis frameworks.

5.4.2 Selection of participants

Having negotiated with gatekeepers and gained access to the schools (see Section 5.4.3, & Appendices A1 – A3) purposive sampling was used. This was based on a quota selection (Miles & Huberman, 1994, p. 28) of the participants in which the learners had to be representative of major subgroups (Stake, 2005; Miles & Huberman, 1994). The selection was done by the teachers, based on a set of parameters, which included academic aptitude, character disposition such as shyness and outspoken individuals, introverts and extroverts and social background (Hennessy & Heary, 2006, see Appendix A11). We also tried to incorporate a gender balance as studies have shown that gender roles are sometimes clearly defined in school activities as gender roles emerge as cultural products (Archer, 1992). However there were more girls than boys, a true reflection in all the schools of the distribution of gender in the larger school population. Within each school, participants included seven or eight **Standard 6 and 7 learners** of an age range of 11 to 12 years and **one teacher** who was working with me in coordinating and supporting learners during the research process (see Chapter 6). A small group allows the researcher to "explore complex or sensitive topics in depth" (Hennessy & Heary, 2006, p. 236). This is especially true with children because it also creates a safe peer environment where peer support is provided particularly in the presence of an adult researcher as this helps redress the power imbalance (ibid., see Section 5.8.1.4). The choice of selecting learners at this level was based on the fact that this was my first major study where I had in-depth interaction with learners. As a novice researcher, I felt they were at a developmental level where I could rationalise with them more easily than those at lower levels. I however made it clear to the teacher and later, to the learners, that participation was on a voluntary basis and learners had the right to withdraw at any time. The details of the learner profiles are provided in Chapter 6 where they are related and built into the characteristics and context of the subjects in the activity systems.

5.4.3 Entering the field – consent from learners and other "Gatekeepers"

As case study protocol recommends, informed consent has to be sought from participants before the research is conducted (Yin, 2003). The study recognised the fact that children are independent individuals who are free to decide for themselves whether or not to participate in research (Masson, 2000). But it was also critical to gain permission for working with learners by getting informed consent from the Ministry of Education, District Office, the school authorities, and parents as Masson (2000) correctly points out that:

…children are surrounded by adults who can take on the role of 'gatekeepers', controlling researchers' access to children and young people... Even where they have no power over a child's decision to take part in research, parents, carers and teachers generally control the places, homes and schools that provide the safest and most suitable venues for research interviews with children and young people. Arising from their positions as parents, employees or carers, 'gatekeepers' have legal rights and responsibilities to safeguard children's welfare, to follow their employer's directions and comply with the ethical code of their professions. Their legal rights and responsibilities mean that gatekeepers may face disciplinary action, including dismissal or removal of children from their care, if they fail to comply with the standards expected of them. Gatekeepers have a positive, protective function, sheltering children and young people from potential harm and testing the motives of those who want access (p. 36).

This passage highlights the fact that despite the notion of children's rights as demanded by the rights movements (Chapters 2 & 3) and some children researchers advocating for a children's position of informed consent (Greig et al., 2007, Greene & Hogan, 2006; Cohen et al., 2007; Creswell, 2003; Maxwell, 2005) adults are ultimately the ones who decide whether or not children should take part or not in research (Edmond, 2006) because of their social responsibility towards them. For all the schools the first and main gatekeeper was the Ministry of Education to whom I made a written application requesting for consent and to which they granted permission (see Appendix A6). The next gatekeeper was the Department of Primary Education which also granted me consent within a short time (see Appendix A7).

I visited all the three schools and introduced myself to the school authorities, verbally requesting permission to conduct the research in their schools. In schools A and B both the school heads were new. The head for school A (the peri-urban school) called her deputy head, the head of Science and the coordinator of the School Environmental Committee (SEC) (see Chapter 6). In school B (urban school) I met the new school head who immediately referred me to the deputy head. The deputy head called the SEC coordinator and we held a meeting and I explained what the research was all about. In school C (rural school) I met the school head who also discussed what the research was all about with me, and then called her deputy after which they referred me to the SEC coordinator. All the schools were very keen for me to conduct the research as they were initially of the view that I would solve their environmental issues with their learners; I had to clarify that while I hoped to contribute something worthwhile to the learners and the greater school community, I had not come to offer solutions. The school B SEC coordinator was particularly excited as she is an environmental education enthusiast

who has even participated in a couple of Environmental Education Association of Southern Africa (EEASA) conferences and attended a number of Environmental Education workshops organised by the Ministry of Education and DWNP. In all the schools I was assigned the SEC coordinators to work with me (see Chapters 6 & 9), but the rural school SEC coordinator was initially not very keen as he indicated that he was very busy. He offered to assign me to his colleagues if he was not available. It was, however, more critical for me to get permission from the learners themselves by fully explaining what the study entailed and its purpose before the study began. I met with selected learners, all of whom seemed very enthusiastic to participate and I gave them two letters of consent, one for themselves and the second one for their parents (written in English and Tswana) which had to be signed (see Appendices A4 & A5). I emphasised that their participation was voluntary. Two weeks into the study one boy in the peri-urban school withdrew without giving any reason for his withdrawal. As the research progressed, other learners were keen to join the group and we took in two extra learners in one case study.

Other protocol procedures followed in the study included:
- Continuous updates and feedback to the learners and the teachers, school heads/deputy heads on the activities with learners (see Chapter 9).
- Phone calls to the schools reminding about my next visits.
- Getting learners' and teachers' continuous feedback regarding the progress the learners' progress in their activities throughout the research period (see Chapter 9)
- Giving feedback to teachers about certain outcomes of our focus group discussions with learners with prior consent from learners and giving the schools feedback through verification of data and on the outcomes of the research (see Section 5.7.3).
- Thanking the school heads and learners for having taken part in and supported the research process (see Appendices 8 & 9).

5.4.3.1 Clarifying some ground rules

I wanted teachers and learners to understand that I was not evaluating their practice. I did not want them to perceive me as someone who had come to destabilise the power balance in the structures of the schools nor to view me as an additional staff member. I also had to make it clear to both learners and teachers about the level of my involvement, the collection of data, the length of my stay and what would happen to the

information that was recorded (Edmond, 2006, p. 128), especially with learners to ensure confidentiality and trust (see Section 5.8.1.3). In addition to this I had to explain the value of the research and the conditions under which it was to be undertaken. This included minimising any risk of participating in the research and protecting their confidentiality especially with the teachers who had authority over them. As much as possible, activities that directly involved learners, workshops in particular, were undertaken in the afternoons when most of the school's formal programmes would usually be over. Because they had to stay behind for workshops, I had to provide them with lunch, an aspect that posed a validity threat. In some cases other learners felt participant learners were being rewarded with food so this required careful explanation from both teachers and the researcher (see Section 9.6.3.2(a), extract 9.14 & 9.15). I also had opportunities to interact with learners on an informal basis before school started and during break. School authorities in all cases were generous with time and allowed me to interact with learners even during school hours when there was a need. Because of the unpredictable school schedules, the small number of learners participating in the study enabled these interactions to be undertaken with minimum interruption to their day to day normal school activities. Critical to the study was the fact that within any constraints that the research was going to be undertaken with learners, the purpose of the study had to be in the foreground i.e. to develop the learners' action competence which meant that the research had an emancipatory intent (see Chapters 3, 4 & 9).

5.5 A critical emancipatory participatory research approach

I have already indicated that these case studies were conducted and largely framed within an interpretive paradigm of inquiry (phase 1), and combined with a socially critical orientation (phase 2). Premised on the view that schools do not seem to reflect democratic ideals (see Sections 1.7, 1.8 & 3.6) but contribute to maintaining existing social inequalities through normalising strategies in waste management activities and power relations (see Chapter 1), the aim of my critical inquiry was to work with learners to attempt to transform social and cultural structures that constrain and subjugate them (Stevenson, 2004), and particularly marginalize them within the decision-making structures of the schools (see Section 1.8.1 & Chapter 9). The research processes, within the expansive learning and action competence intentions and processes had an emancipatory potential (Creswell, 2003; Kemmis & McTaggart, 1997, 2005, Cohen et al*.,* 2007) in raising consciousness about the conditions of learner marginalisation. The

research was concerned with mobilizing learners to work collaboratively with other members of the school community, including adults in authority, for change (Stevenson, 2004). Within the emancipatory participatory action[3] research tradition, the aim is to help learners to

> recover, and release themselves from, the constraints of irrational, unproductive, unjust, and unsatisfying social structures that limit their self-development and self-determination. It is a process in which people explore the ways in which their practices are shaped and constrained by wider social (cultural, economic political structures and consider whether they can intervene to release themselves from these constraints ... (Kemmis & McTaggart, 2005, p. 567).

Kemmis and McTaggart in the citation above highlight the possibilities for learners to emancipate themselves from the institutional and personal constraints that limited their power to live their own educational and social values (at least in relation to existent socio-cultural historical contextual constraints), with the assumption being that this emancipation can be realised through genuine participation (see Section 3.3.2) within a democratic dispensation (see Sections 3.4, 3.5 & 3.6). Stevenson, (2004) does acknowledge that this case study approach is consistent with Yin's (1994) argument that is concerned with participatory action research, in which "deliberate changes are enacted within a bounded system (such as a classroom or school) and studied in a cycle of planning, acting, observing and reflecting" (p. 45). However he contends that the approach can also be located in less directed interventionist type of case studies as was the case in this study. This is consistent with the Danish IVAC model of identification of themes and problems, envisioning, actions and evaluation of learning processes (see Section 4.5.1). In some ways, this is consistent with the action research cycle, but not necessarily interventionist in that it does not insist on action per se, but rather focuses on action competence development and agentive choice and decision making. It relies more on dialogue and scaffolding of action competence development than implementing actions.

5.6 Overview of the research process

As indicated in Chapter 1 and above, **phase one** focussed on generating a body of data concerned with the identification of issues relating to how children's participation was

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[3] While the research had the characteristics of action research, the focus was more on participatory processes of expansive learning.

mediated, rules and roles governing their participation in waste management activities, and their local experience. This was subsequently followed by the identification of tensions and contradictions within and between the learner activity system and activity systems of other subjects in the school. **Phase two** focussed on working with this data to explore innovative expanded learning opportunities with learners to enhance and extend their participation in waste management practices in the school, with the main purpose of strengthening or developing their action competence for civic agency.

5.6.1 Data generation processes

Merriam (2001) argues that case study research has no specific data collection methods; hence all methods of data collection can be used. Over and above power relations (see Section 5.6.1), the most common challenge for researchers in working with children is the fear of receiving inaccurate information (Green & Hogan, 2006). This is based on the belief that children have poor memories which are highly subject to the power of suggestion, and that they have a strong desire to please the interviewer by saying the 'right' thing (Green & Hogan, 2006). To overcome this challenge, children researchers recommend the "mosaic approach" or multi-method approach (Clark, 2004; Greig et al., 2007; Waller, 2006; Roe, 2007). In this study I used the mosaic approach in working with children as it offers a framework for incorporating multi methods allowing for "triangulation across the different methodologies" (Clark, 2004, p.144). The choice of this approach was also because research done with children has "identified that working with children demands flexibility and creativity" (ibid.) in order to generate rich and valid data. The approach also helps to operate within the children's ZPD and helps to stimulate interest in learners through enabling more responsibility and emergent ways of generating data, suited to the situation (see Section 5.6.2) The mosaic approach, because of its use of a variety of methods over a relatively long period of time, allowed learners "to express their views in many different ways" in this case study (Roe, 2007 p. 474; see Chapters 6, 7 & 9).

The data was largely generated from workshops through **focus group interviews** during workshops with children and **observations** of waste management activities. These two methods formed the main data generation methods. They were complemented by semi- structured **interviews** with teachers and other actors in the waste management activity systems, learners' activities and work, **learners' notes, photos** and children's **drawings** as well as **show-and-tell explanations** by learners.

This multi-method approach or mosaic method was also meant to stimulate and sustain the children's interest in the participatory processes (Greene & Hogan, 2006).

5.6.1.1 Data generation for Phase One

Data for the first phase of the study was guided by Engeström's (1987) model (see Section 4.2.1, Figure 4.2) and operationalised using Mwanza's (2002) eight-step model (see Section 4.3, Table 4.1). This data was generated mainly from tape recorded focus group interviews which were conducted with learners during workshops and were the main data generation source (see Appendices A12 & A17). This was accompanied by observations of all waste management activities undertaken in the schools and how learners were participating in them, recorded as field notes (see Appendix A17). These also served to triangulate the data collected from the focus group interviews. Further data was generated from learners' narratives where I asked them to show, tell and explain how they participate in these activities either through tours or informal conversations with them as they went about their activities. This was noted in observation notes (see example Appendix A17.7). The data was also collected through photographs and drawings capturing aspects of their participation and concerns, most of which were captured by children themselves (see Chapters 6 & 9). These two methods triangulated the two initial methods and produced more rich data. Concurrently more data was generated from semi-structured interviews with teachers, school heads/deputies, cleaners and any other subjects within the school community and other learners who were directly involved with the waste management activities of the school. This was done to generate data that enriched the focus group and observation data. The learners in one school also took me on observation visits to their neighbourhoods. The specific purpose at this stage was to build a picture of waste management activity systems in schools by identifying the various components of the activity system and identifying contradictions and tensions within them (see Sections 4.2.3.3, 5.7.1.1 and Chapter 7). I also needed to gain access to school documents (for example, school rules, policies, school litter pickups and cleaning rotas) that could help to reveal some aspects of the activity system (see Appendix A 17.1, A, 17.3 & A17.5). All these methods were used in school visits which spanned four weeks where I spent an average of five to seven working days in each school. The aim was to observe and get a detailed account of the activities and participation of learners in them. This time period was interspersed with some impromptu visits when the need arose because the schools seemingly saw me as a member of the school community. A detailed record of data

generation methods is produced in Table 5.1 and examples of the data record are presented in Appendix A 17.

5.6.1.2 Data generation for Phase Two

As mentioned earlier, the second phase data generation which was guided by Jensen's (1997, 2002, 2004a) IVAC action competence development cycle model (see Section 4.5.1 and Table 4.2). This phase was in two parts, both of which drew from contradictions and tensions identified within the activity systems from the analysis of data in phase one. I held three workshops and focus group discussions in each school and four workshops for school A because they needed more support. I conducted focus group discussions coupled with observations in each of the stages within this entire phase (see Table 5.1). The first workshop and focus group discussions involved critical discussions and reflections (see example Appendix A17.8). Learners were questioning their position in relation to their participation in waste management activities. They became involved in a process of re-conceptualising their motives in these practices in order to generate a wider horizon of possibilities, visions and new activities, than in the previous mode of their participation (Engeström, 2001). To facilitate this, I used a number of other tools like reflection on and narration of photographs and drawings with some of the learners, as well as show-and-tell narratives and informal conversations. Methods were selected based on the arising issues and tensions in the various schools and the interest of the learners (see Table 5.1). During workshops through focus group discussions, learners also planned how they might implement their newly envisioned activities based on what emerged in the data generated in the previous workshops, so that they could implement the planned activities afterwards (see Chapter 9 & Appendix A17.2, A17.4 & A17.6 & A17.11). With my facilitation they compiled a list of these activities and presented them to their teachers. I asked learners to document what they were doing (see Appendix A17.11), and what they thought about the post-workshop activities (see Chapter 9 & examples in Appendix A17.11). I also conducted regular observation visits and reflective discussions with learners during this time (see example Appendix A17.9). This phase which ran for eight weeks used the data generated from the learners' activities as a basis for further focus group discussions where there was analysis and reflection on the activities which learners had been undertaking. The focus of this phase was mainly on the learners' work and activities, teacher reflections and evaluation, children's field notes, photo discussions and show-and-tell explanations from the learners. The focus was also on the nature and processes of expanded

learning, and on the development of action competence through scaffolding (see Chapter 9 & example Appendix A17.9). The data was used to reflect on, and form an understanding of the learners' participation after reflecting on the learner-initiated activities generated out of the cultural historical activity system analysis in the first stage. It has to be noted that these two phases overlapped as some of the children's activities started immediately after the second workshop after they had identified their problems and modelled solutions. The data generation methods are summarised in Table 5.1 that follows and a summary of the sequential research process is outlined thereafter in Figure 5.3.

Table 5.1: Summary inventory for all data sources

Case Studies	Case Study A *(Peri-urban school)*	Case Study B *(City School)*	Case Study C *(Rural School)*
PHASE 1 Building the schools' waste management picture	1 Learner focus group discussion (workshop) Observations of waste management activities and how learners participate in them Show-and-tell narratives Photographs & drawings 1 Semi-structured interview with SEC teacher and 2 other teachers, school head and cleaner Informal conversations Ministerial directive analysis Litter and cleaning rota analysis	1 Learner focus group discussion (workshop) Observations of waste management activities and how learners participate in them Show-and-tell narratives Photographs Semi-structured interview with SEC teacher, deputy school head and group interview with 3 cleaners Informal conversations School documents analysis Ministerial directive analysis Litter and cleaning rota analysis	1 Learner focus group discussions (workshop) Observations of waste management activities and how learners participate in them Photographs & drawings Show-and-tell narratives and field visit guided by learners Semi-structured interview with SEC teacher, school head and cleaner Informal conversations Ministerial directive analysis Litter and cleaning rota analysis
	Preliminary surfacing contradictions and tensions by the researcher		
PHASE 2 Action competence development	4 Learner focus group discussions (workshops) to identify problems, build visions, reflect and evaluate Observations of new activities and how learners participate in them. Show-and-tell narratives Photographs and drawings 1 Semi-structured interview with SEC teacher, school head and cleaner Informal conversations	3 Learner focus group discussions (workshops) to identify problems, build visions, reflect and evaluate Observations of new activities and how learners participate in them. Show-and-tell narratives Photographs 1 Semi-structured interview with SEC teacher, deputy school head and cleaners Informal conversations	3 Learner focus group discussions (workshops) to identify problems, build visions, reflect and evaluate Observations of new activities and how learners participate in them. Show-and-tell narratives Photographs and drawings 1 Semi-structured SEC teacher and one other teacher deputy head and cleaner Informal conversations
	Identification of problems by learners, building visions *Scaffolded and guided participation in learner activities, reflections and evaluation*		

Research Process	Methods	Analysis/ Outcome

PHASE 1

Building picture of **learner participation** in WMAs using Engeström's 2nd generation **CHAT**

Focus group interviews
Observations
Show-&-Tell narratives
Informal conversations
School documents
Interviews
Learner photos
Learner drawings

Waste Management **Activity Systems**

Existing **forms of participation** (Jensen's matrix)

Emerging **tensions** using Engeström's 2nd generation CHAT framework

PHASE 2

Exploring of **expanded learning opportunities** for **action competence development** (Jensen's IVAC model)

Observations
Show-&-Tell
Focus group interviews
Informal conversations
Interviews
Learner photos
Learner notes

Evidence of action competence – (Jensen's IVAC model)

Existing **forms of participation** (Jensen's matrix)

Figure 5.3: Sequential design procedures followed in the study process

5.6.2 Rationale for selected methods

The study had a broad, participative intent (Hill, Layboum & Borland, 1996), which ideally would require a lengthy period of ongoing engagement to intensively and effectively engage learners in a long term process. The entire research cycle of understanding the participation in existing waste management activity systems and the expanded learning process spanned over a period of only four months because of severe time and financial constraints. This was sufficient to gain insight into the

148

research contexts and engage learners in an expansive learning process (see Chapters 6, 7 & 9), which I would have liked to continue with if time and resources had allowed. Hill et al. (1996) recommend focus group interviews and observations as the main methods to be used in studies of this nature carried out within time constraints.

Focus group interviews with learners instead of individual interviews enabled maximum participation by all children participants in each of the focus group interviews that were conducted in each school. Focus group interviews "appeared to offer the most economical and effective means of ascertaining children's views" (Hill et al., 1996, p. 131). As stated in Section 5.8.1.4 this was made possible because children in focus groups had the safety and support of their peers, an environment within which there was a power balance, a crucial factor for optimal learner participation (ibid.). Focus group interviews with children are also important because according to Levine and Zimmerman (1996, cited by Hennessy & Heary, 2006) focus group interviews acknowledge children

> …participants as experts. Thus a child participating in a focus group should not feel that he or she is being questioned by an adult but rather that he or she is sharing experiences with a group of peers (p. 239).

All focus group discussions were audio recorded with a voice recorder with the permission of all participants. The focus group interviews took 35 minutes to an hour; I did not want take longer because, though the children were always excited and looked forward to these workshops, I had to consider that they were taking place in the afternoon after lessons the whole morning.

Observations were mainly used to see how learners participated in these waste management activities and I recorded them as field notes (see Appendix 17.7). This approach allowed me to examine the type of activities that were taking place in which learners were participating in context, or those in which they would have liked to participate but were discouraged from doing so (Tudge & Hogan, 2006). Observational methods also allowed me to examine some key aspects of what learners did to start activities, how they involved others in those activities initiated in the second phase of the study and how their peers responded (see Chapter 9 & example Appendix 17.9). As is usually the weakness with observations, I could not observe everything because of what Cohen et al. (2007, p. 410) call the "selective attention of the observer"; also certain activities worth observing would happen in my absence. Focus groups and

individual interviews were useful in filling this gap. Again, as anticipated, the learners'
and other members of the school community's motivation for the object in these
activities was mostly different (Engeström, 1987; Kaptelinin, 2005; Hardman, 2005,
2007; Foot, 2002; Miettinen, 2005) for different members (see Section 4.2.3.2). Focus
group interviews for learners and individual interviews for teachers, cleaners and school
heads/deputies of the school communities were very useful tools for unpacking each of
their motives in these activities (Hardman, 2005, p. 102). Gaining access to school
documents (for example, school rules, policies, cleaning rotas used for waste
management education etc.) helped to enrich the data by illuminating some aspects of
components of the activity system such as tools, rules and division of labour.

Photographs and drawings were useful because learners could make the choice of what
was important to photograph or draw. Photographs allowed learners to control the
camera and thus the selection of images presented (Greig et al. 2007, see Chapters 6 &
9). Malchiodi (2001) also suggests that drawing provides an opportunity for children to
communicate in a natural way that they usually enjoy. According to her it is a method
that offers children the means to express their feelings and thoughts in a way that is
less threatening than strictly verbal means. Drawing further helps children to quickly
communicate concerns and problems that they would not normally speak out loud
(ibid.). Participants in the study were given the option of drawings to communicate their
concerns, thoughts and feelings about waste management issues they experienced.
They were all made aware that the purpose of the exercise was for them to express
their genuine feelings and concerns about waste management issues in their schools.
For drawings I gave them pencils, paper and crayons. For photographs they were given
a camera which was kept by the teacher and they could collect it anytime they needed
it. They did at times experience some technical problems getting cameras from their
teachers. The explanatory captions of the photos and the drawings were brought into
the focus group discussions (Greig et al. (2007, see Plate 9.1). They were used in focus
groups in open-ended questions such as "Why did you draw this picture or take this
photo?", "What is your waste management concern about it?", or "What is happening in
your drawing or photo?" They were also used when arguments broke out regarding
what waste issue was of higher priority (see Extract 9.2).

Instead of sticking to a structured approach of using the mosaic methods across the
three case sites in a uniform way, I found myself more flexible and adjusted to the
needs of the children at each site. I came to the realisation that there was no specific

method that should be particularly privileged over any other method (Denzin & Lincoln, 2000, p.6). For example in all three schools, learners were fascinated and excited by photographing and in Schools A and B they didn't seem so enthusiastic on drawings. Learners in School C however especially liked the idea of drawings and this method worked quite well to articulate the issues of concern to them (see Chapters 6 & 9).

It is important to note however that the children's activities were expected to go beyond the period of the research. Some learners, it was expected, would have extended and incorporated their new activities into the normal activities of the school programmes and beyond in their communities. Figure 5.4 below summarises the expansive learning cycle during the entire research process and the process is summarised in Table 5.2.
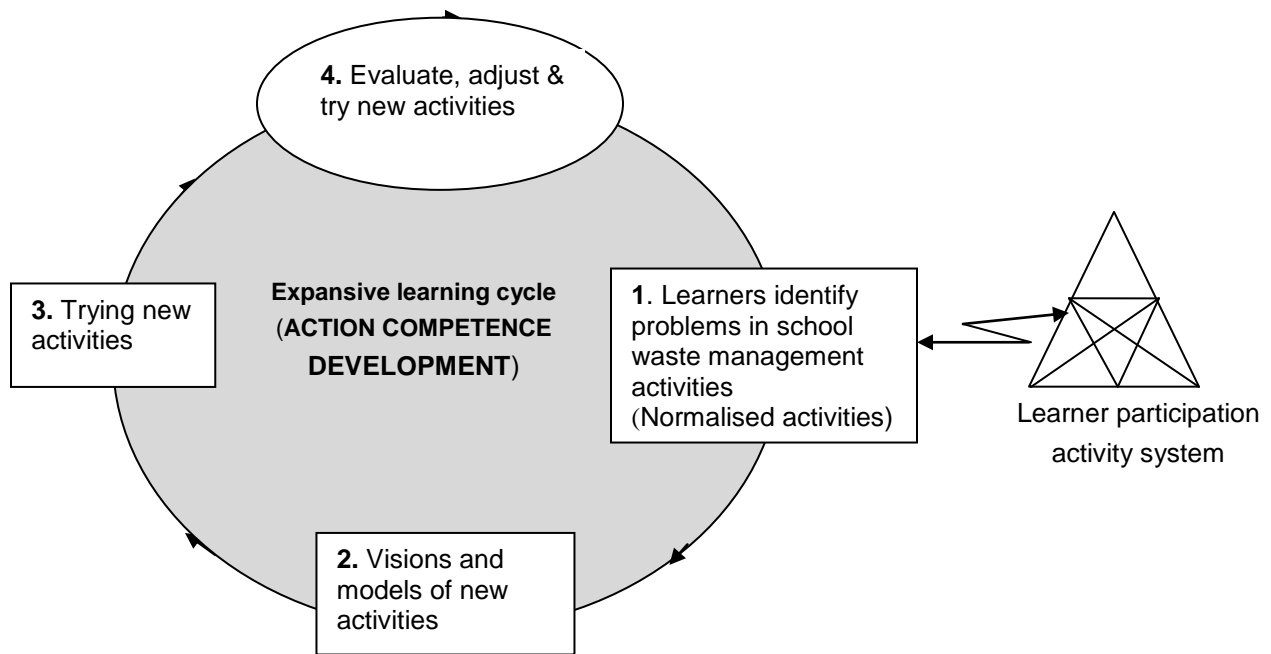
Figure 5.4: Expansive learning cycle of action competence development

Table 5.2: Stages and activities in the action competence development cycle

Stage in the expansive learning cycle (Action competence development)	Main activities with researcher's support and questions
1. Learners identify problems and themes of interest in the school waste management activities (normalised activities)	Learners question their position in relation to their participation in waste management activities and identify problems of interest to them. With researcher's support and questions
2. Visions and models of new activities	Learners re-conceptualise their motives in these activities and generate a wider horizon of possibilities and visions and than in the previous mode of their participation and model new activities
3. Trying new activities	With the support of the researcher (and some teachers), learners select and try out new solutions that they feel will resolve the problems by enacting different activities and collaborate with teachers and other learners to do so
4. Evaluate, adjust and try new activities and actions in	Learners, together with the researchers, teachers and other learners reflect on and evaluate their activities identifying constraints and affordances. They continue to adjust activities and come up with further new solutions.

Table 5.2 shows that the action competence importantly involves not only learners, but in this case the researcher and teachers to develop action competence in the collective ZPD (see Chapters 6, 7, 9 & Section 5.8.1.2 for a discussion on the role of the researcher).

The table that follows summarises the research process and the time frames for the study.

Table 5.3: Summary of research process and time frames

PHASE	RESEARCH PROCESS	PERIOD
PREPARATION	**Seeking consent from**: Ministry of Education Schools	November 2008 January 2009
PHASE 1 Building of School waste management picture using Engeström's second generation CHAT	1 Workshop for learners (focus group discussions) Informal conversations with learners Observations of activities Show-and-tell explanations by learners Interviews with teachers, school heads and cleaning staff Looking at school documents	January 2009 - February 2009
	Preliminary analysis to develop picture of learner participation activity systems and bring to the surface contradictions	February 2009
PHASE 2 Expansive learning cycle Action competence development	**Identifying problems, Vision building** **Modelling new activities** (open to learners) 1 Workshop for learners (focus group discussions) **Try out new activities** Children's activities **Analyse and Reflect** 1 Workshop for learners (focus group discussions) Observation of children's work Teacher reflections Children's field notes Photo discussions during workshops Show-and-tell explanations by learners	January 2009 - February 2009 January 2009 - February 2009 February - March 2009
	Improve previous/try out new activities **Analyse, reflect and evaluate** 1 Workshop with school B & C learners and 2 workshops with School A learners (focus group discussions) Observation of children's work Teacher reflections Children's field notes Photo discussions during workshops Show-and-tell explanations by learners	March - April 2009

5.7 Data analysis

The analysis relied largely on content and abductive approaches to analysis (Miles & Huberman, 1994). Content analysis is an approach that makes valid inferences from

data by taking "texts and analyses, [reducing and interrogating] them into summary form through the use of both pre-existing categories and emergent themes..." (Cohen et al., 2007, p. 476). The meanings attached to the inferences may emerge from "specific contexts, discourses, and purposes, and, hence the meanings have to be drawn in context" (ibid.). The abductive approach to analysis interprets and re-contextualizes data within pre-determined or pre-existing conceptual frameworks in order to understand the data in a new way by observing and interpreting within the new context (Miles & Huberman, 1994). It allows themes to emerge from data through contextualising the data in context. Like inductive analysis meanings are located within contexts and discourses within the purpose of the research (ibid.).

Data analysis initially started with content analysis (Cohen et al., 2007) which was used to analyse focus group interviews, observations and interview data. Photos and drawing data was incorporated in the focus group interviews (see Table 5.7, Chapter 6 & 9 and Appendix A17.11). All focus group discussions and interviews were audio taped and transcribed (see examples Appendices A17.8 & A17.9). These transcriptions and observations were coded in terms of categories arising from both empirical data and from theoretical frameworks used in this study (see Appendices A17.1 – A17.6, Chapters 6 & 9). All transcripts were coded with a prefix of the case study A, B or C followed by the first letter of the data source (e.g. R for researcher, L for learners, T for teacher, H, for Head etc., (see Appendix A17). The transcripts were written verbatim and because the interviews and discussions were carried out in both the Tswana and English languages, whichever was comfortable for participants, I did some minor editing for first language English speakers, taking care not to lose the original meaning (see Appendices A17.8, A17.9, A17.10 & A17.12).

Miles and Huberman (1994) remind us of the difficulty of separating the two steps of data management and analysis as the two processes overlap. The analysis then followed Miles and Huberman's (1994) proposed abductive analysis of a pre-structured case approach where each waste management activity picture was represented through case study vignettes (see Chapter 6) drawn from the questions that were pre-structured from Engeström's (1987) second generation activity system diagram and operationalised through Mwanza's eight-step model (see Section 4.3, Figure 4.5 & Table 4.1) and Jensen's models of the action competence development cycle (see Section 4.5.1, Table 4.2). The analysis used these models from the well-defined research questions that led "to specific instrumentation and sampling of events, times,

processes as well as participants" (Stevenson, 2004, p. 44). These pre-structured analyses were intended to be "less labour-intensive and deployed for researching multi-site cases while still primarily involving qualitative data" (ibid.). The aim was to provide a comprehensive and a more focussed structure and standard data displays for each case to allow in-depth and coherent cross-case analysis of the schools' activity systems and children's actions in the new activities. They were reduced into comprehensive analytical memos which were compiled into case records (see Appendix A17.1 – A17.6).

5.7.1 Phase one data analysis

The CHAT framework of activity systems was used to analyse and build the picture of learner participation in waste management activities in each school using the data generated from phase one. Drawing from Mwanza's (2002) framework for content analysis, Engeström's second generation activity system was used (see Section 4.3, Figure 4.5 and Table 4.1) and components of the picture of each school's activity system were mapped out from the data generated. This was an essential process which allowed for an identification and analysis of the components of the waste management activity system within the school in steps. Using this analytical tool, I was able to examine the relationship of each component of the activity system and the object as mediated by the primary components that constitute an activity system: (a) mediating tools (both material and conceptual), (b) the overall waste management culture (emergent norms), (c) division of labour (group dynamics and learner–teacher/cleaner roles), and (d) rules (informal, formal, and technical). In my analysis I also examined actions (Leontiev, 1981) and framed these in terms of the mediating components that constituted the activity system. Although the boundaries I chose to frame an action (or a series of actions) are smaller than those typically used to delineate larger "activity systems" (Engeström, 1999), it is my contention that using Engeström's (1987) mediational model to explain instances of activity at this scale is useful, meaningful, and, I argue, theoretically consistent with cultural historical activity theory (Engeström, 1987, 1999, 2001).

Examining participation using cultural historical activity systems in the school waste management activity systems not only allowed the analysis of collective action as a unit of analysis (Cole & Engeström, 1993; Engeström, 1987) but also allowed me to capture (a) the dynamic structure of activity, (b) the historical development of the activity over

time, (c) the socio-cultural influence in the formation of subjects' actions (Leontiev, 1981) and (d) the objects of the different components in the activity systems (Engeström, 1987, Kaptelinin, 2005; Leontiev, 1981; Hardman, 2005, 2007). Hence, when I examined activity over the life span of this study, I was able to witness the nested system of activities (Yamagata-Lynch, 2003) in which the outcome of historically emerged schools' context influenced the development of activity systems of learner participation. Most importantly, the activity system model enabled me to represent and provide an illumination of insights gained from data drawn from learners and multiple individuals engaging in the waste management activities in their natural setting to track **objects** that they were working on (see Section 4.2.3.2).

5.7.1.1 Building the picture of waste management activity systems and surfacing contradictions

To build and analyse the picture of waste management activity systems Mwanza's (2002) eight-step model (see Table 5.4 below) which operationalises Engeström's (1987) meditational model was used. The components provided in the table were considered for analysis in steps by asking questions. These steps and questions created a blueprint from which the schools' waste management activity systems were constructed by responding to the questions (see Table 5.4). As indicated below, the questions that I posed refined Mwanza's framework of analysis further allowing for careful reading of the data.

Table 5.4: The Eight-step model of analysis (*Adapted from Mwanza, 2002*)

The Eight-Step Model of Analysis applied to this study			
Step	*Activity System Component*	*Question to ask?*	*Emerging theme*
1	*Activity of interest*	What activities are learners participating in?	Participation of learners in waste management activities
2	*Subjects*	Who is involved in carrying out this activity?	Learners being the **subjects** and the focus and main unit of analysis in waste management activity systems.
3	*Community*	What is the environment in which this activity is carried out?	The community in which the waste management was conducted: What was the context and environment in which waste management was carried out? Why and how was it like this?
4	*Object of activity*	Why is the activity taking place? Object of interest	**Object** of activity for the subject and other components of the activity system. It was crucial to establish each component's object in order to elucidate the motivation behind each component's object in these activities.
5	*Tools*	By what means are the subjects performing this activity?	Influence of **mediating tools** on the waste management activity: By what means were subjects carrying out the waste management activity? What did they actually do in carrying out these activities? How were they carrying out these activities? What tools/resources (both conceptual and material) were available in carrying out these activities and where did these come from? How useful were the tools in helping the subjects to achieve the intended object of waste management? Why had these tools been selected? What were the views and beliefs of individuals about the waste management activities in general and specifically in achieving the intended object of activity? What aspects of the culture in which the activity system was embedded had influenced these choices? What and how had historical and cultural influences impacted on the choice and use of tools?
6	*Rules and Regulations*	Are there any cultural norms, rules or regulations governing the performance of this activity?	**Rules** mediating the waste management activities: What were the cultural norms, rules or regulations governing the performance of these waste management activities? What influences (both internal and external) were acting (as constraints or affordances) for achieving the intended object of waste management activities? What and how had historical and cultural influences impacted on rules?
7	*Division of*	Who is responsible for what,	**Roles** mediating the activity: Who was

	labour	when carrying out this activity and how are the roles organised?	responsible for what, when carrying out waste management activities and how were the roles designed, allocated and organized? Why was it like that? Were there any historical or cultural influences on their allocation?
8	*Outcome*	What is the desired *Outcome* from carrying out this activity?	**Outcome**: What was the desired outcome in carrying out these waste management activities for each subject in the school community? What was the purpose for the children's' participation in the activities?

The data generated from these questions was used to create an analytical memo for each school (see Appendices A17.1, A17.3 & A17. 5) from which a wider picture of the learner participation activity systems for each school was built and summarised into activity system diagrams (see Chapter 6). This picture was presented for each case study detailing all components of the activity system. From this picture contradictions and tensions were surfaced and revealed using content analysis largely based on the historical context around activity systems. Since the study drew mainly on second generation CHAT, and because the unit of analysis was the learner participation activity system, mainly primary and secondary contradictions were surfaced, although other contradictions and tensions were also noted because the leaner activity system was interacting with other activity systems (see Section 4.2.3.3 & Chapter 7).

5.7.1.2 Identifying forms of learner participation

From the picture of waste management activity systems and emerging contradictions, I identified existing forms of participation and action competence from the themes and categories that emerged in this phase by using the adapted and modified Jensen's matrix of participation (see Table 5.5 & Appendix A16). Upon analysis, this table was further modified to include more categories or forms of participation (see Tables 7.1 & 9.5). It is, however, worth noting that the boundaries of participation depicted in the matrix, are fluid (Jensen, 2004b) and that even where there seems to be non-participation (ibid.) some limited forms of participation, intended or unintended, still occur. Because of the fluid nature of these boundaries I had to add more forms of participation to the matrix as the situation demanded in the case studies (see Section 7.1 & 9.5).

Table 5.5: Forms of participation and action competence development *(Adapted from Jensen, 2004b)*

Forms of participation \ Action competence	Who identifies the problem for learners' participation in WMAs?	Who comes up with visions for WMAs?	Who sets the rules in the WMAs?	Who allocates roles in the WMAs?	Who decides what actions are undertaken in WMAs?	Who does the evaluation?
Teachers' decisions told clearly to learners						
Teachers inform Learners accept or reject						
Teachers' suggestions Common decisions						
Learners' suggestions Learners' decisions						
Learners' suggestions Common decisions						

5.7.2 Phase two data analysis

In the second phase, content analysis was used to analyse the data generated in the first phase to reveal meaningful conceptual categories which then fed into the workshops to provide feedback and formulate relevant action planning with learners. This was used with learners to devise new activities by learners according to their visions, interests and preferences. The analysis was in two stages. Evidence of responses to contradictions in the first phase of activities and learners' knowledge of these was mapped out (see Appendices A17.2, A17.4 & A17.4 and Tables 9.2, 9.3 & 9.4). This evidence from contradictions and tensions had to be clearly captured as they were the focus of expansive learning opportunities.

Firstly, themes, emerging issues and categories that reflected evidence of development of action competence and agency according to the research questions and within the theoretical framework of participation and action competence, were identified. These were;

- themes and problems identified by learners;
- their visions and alternatives;
- their actions in their new activities (direct and indirect actions, see Section 3.7.2); and

- evaluation of their activities and actions (see Table 5.6 & Chapter 9).

To start identifying evidence of development of action competence and new forms of participation, I used Jensen's IVAC model to identify evidence of action competence which showed actions (direct and indirect) and competencies in the learners' new activities. I then mapped these out using the adapted and modified IVAC model as a framework for analysis as shown in the figure below:

Table 5.6: The action competence development cycle

Component of Action Competence Cycle	Area of Focus
A. Selection of waste management themes (issues, problems and concerns)	What are our issues of concern/problems? What are the causes of the problem? What influences are we exposed to and why? Why is this important to us? What is its significance to us/others?–now/in the future? What influence do lifestyle and living conditions have? How were things before and why have they changed
B. Vision building	What alternatives are imaginable? What alternatives do we prefer and why?
C. Activities (Action and change) (Direct and indirect actions)	What changes will bring us closer to the visions? Changes within ourselves? In the classroom/school? In the community? What action possibilities exist for realizing these changes? What barriers might prevent the undertaking of these actions? What barriers might prevent actions from resulting in change? What actions will *we* initiate?
D. Evaluation	How will we evaluate those actions? What comes out of this evaluation?

The model was used as an analysis tool for observing the evidence in the expanded learning phase. Secondly Jensen's (2004) framework of forms of participation (see Appendix A16 & Table 5.5) was used to show the different categories of participation that had emerged as a result of the expansive learning process. This framework was also refined, to provide for an even wider range of possibilities for learner participation than those indicated in the framework so far (see Tables 7.1 & 9.5). This depended on the nature of learner participation observed. Both these models could be seen as the

starting point that provided a useful 'first step' for analysing action competence development during the second phase analysis.

While children's participatory processes were treated as the foreground (Rogoff, 1998, Simovska, 2004), the purpose was to analyse their participation without losing track of the interdependence of other members of the school community, particularly teachers who were assisting in guiding learner participation, and other individuals who constituted the social relations, historical traditions and cultural contexts (Simovska, 2004, p. 203). This was catered for by the continuous reflections and feedback from teachers and cleaners (see example Appendix A17.12). Analytical memos from this analysis were created for each school and formed part of the case records (see Appendices A17.2, A17.4 & A17.6). Table 5.7 shows a summary of data analysis processes adopted for the study.

Table 5.7: Summary of data analysis processes

Research phase	Research question	Data generation methods	Data analysis methods
PHASE 1 Building a picture of waste management activity systems in schools	What is the current picture and nature of waste management activities in Botswana Primary Schools (i.e. what are the existing learner waste management activity systems, and how are they constituted?	Learner focus group discussion Photographs and drawings (built into focus group discussions) Observations notes Interviews	Content analysis using themes in Mwanza's eight-step model Abductive mode of inference using Engeström's second generation CHAT Content analysis using forms of participation in Jensen's matrix
	How are learners participating in these waste management activities?		
	What tensions exist in learner participation in these waste management activity systems?	Activity systems	Content analysis based on historical analysis
PHASE 2 Expansive learning through action competence development	What expansive learning opportunities can be mobilised to develop action competence for civic agency through learner participation in waste management activities?	Learner focus group discussion Photographs and drawings (built into focus group discussions) Observations notes Interviews	Content and abductive analysis using Jensen's models to identify evidence of action competence development in learners

5.7.3 Data verification and validation

Data verification and validation was an important part of the analysis process which facilitated ruling out misinterpretations (Maxwell, 1992). In part, validation was done throughout the research process as reflected in all sections above. But Maxwell recommends that researchers should consider descriptive validity to maintain the "factual accuracy" (p. 285) of the account and hence truth and reliability. I included original transcripts of all focus group discussions and interviews, and constructed analytical memos and this helped in enhancing descriptive validity in the study (see Appendix A17). Maxwell (2005) also recommends interpretive validity, that is, consideration of how accurately the participants' viewpoints, thoughts, feelings are understood by the researcher and portrayed in the research. He regards this form of data verification as:

> … the single most important way of ruling out the possibility of misinterpreting the meaning of what participants say and do and the perspectives they have on what is going on as well as being an important way of identifying your own biases and misunderstanding of what you have observed (p 111).

Varied approaches were used for data verification. Three approaches were used with learners. One way was to re-play the recorded focus group discussions and interestingly learners enjoyed listening to their previous conversations. But usually one learner wrote down a summary of the discussions on a flip chart and a secretary took notes (see plate 9.1 & Appendix A17.11). Teachers and school heads were given transcripts which they either agreed to or did not give feedback. After an agreement with learners, they gave a summary of the identified problems compiled from their focus group discussions to their teachers and school heads. They discussed the issues raised with their teachers and heads. I also subsequently followed up after reaching an agreement with learners to discuss these issues with teachers. Cleaners in Schools A and C were also asked to listen to their recorded interviews.

But when it came to validation of analysis, learners were not asked to validate or comment upon the themes and categories developed through this analysis. Hopwood (2007) cites Dey (1993) who argues that distinctions made by researchers during analysis "may not be recognized explicitly or even implicitly by the subjects themselves" (p. 98), but that this need not render them invalid. The analytic outcomes were relatively abstract categories (mainly drawn from theoretical frameworks) based on learners'

comments and were thus at some level removed from the learners' own words and level.

The analysis and representation of data was also frequently presented during regular seminars and other informal engagements with critical colleagues who provided very useful feedback and insights.

5.8 Validity and ethical issues - Participatory approaches with children

The next sections cover some validity and ethical issues related to the study and describe my attempts to deal with them. As reflected in Section 5.5, a number of pioneer participatory research authors, among them Kemmis and McTaggart (1997, 2005), have insisted that participants have to take full ownership of all the phases of planning, acting, observing and reflecting in order for the research to be termed participatory. But I believe that even in what is intended to be child-led initiatives, adults have a role to play, and this inevitably includes making some decisions. I do concur with Lotz (1996) who sees the assumptions about participation put forward by researchers such as Kemmis and McTaggart (1997, 2005) as being "extremely difficult to realise" (p. 301) in practice, given the fact that power relations always exist in society. This is especially relevant in this case where cultures favour adults to take decisions on behalf of children, and where the culture of schools is instructive and authoritarian as is the case in the Tswana society (see Section 1.8). In such a context, however, if one is interested in children's participation, it is important to be reflexive about one's own interest, role and influence on the research process (Alvesson & Skoldeberg, 2000; Russell & Kelly, 2002; Hall & Callery, 2001; Ahern, 1999). Models that advocate for full participation "stop short of identifying how children make decisions and take action, and how adult facilitators need to move fluidly between providing different kinds of support to groups of children and the individuals within those groups, at different times, in response to their needs" (Kirby & Gibbs, 2006 p. 211).

The assumptions of 'genuine participation' advocated by some theorists discussed in Chapter 3, also assume that children can and want to participate equally with adults. But this may deny them the protection and support they need to participate in appropriate ways (Lotz, 1996). Some recent research has found that many children and young people do not want to be involved in taking forward the results of their own consultations; but they do want adults to take responsibility in assisting in implementing

their ideas (Waller, 2006; Roe, 2007; McIvor, 1999). But taking account of the cultural history of power relations (Creswell, 2003) in schools as revealed in Section 1.8, there was need on my part (and teachers) to exercise some collegiality with learners (Cohen et al., 2007) which is a central ingredient for participatory research. Consistently taking cognisance of this factor largely guided my ethical behaviour in the study. But it also posed some methodological challenges which demand careful consideration of validity and ethical issues which I highlight in the next section.

5.8.1 Learners as children at the centre of the research focus

The main object of my study was how children participate in waste management activities and exploring their potential for action competence development against the background of children's undervalued ability to participate (see Sections 1.8, 2.4 & 3.3.1). Methodologically, research done with children in Botswana has primarily been predominantly 'on' or 'about' children as reflected in research done on curriculum reforms and learner-centred pedagogy (see Section 1.8.2) and much of this research has been located on what Hart (1992) chooses to call 'deception' (p. 15). This is so called because where information is required about children, the researcher would either ask the teacher or have all the questions for the children, yet the reasons for these questions would not be understood by the children largely due to the fact that the research would be 'on' or 'about' children (Greene & Hogan, 2006) not *with* the children (Hart, 1992; Hart, 1997; Greene & Hogan, 2006). This gave me some indication that I should be consistently conscious in this research to partner **with** children in this endeavour as they formed my unit of analysis in a quest to achieve the object of the research as articulated in the study purpose (see Section 1.9). In fact, Hart notes that even anthropological research,

> ... which might be expected to have a different emphasis, given its sensitive approach to interviewing, had given very little thought to working directly with children. Its emphasis with regard to children has been, until recently, almost entirely upon childrearing, with the information coming from parents and from direct observation of children, rather than from any talk with children (Hart, 1992, p.15).

I had to be cautious throughout the study to avoid this patronising approach which has been premised on the belief that children do not have the same competence in communicating issues that concern them as adults do (Greene & Hogan, 2006). Contrary to this belief, I learned quickly from the children I worked with in this study that

if an adult has a genuine interest in their lives, then they are most enthusiastic in their engagement and participation and it does not mean that because of this position ascribed to them by adults, information from them is invalid (Maundeni, 2002). However I have to acknowledge that it was a methodological challenge as the object of the study was to develop learners' action competence within cultural constraints of working with children in Botswana's context of how children are used to relating to adults as the ultimate authority. Potentially this challenge could be aggravated by and emerge from learners working with the researcher who was unfamiliar to them and teachers who are an authority over them, both of whom are adults. This pointed to a number of methodological considerations that I had to be cautious of throughout the study as these had broad and genuine validity and ethical implications (Greene & Hogan, 2006; Greig et al., 2007; Cohen et al., 2007; Maxwell, 1992). The main considerations I made related to the following:

- Power relations;
- My role as a researcher;
- Confidentiality and trust; and
- Considerations in focus group discussions.

I now discuss these considerations I had to make throughout the research process as a reflexive researcher in the next sections.

5.8.1.1 Consideration of power relations – exclusion of teachers from workshops

I have already explained my decision to exclude teachers from children's workshops against Engeström's proposed boundary crossing laboratory workshop approach (see Section 4.4.1). In taking this decision, I was starkly aware that the democratic approach that I was about to undertake in working with learners was against the tide of accumulated historically entrenched authoritarian culture (see Section 1.8) and I was likely to stimulate what Simovska (2008) sees as the

> introduction of fundamental changes to school approaches to teaching and learning as well as school management, which move away from top-down hierarchical school structures towards a more participatory and empowering system on all levels. Consequently…this perspective points to controversial processes of challenging traditional power imbalances in schools and also implies a different view of the nature of learning (p 63).

To this end, throughout my engagement with the children, I needed to be sensitive and cautious of children's position within the cultural and historical milieu. I needed to use my methods in ways which maximized and optimised learner engagement without negatively destabilising the existing school structures. I had to make this clear at the beginning of the research (see Section 5.4.3.1). I also had to continuously update teachers and get feedback from them and learners on the activities I was undertaking with learners and solicit their evaluation as well. This was to ensure that teachers did not feel that their power base was being challenged and this was indeed revealed to be the case in school A (see Section 9.6.2, extract 9.12). As a researcher my role as facilitator, mediator and moderator had to be clear.

5.8.1.2 My role as a researcher

The biggest challenge I encountered in this study was clarifying my role as researcher with such 'special subjects', so labelled since children are a special group of researched subjects because "they are different from the adults who control and describe the(ir) world as we know it" (Greig et al., 2007 p. 5) and most often decisions have always been taken by adults on their behalf (Greene & Hogan, 2006). My role here was tricky as I was coming in as an outsider to engage with learners through participatory approaches. The study essentially relied on researcher-learner-teacher mediated discourses and activities on waste management activities within the concept of ZPD (Vygotsky, 1978; Rogoff & Wertsch, 1984; Wertsch, 1985; Vare, 2008).

> A central feature of this process is the creation of a "communicative action space" (Kemmis, 2001) characterized by flexibility, mutual respect and reciprocity in relationships between young people and adults (Percy-Smith, 2006, p. 168).

Given my position as an adult who was working closely with learners in a study of such intensity for the first time, I had to be open to constant reflexivity and ongoing review of a range of possible validity and ethical threats (Maxwell, 1992) that my role as a researcher posed throughout my engagement with children.

Firstly throughout this research process, as the researcher I had an obvious role of technically assisting in the process of the research itself. But a less obvious, but very important role for any researcher in participatory research is, as Hart (1992) correctly puts it

to use whatever knowledge or insights she may have of the larger causes influencing the problem, and to engage in a democratic dialogue with the participants over these larger causes. Through the process of carrying out this participatory research the participants not only transform some conditions related to a practical problem in their lives, but they also educate themselves about their general situation, thereby empowering themselves more generally for future action (p.16).

What is implied in this statement is the researcher's key role of supporting and expanding the learners' ZPD through collaboration or dialogue, which were seen as essential components of working with the learners (see Section 3.8.3, Chapters 8 & 9). A key component of this concept was the importance of scaffolding where learners were provided with support in envisioning their anticipated future participation and modelling solutions to the identified tensions (see Section 3.8.3, Figure 5.3 & Table 5.1, Chapters 8, Extracts 9.6, 9.7 & 9.8 and example Appendix A17.9). Crucial to the scaffolding process is a descriptive enactment of scaffolding the learners' ZPD by the researcher's (my) mediation of situated learner participation and providing evidence of processes at play between the researcher (myself) and activities and actions enacted by learners. Some distinguishing features of scaffolding in focus group discussions and the action competence development process was the evidence of:

- giving learners tasks,
- my assistance and support of learner's selection of problems and themes,
- supporting learner's emerging skills and linking their ideas to the problems themes and knowledge that was the focus in the discussions,
- helping to provide focus and direction in the focus group discussions to the theme,
- encouraging learners' ideas to be made explicit to everybody in the group,
- use of modelling, allowing for questioning and explanation to clarify the goals of the task,
- the generation and maintenance of the learner's interest in the task through support in collaboration with their teachers by continuously soliciting support from teachers to support learners in their activities,
- ongoing collective evaluation of the suitability of learners' activities to serve their purpose and moving learners' comments from being negative to positive towards any constraints (Palinscar, 1986; Cheyne & Tarulli, 1999).

The central tenet to this scaffolded process was collaborative dialogue (see Chapters 8 & 9). Figure 5.5 and Table 5.1 below highlight the comprehensive steps that the scaffolding process followed throughout the action competence development cycle (see Chapter 9).
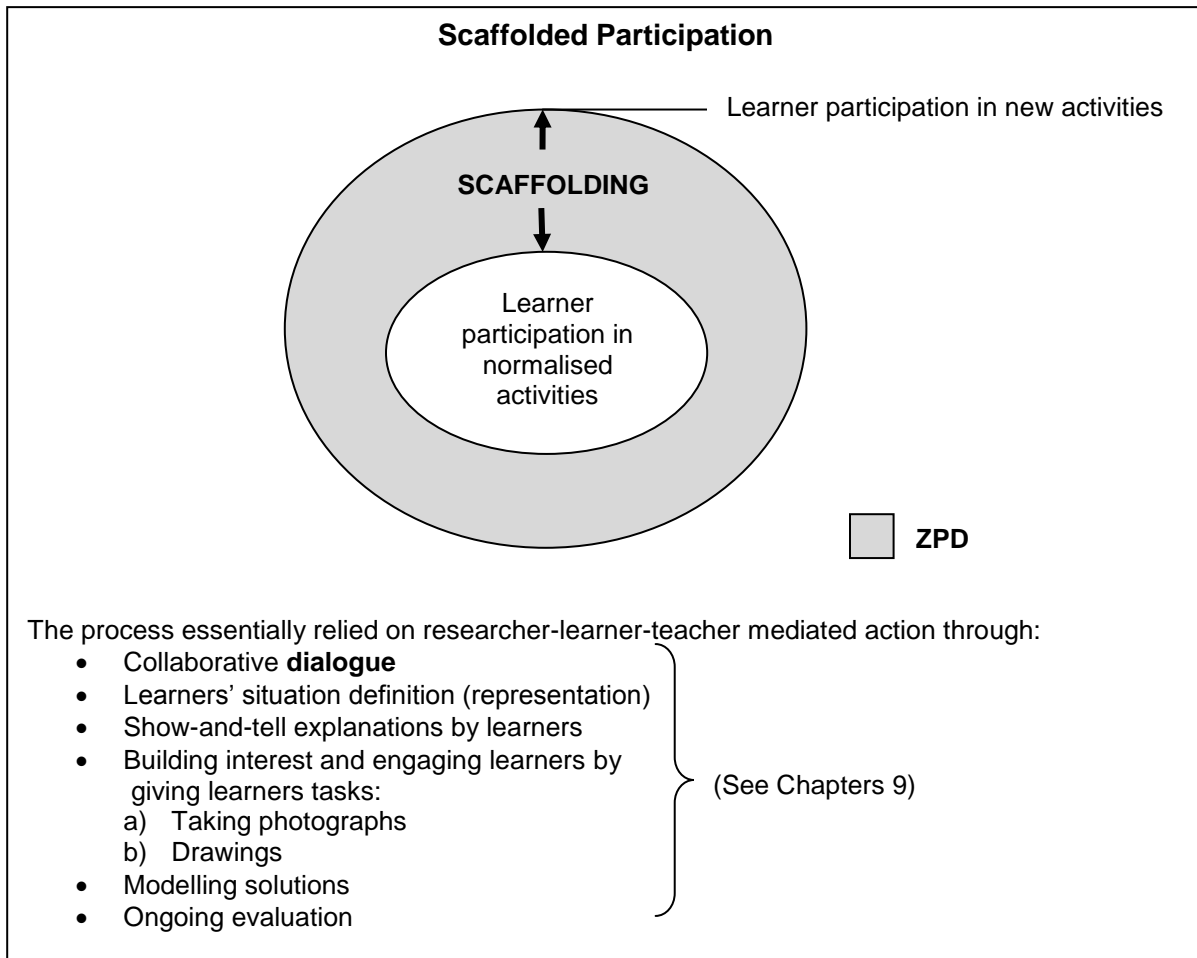
Figure 5.5: Scaffolding learner participation

Table 5.8: Scaffolding learner participation

Function or task	Scaffolding processes
Focus group discussions	Collaborative Dialogue: • supporting learner's selection of themes and ideas and contribution to the discussions by probing and affirming • linking of learner's ideas to the themes and knowledge that was the focus in the discussions by questioning and modelling solutions • continually providing focus and direction in the focus group discussions to the theme by giving the task and clarifying goals of the task • learners' ideas being made explicit to everybody in the group learners writing ideas on the flip chart • intervening mediating conflict in resolution
Selection and modelling of activity	• assist learners with ideas • suggest ways of approaching and engaging teachers and other learners through **dialogue** • assist learners to come to agreement among themselves before proceeding • solicit support from teachers for learners • encourage the division of labour through shared responsibilities by election
Learners' situation definition or representation	• use of a reflection flip chart in which members could share publicly their representation of the problem • making them write down information in their note pads, taking photographs and drawings • gradually transferring regulative role from researcher to learners • negotiation of shared meaning
Evaluation of activities	• ongoing evaluation of the activity's suitability for its purpose • getting learners to evaluate their activities and their performance in them • evaluation being done and moving learners' comments from being negative to positive towards their constraints • evaluating their positive outcomes

The scaffolding process prompted learners to think critically and work practically, positively and cooperatively on issues of concern such as continued and sustained consultation with teachers and other learners, taking ownership of what they wished to undertake, ethical considerations for their decisions in the participatory processes and conflict resolution. Throughout the study learners needed to be scaffolded in order to "engage at the highest level possible subject to their developing capacity for participation" (Graham et al., 2006, p. 239), as well as to sustain their motivation throughout the project and for this aspect teachers played an important role. It was a role I had to carefully and consistently play with the help of teachers as reflected in

Figure 5.3 and Table 5.1 as I had to master the art of putting aside assumptions about what form of participation is appropriate and enter into dialogue with children to ascertain and provide the appropriate types of support and necessary guided participation (see Chapters 8 & 9) for children within different contexts and at the appropriate points. This shifted from school to school, moment to moment, and sometimes from child to child, as well as between tasks and projects and influenced how I applied the ZPD concept. The mosaic approach (see Section 5.6.1) also addressed the fine line between a point where learners' responses moved from what they expected me to hear to what their genuine responses were. The use of both English and Setswana languages whenever it suited learners proved to be a crucial factor; it facilitated easy and unrestrained participation of learners because they were not very eloquent in English (see Sections 5.4.1 & 7.3.5).

5.8.1.3 Learners' experiences and issues of concern - Confidentiality and trust

An essential part of the participatory approaches that I was using with learners in context situations was representation and reflection of how learners were participating in their usual activities. Learners had to freely explore their experiences in order to develop new understandings that could be used to inform their proposed future activities. I initially anticipated that they would not feel comfortable opening up to an adult stranger. A number of sensitive issues emerged from these interactions and this called for high level confidentiality and trust on my and their parts. Some of the main ways I addressed this challenge were:

- introductions and familiarisation of each other,
- breaking initial tensions by singing greeting songs,
- clarifying the ground rules of maintaining confidentiality (see Section 5.4.3.1)
- regular visits and contact with learners to build rapport,
- requesting tours of their neighbourhoods (some of them showed me their homes and took pictures of their homes and other contexts of their livelihoods, see Plates C6.1 & C6.2)

One way of relieving tension during the initial workshops was to teach the learners songs which they seemed to enjoy considerably. In School C, later in the study these songs were modified to incorporate waste-issue related lyrics which were taught to the younger children (see Section 9.8.3). Before the learners could start on their activities,

they needed to elect a committee that coordinated different aspects of their activities. The committee was made up of a chairperson, secretary and later for Schools A and C which planned fundraising activities, a treasurer was also elected. All the elections were by secret ballot. I made regular visits to the schools, and held more workshops than initially intended. This was to ensure continued dialogue and interaction with learners, to develop a rapport and also to ensure that there was depth in the data generated. As interactions increased the children began to take control of the recorder, switching it on and off and continuously checking if it was recording - this revealed the development of trust between us.

The scaffolding process discussed in Section 5.6.2 also helped to produce a friendly atmosphere that encouraged the learners to inquire and state their ideas more freely. Efforts to meet learners at their level of development were designed to help them feel competent and able to freely participate. I also had to discuss the issue of information sharing and we reached a consensus. We agreed that I would make them aware of and negotiate any information that I would be passing on to their teachers. They also had to commit to this level of confidentiality between each other so that they would not compromise any of the participants' positions with other learners or teachers in the school.

5.8.1.4 Considerations in learner focus group interviews

Focus group interviews were conducted in the classrooms of Schools A and C and in the school library of School B. Researchers believe that "children are likely to feel most comfortable when they are in a familiar environment" (Hennessy & Heary, 2006, p. 236). I also had to be sensitive to children's level of development and find methods which maximized their ability to speak about issues which concerned them in a manner which was most comfortable to them in focus group discussions. I allowed their ideas to dominate a large part of the discussions in order to convey to the group that I was not controlling the discussions (Hennessy & Heary, 2006, see example Appendix A17.8 & A17.9). In addition, I set myself apart from the authority figures of their teachers (Tabulawa, 1997, 2003) and emphasised that my role was not to judge, discipline or issue orders, but to listen to their stories about their experiences in their participation in the waste management activities. I tried to understand their feelings.

Our initial workshops usually started with songs that I had taught them and later they suggested new songs (see Section 5.6.3) which were used as 'ice breakers' (Hennessy & Heary, 2006). This was followed by broad and general informal questions on what they liked and they did not like about their school in the first phase of the study; in the second phase of the study they gave me an update on their activities. This was done in order to give learners the freedom to openly respond within the broad context of their activities without initially limiting them with structured questions. Starting this way in Schools A and C in particular, immediately led the interviews into the waste management concerns that the learners felt strongly about in their school and later transitioned smoothly into the actual focus group interview questions (see Appendix A17.8).

One particular challenge was the individual characteristics and qualities of the group, such as the level of confidence and shyness of the participants and their relationship with each other (Hennessy & Heary, 2006). For example, there were some characters who wanted to dominate the discussions and impose their ideas and suggestions all the time. I tried throughout these interactions to acknowledge the value of each learner's contribution by moderating the discussions to ensure a balanced contribution as much as possible from all learners. I must admit it was still skewed most of the time. I also included activities that engaged all the children's attention (see Appendix A17.11). Each learner was encouraged to make notes and contribute to the sessions in various ways (e.g. through making presentations, and writing on the flip chart or taking photographs). The multi-method process or mosaic approach (Clark, 2004; Waller, 2006; Roe, 2007; Greig et al., 2007) and visits to neighbourhoods helped to bring everybody into the activity. During workshops and at other times, learners also held regular meetings and planned how they were to implement their newly envisioned activities based on what emerged from the data generated in the previous workshops (see Appendix A17.11). Working with learners to encourage cooperation and corporative decision making was a very important feature of the children's activities (see Section *9.6.3.2(b),* plate 9.1).

Another important challenge that I had to consider was my values and their influence on the process. In the workshops, for example, particularly in School A, learners were frustrated by lack of support from their teachers and sometimes vented their frustration using strong language. I had to carefully manage the language that learners used against their teachers, by constantly reminding them about respect to their Tswana

cultural values when they speak to or about adults. As a Tswana adult, and having been socialised in that kind of culture, I was sensitive to how the children engaged with adults and always tried to encourage respect (see extract 9.8 & 9.16).

5.9 Chapter summary

In this chapter, I outlined the research process by providing the methodologies and methods of the whole study, giving a justification of the study design and selection of sites and participants. Because I was working with children who are a special group of participants, I went on to elaborate in detail a number of validity and ethical challenges I faced and how I dealt with each of them. I went on to present my analysis strategy, where for the first phase of the study I used Engeström's (1987) mediational model operationalised by adapting Mwanza's (2002) eight-step model as my tool for data generation and analysis. This tool helped to highlight inherent contradictions. I used tensions in the activity system to identify potential zones of construction or the learners' ZPD. Through guided participation and scaffolded participation (Rogoff, 1990; Wertsch, 1985) I engaged learners in expansive learning processes where learners generated a wider horizon of possibilities, visions and new activities, (Engeström, 2001) to develop action competence (Jensen & Schnack, 2006; Jensen, 1997; 2000; 2002; 2004a, 2004b).

PART IV
RESEARCH FINDINGS

SECTION ONE

LEARNER PARTICIPATION: UNDERSTANDING THE WASTE MANAGEMENT SYSTEMS - TENSIONS

Overview

This section which covers two chapters, Chapters 6 and 7 provides detailed empirical results and findings of the waste management activity systems and how learners participated in the context of each of the schools. In Chapter 6, I present the picture that emerges of the schools' waste management activity systems in the form of case study vignettes. In Chapter 7 I try to unearth and reveal the multiple tensions and contradictions that emerged from these activity systems. The main objective of Chapter 6 is to depict a clear picture and understand how learners participate in the waste management activities. Using Engeström's (1987) mediational model of activity systems (see Section 4.2.1, Figure 4.2) and Mwanza's (2002) eight-step model and questions together summarised in Table 5.3, I was able to focus on an in-depth analysis of the activity system which revealed how learners participated across the three contexts. As explained in Chapter 5, the first step was to map out and analyse components of the each school's activity system using Mwanza's (2002) framework. The second step, which is the main focus of Chapter 7, involves identifying the contradictions and tensions.

CHAPTER 6: SCHOOL WASTE MANAGEMENT ACTIVITY SYSTEMS

6.1 Identifying and analysing components of the activity system

This chapter presents the analyses of the empirical data from learner focus group discussions, observations as well as interviews with teachers, cleaners and school heads/deputies who were all part of the school's community. The empirical data generated was used to develop an understanding of the activity systems of each school with a special focus on how learners were participating. These activity systems formed the unit of analysis because the activity of interest was **learner participation** which was the main focus of this study (see Section 5.2). A key dimension of the analysis was to develop a deeper understanding of the social context and environment in which the school waste management activity system is operating to provide adequate insights into the cultural historical context of the school and its practices.

The next section provides a comprehensive picture of alluvial historical waste management activity systems in each of the three cases. At the end of each case study vignette an analysis of the school's waste management activity system is summarized in a diagram which shows the schools' waste management activity systems at a day to day operational level.

6.2 Case studies of School Waste Management Activity Systems – A historical analysis

Section 5.4 provides an overview of how the nested case studies (Yin, 2009) within the broader Botswana national context within which schools are operating. This picture provides a historical context that has informed learner participation in environmental education, and the main factors within this context are: the socio-ecological issues affecting children in Botswana (see Section 1.2), the infusion policy which lays great emphasis on participation of learners in environmental education processes (see Section 2.6.4), the culture of normalisation of environmental education practices in schools (see Section 1.6 & 2.6.4), the directive/policy that barred learners from cleaning, particularly bush/grass clearing and toilet cleaning (see Section 2.6.5) together with the authoritarian culture (see Section 1.8). These external contextual factors and policies have largely influenced the micro-context within which these

activities take place and how schools operate their waste management activities e.g. how they make rules and allocate roles in these activities.

6.2.1 Case study A

6.2.1.1 Subjects

The subjects of focus in this school were eight learners. Initially the group of learners was made up of nine Standard 7 participants, six girls and three boys. But within the first two weeks one boy decided to withdraw (see Section 5.4.3) and two girls volunteered to join the group. They generally were highly motivated with some outspoken learners who seemed to be very clear about their needs and aspirations regarding their participation in the school waste management activities. The average age was 12 years at the time of the study. They were drawn from the three different Standard 7 classes in the school. All the learners came from the surrounding predominantly low-income neighbourhood (see Section 6.2.1.2). Most of the children in this school come from single parent households which could in part be related to the prevalence of HIV/AIDS which has seen many children orphaned in Botswana (see Chapter 1). L1 was a very vocal and had a domineering disposition. She was elected leader of the group and she tended to dominate during focus group discussions. I had to prevent her from dominating during discussions, though with some difficulty because she articulated issues very well (see Section 5.8.1.4). L2 was also very vocal and blamed everything on teachers whom he felt could offer more support to learners. He was elected secretary of the group. L3 was a bit on the reserved side but also very articulate. L4 was a bit shy but opened up when probed. L5 was also vocal but sometimes could not articulate himself so well. Learner 6 was another girl who was quite motivated and contributed to the discussion freely. L7 and L8 who both joined the group later were both very mature and articulate. L8 was the stabilising character when conflicts emerged in the group.

Learners generally presented a very grim picture regarding the state of waste management in the school as reflected in the following quotes.

Extract A6.1 Learners on the state of the school

L1: I don't like my school because as you can see it doesn't look nice. I'm worried about toilets, the toilets are so dirty. There isn't any serious commitment to it when it comes to picking up litter and it just doesn't give you a good feeling. There is filth all over and we are never given any guidance as to how to clean our school. We like it [our school] *but what we don't like about it is the unclean state of the school. We need guidance from the Environmental teacher (AFL1.1)*

L5: The windows and doors are broken and aren't fixed so it's easy for people to open the windows and take our stuff when all our work is in those books. But nobody seems to care (AFL1.1)

L2: The school does not look nice with this grass which is overgrown. The teachers also don't seem to care about it. There are garden tools which can be used, but they are not used because we are not allowed to use them but once out of nowhere when a teacher feels he doesn't like to see that grass anymore, he will be telling you to pluck it up with your hands. (AFL1.1)

L4:. I don't like my school because it's dirty it doesn't look like other schools, when you look at other schools, they are clean and well taken care of. While here the school does not look like a school (AFL1.1).

Their major area of contention was lack of support and guidance from teachers, a concern which prominently and consistently featured in all the focus group discussions throughout the research process.

6.2.1.2 Community

The school community was made up of 958 learners, 23 teachers and one general duty assistant (GDA) or cleaner who all worked together on the shared waste management activities in the school. The average teacher-pupil ratio is 1:45. But in a wider sense this community belongs to a community of other schools within the local district council which is charged with the administration of all the primary schools. There are 98 primary schools in the district. This plays a crucial role when it comes to looking at the context of the school's operation in its waste management activities as the district under which the school falls is very big in geographical spatial terms measuring 35,890 km^2. The school is located in a low income residential area with many poor families as described by the school authorities, and the majority of the learners in this school came from homes described as 'poor'.

The peri-urban centre of this community was originally a small farming village that is close to Gaborone the capital city of Botswana. Its proximity to the city meant it served as an overspill for the city's population because of the shortage of accommodation in the city (Molebatsi, 2004). It is termed the "fastest growing 'urban village' in Botswana. Its population has increased from 14 246 in 1991 to 38 816 in 2001 at a rate of over 10% per annum" (Molebatsi, 2004, p. 91). It has over the years been characterised by squatters as a result of illegal occupation of land leading to overcrowding and poor sanitation conditions. Because of its high population density it is one of the areas in Botswana which has been heavily impacted by the scourge of HIV/AIDS (Molebatsi, 2004). There is a high rate of unemployment and most parents are in informal employment within small scale commercial activities that include small tuck-shops commonly known as '*dimausu*', beer parlours or *shebeens*, car repairs and brick-moulding (ibid.). For example, there were a number of lady vendors sitting in front of the school gate selling snacks, some of whom were parents of children in the school.

6.2.1.2(a) Litter generation

Typically, where the school is located and the environment around the school has influenced the waste management activities in this school. The vendors who sat at the school gate selling, started their operations in the morning and continued to the time the school ended in the afternoon. They sold sweets and snacks and this was a major source of litter that was evident in the school grounds. At tea-break and lunch time the children bought from these vendors. Soon after break it was noted that the volume of litter would increase and the only two litter bins that serviced the school would be spilling over. The waste eventually gets blown by the wind throughout the school premises. This is evidenced by extract A6.2 from a learner focus group discussion and plate 6.1 below.

Extract A6.2 Litter generation

L1: The other thing is there are those ladies you see there by the school gate who sell sweets and chips and pop-ice. Even if you are made to pick up papers in the morning at break time when the children finish eating they throw the papers, sweet wrappers all over the school grounds and the school gets even dirtier again. When they are told to throw the papers into the litter tanks they just throw them into an already full tank and it doesn't help as well and so the school is perpetually littered as you can see (AFLI1.1).

Plate A6.1 Overflowing bins and children buying from ladies at the school gate

The school has a feeding scheme in place which ensures that children have at least one meal a day as is the case with all government schools in Botswana. Once a week the children are given milk to drink and this is supplied in cartons and on such days or the day after the volume of litter in the school increases.

6.2.1.2(b) General state of the school

The school has very old buildings with paint that was peeling off and a number of broken windows, doors and locks. The quote below and also extract A6.1 and plate A6.2 confirm this.

Extract A6.2 Learners' views about the state of the school

> *L5: Our parents and some of the teachers here… say that they came into this school and found this paint and it's still the same paint which has not been changed and the school looks ugly in this old peeling paint. Even some teachers went into this school with this same paint. Even the metal roof sheets are no longer strong and when there is a heavy wind blowing, some sheets get blown away and this poses a danger to us because the metal sheets can injure us. They need to be redone (AFL1.1)*

Plate A6.2 Broken window and peeling paint on classroom walls

Some of the classrooms were very small housing 40-45 children and this congestion made the movement of children and furniture difficult especially during cleaning. The school grounds were strewn with litter and covered with overgrown grass. Both teachers and children felt that the deteriorating state of the school was due to the ministerial directive which bars learners from carrying out certain cleaning activities (see Section 2.6.5) and council's failure to meet its mandate (see Section 6.2.1.4(c)). Prior to the enactment of this policy, children used to do the weeding of the grass around the school premises and the school was in a better state. The GDA or cleaner who was employed to carry out the cleaning duties of the school did not cope on her own because of the excessive work load, given that it is a very big school.

6.2.1.2(c) Toilet sanitation management

There were two types of toilets, pit latrines which were specifically designated for boys but which they resisted using as they were in a bad state. There was no indication that they ever got cleaned. About five hundred girls shared two water system toilets; the remaining toilets were locked because they were not functional due to lack of maintenance. The boys' water system toilets were locked as they were out of order, damaged partly by boys themselves. The state of pit latrines and locked toilets resulted in boys resorting to utilizing the grass outside for their convenience. At tea-break there would be a crowd of girls around the toilet area queuing to use the limited toilets. In between lessons some girls also hid behind the toilets and utilised the grass. The children also complained about the shortage of toilet paper and girls' sanitary disposable facilities and they felt ignored by teachers as shown in the quotes below. I

deliberately chose not to include the learners' photographs of toilets as I felt they were too graphic. The following extract and learner's drawing (plate A6.3) reveal the learners' feelings about toilet sanitation.

Plate A6.3: Learner drawing on toilet sanitation

Extract A6.3 Learners lamenting on the state of toilets

R: Why do the boys relieve themselves all over, don't they have toilets?
L1: They have no toilets, what we mean is, there are toilets. The flush system ones, but they are not functional. So they are locked and now they [boys] use those ones which you saw [pit latrines] which are dirty so they have decided to relieve themselves anywhere in the grass outside behind the toilets.
L3: But now they are so messed up, behind them, inside on seats and on the floor, its so messy and the boys no longer use them and they go outside and the surroundings are so messy and smelling
L1: Yes! You see that grass down there!!! You can't go there [sic] because it's so messy, but still its better using it than our toilets. Think of it Mrs Silo, we are...so many in this school and for girls we only use two toilets, only two for more than 500 girls, just think of that.

L1: I don't see any solution in their being locked because the ones they now suggest boys should use, are not cleaned and they [boys] are now no longer using them and when they utilise the space outside the toilets, they are told not to do that and to use the toilets and yet they (teachers) know that the toilets are not in a usable state, so boys can't use those toilets. They can be given soap to clean them so that they can use them. So it's all futile exercise.
L6: The problem is that the teachers are not even interested in seeing the state of our toilets. They know that they do have a toilet next to the kitchen. But as for us, what we use, they just don't care about us. They don't see us as people. I mean imagine for us girls, only two toilets for so many of us! How many are we? I guess more than 500 because I know we are more than boys (AFL1.1).

6.2.1.2(d) General cleaning and cleaning resources

The supply of all waste management (cleaning) materials falls under the jurisdiction of the district council but there was a chronic shortage of resources such as litter bins with only three litter bins for the entire school and none in classrooms (see plate A6.1). The litter bins were supposed to be emptied by the Council once a week but it was noted that this was only done, at best, once in a fortnight or after several weeks. The few litter collection trucks which service this peri-urban centre also have to cover a number of other villages within the district. For classroom cleaning sometimes classes had to share brooms and in most cases they used grass brooms which had been reduced to stumps from sweeping. The children were sometimes asked to contribute towards the purchasing of brooms, candles and paraffin for making floor polish which was perpetually in short supply. The general quality of cleaning was sub-standard, and according to learners and teachers, this was partly due to the shortage of manpower (only one cleaner), cleaning materials, lack of supervision and overcrowded classrooms which made it difficult for the children to move furniture around especially in the junior classes.

Extract A6.4 Teacher's comments on resources

> T: The challenge I am facing is the one of collecting of litter and the other one in classrooms is that we do not have enough materials. Resources, we have no resources. Everything is in short supply, cleaning materials, gloves, brooms, everything! Because Council is the one responsible for supplying resources to primary schools, even books, we struggle and in some classes children have to share books. Isn't it Council gives us supply of resources at the beginning of the term, and very few for that matter, maybe only four or six brooms, two mops, four buckets of polish, and little soap, before long it's all gone, brooms are damaged and it becomes a challenge.
>
> R: So what do you do to overcome that?
>
> T: Sometimes we just contribute, say asking children to bring P2s [two Pulas[4]] and buy gloves for ourselves or raise funds by selling some things but they don't take long. And it's another extra work trying to raise funds to buy all those materials; Like we ask children have to bring candles from home for making polish. But these children as you can see them, they come from poor homes. Most of them are really poor, so asking for money can be too much (ATI1).

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[4] Pula (P) is the Botswana currency in which $1 is equivalent to P6.50

Council which is responsible for the general maintenance of the school infrastructure and supply of all material resources was obviously not able to fulfil its task in view of the picture painted above (see Section 6.2.1.4(c)).

6.2.1.3 Object of Activity

The children had an appreciation of the aesthetic and hygienic value of the environment. They were particularly concerned about the state of their toilets and school buildings, the overgrown grass around the school premises that was not maintained and littering. They felt that the teachers' interest in, concern and support for their needs as members of the school community was inadequate. They felt that the School Environmental Committee (SEC) which is made up of teachers (see next section 6.2.1.4(a)) should have played a pivotal role in the management of waste in the school and they continually made specific reference to the SEC coordinator as they did not know who the other teachers in the committee were. Extract A6.1 and A6.5 below confirms this fact.

Extract A6.5 Learners' concern about toilets

> *L1: I don't like my school because, like at times when we are made to clean or pick up litter, like the other time when we were picking litter and clearing grass behind the boys' toilets, the place is so dirty and it smells because the boys relieve themselves anywhere and we now had to clear grass and handle litter with all this dirt without wearing gloves (AFLI1.1).*

In spite of the fact that dirty toilets were their main concern, they still saw litter pickups as the main waste management activity in the school. They registered strong displeasure in having to pick up litter with bare hands in what they considered a very unsanitary environment especially around the toilet area. This revealed that learners had knowledge about some health issues. On the other hand the teacher(s) identified littering by children and their lack of commitment and cooperation in their litter picking duties as their main concern. Their main object was to achieve a litter-free school environment as shown by these quotes from one of the teachers and the learners themselves.

Extract A6.6 Teacher's concern about litter confirmed by learners

> *T: The biggest challenge is litter, Council does not collect litter. You can see for yourself how dirty the school is! The litter can stay there for days on end!!!! and they do not even allow us to burn the litter, We are not allowed to burn it and as you can see the tanks are full and we fail to know what step to take in that case.*
>
> *L3: We participate (in waste management) by picking up litter and throwing it into the bins.*
>
> *R: How do you actually do it, the picking up of litter?*
> *L2: Teachers tell us to pick up litter around our classes and sometimes next to the school fence, but they are not really serious about it that is why the school is so dirty.... We should be doing it in a more organised way, but there is no particular system that we follow. Most of those who come late are the ones made to do it (AFL1.1)*

They also felt that the ministerial directive that barred learners from undertaking certain cleaning duties was a major constraint to the school's waste management efforts (see Section 2.6.5). In addition they felt that council's failure to meet its responsibilities was another major hindrance to their objective of keeping a clean school (see Section 6.2.1.4 (c)).

6.2.1.4 Mediating Tools

6.2.1.4 (a) School Environmental Committee (teachers)

The main tool for mediating waste was the School Environmental Committee (SEC) which was made up of four teachers including the coordinator who was the teacher I worked with in this research. With little consideration of the teacher's interests and constraints, it is school policy that the SEC coordinator is a science teacher, a decision based on the school's belief that environmental issues belong to the Science discipline (see Sections 2.6.4 & 7.4.3), a point noted by Ketlhoilwe, (2007a, 2007b). The SEC coordinator had a Primary School Teaching Diploma without any environmental education training. She had seventeen years of teaching experience. The purpose of the committee is mainly to identify environmental issues of concern, develop solutions and also to coordinate and monitor all environmentally related activities. Other members of the committee did not seem to feature or give much support to the coordinator who seemed to be working alone most of the time in the school waste management activities. She did not seem to engage with learners in any visibly active way. The duty she actively carried out was requesting litter bags from the council and reminding them

to collect litter. Generally there was no organised coordination or management of waste activities. The committee drew up a litter rota which was kept in the head's office but the designated classes did not pick up litter around the school grounds.

Extract A6.7 SEC coordinator on her role and challenges

R: Do you feel that whatever you are doing is working for you?

T: Mmmm…we are making it but normally when we are the ones who allocate jobs to classes, its difficult, the committee… we used to be five in the committee, so normally when it comes to cleaning some teachers, they don't supervise and say the committee is the one which is responsible for doing the supervision and it becomes very difficult for us because we've got our own work and this becomes an extra one. So most of the time I am faced with all this work all by myself. And I have many other responsibilities on the side.

R: The members of the committee, is it voluntary to be a member or is there a way in which you are selected as members?

T: It is voluntary, but for a Maths and Science teacher you have to be in the committee and I am a senior teacher and a Maths and Science teacher and automatically I become the environmental coordinator.

R: Why is it not voluntary for Maths and Science teachers?

T: It's because environmental issues are dealt with in the Science syllabus, and the subject deals more with the environment than others
R: Do you have any learners in the committee?
T: No, no we don't, it's us teachers only (ATI1.1).

Litter pickups took place randomly mainly by learners who came late to school as a form of punishment, another trend noted by Ketlhoilwe (2007a). There was minimum support, if any, from the coordinator's colleagues as she seemed to carry out most of the required duties by herself. They hardly ever held any meetings as a committee. Learners also expected her to play a central role in supporting them as the coordinator (see extract A6.1). Once a term, or when teachers saw the need to, all learners would be taken on a litter pick up campaign, during which they would pick up litter in and around the school neighbourhood.

6.2.1.4 (b) General Duty Assistant (Cleaner)

The GDA or cleaner who is employed by Council is another very prominent mediating tool in waste management in the school. She is supposed be responsible for all cleaning duties in the school, which should include cleaning offices, classrooms, toilets

and surroundings. However, given the size of the school and the fact that she is alone, an internal arrangement was reached that she should only clean offices, toilets and Standard 1 and 2 classrooms, while the rest of the children cleaned their own classrooms. In reality, the GDA only managed to clean staff and girls' toilets, and offices. She felt that the work was too overwhelming and that toilets were always in an unpleasant state due to lack of maintenance and abuse by learners making it difficult for her to clean them. She was also tasked with other duties such as photocopying teachers' materials and tests which further added to her volume of work. Her views are reflected in this quote.

Extract A6.8 Cleaner's views

> *C: My job is to clean the children's classrooms, toilets, the headmaster's office, the school grounds, picking up litter, I can say all the litter in the school I am the one who is responsible for picking it up, but because I have too much work, at times children are instructed by teachers to do it, just to help me.*
> *R: How do you do it, as you say you clean everything, offices, classrooms, toilets ….*
> *C: No I clean the standard one and two classrooms, In principle I should be cleaning standard three classrooms and others, but because I am alone and there is too much work involved, I only do standard one classrooms. At times I help teachers with photocopying in the office … At this point in time I am alone, but there were supposed to be two of us employed, but the other one did not turn up, so it meant I have to carry out all these duties alone. As a result it's a big problem for me as I am not managing at all to be honest (ACI1).*

6.2.1.4 (c) District Council

The District Council is responsible for supplying the school with material resources and school infrastructure maintenance. It is tasked with the responsibility of maintaining the school grounds. It is responsible for employing cleaners and should normally engage casual labour to clear the grass around the school grounds. This hardly ever happened and whenever it did, the job never got completed resulting in some areas going without maintenance for years. Toilet and general infrastructural maintenance is poor as the Council does not seem able to meet its responsibility. They take a long time to empty bins as they have limited resources and they cover the whole district for maintenance of all the 98 primary schools. This led to further waste challenges such as learners using the grass for their sanitary needs, because of the poor maintenance and condition of the school toilets as revealed in earlier extracts and the following one from another teacher in the school.

Extract A6.9 Teacher on Council's failure to meet its mandate

T: Isn't it Council gives us supply of resources at the beginning of the term, and very few for that matter, maybe only four or six brooms, two mops, four buckets of polish, and little soap, before long it's all gone, brooms are damaged and it becomes a challenge. Council is also not helping the situation as you can see the drums overflowing with litter. They only come after some time, and even then we would have had to pester them to come and empty those litter drums. (ATI1)

6.2.1.4 (d) Learners

Learners constituted a major component of the school's mediating tools in waste management by cleaning classrooms and picking up litter around the school. The involvement of learners in cleaning activities was largely for cleaning purposes though teachers perceived it as serving the purpose to meet a curriculum objective of learning by participation. Ketlhoilwe (2007b) also noted this as a prominent normalising strategy in the teachers' interpretation of the curriculum objective where they equated environmental education to environmental management activities in schools (see Sections 2.6.4, 7.3.1, 7.3.3 & 7.4.3). The object of the teachers shifted depending on the context under which the participation of learners was taking place. If it was meeting the aesthetic requirements of the school, the learners occupied the position of cleaners as the object in the activity system especially because Council was unable to meet its mandate of employing enough cleaners. But when it came to meeting the policy and curriculum objective, teachers perceived the object of learner participation as the main part of the learning process geared towards meeting the curriculum/policy imperative. But on a day to day basis, the object of learner as cleaner seemed to take prominence over the object of learner as participant. Sometimes these litter pick-ups and grass clearing activities were used as forms of punishment for learners who came late to school as shown in this quote from the teacher below and extract A6.6 from learners .

Extract A6.10 Teacher on punishment of learner using litter pick up

T: Normally in the mornings, the children who come late are the ones who move around picking up litter as punishment for coming late , but sometimes we schedule them, we schedule them according their classes, this week the other ones will be picking up the litter and next week another group will be picking up the litter. Before, they used to clean the toilets and when they cleaned the toilets, last year, when they clean the toilet they were also involved in the picking up of the litter (ATI1).

There was no visible evidence of collaboration, guidance and engagement of teachers with learners when these activities were being undertaken as revealed by learners in extract A6.1.

6.2.1.4 (e) Environmental Fairs and Competitions

The annual environmental subject fair (see Section 2.8.3) in which selected learners take part, is another tool which supposedly the school partly used to mediate participation of learners in waste management. On the instruction and supervision of teachers, learners developed and designed small projects that they took to the fair to compete with other schools in the region. The teachers selected the learners to take part in these fairs according to the learners' talents and skills. Learners could select anything they wanted to do but the teachers made the final selection of what projects to take to the fair. During the period leading up to the fair, about a week or two before the fair, teachers and learners worked closely together in preparation for the fair. At times learners would have to miss classes if there was mounting pressure to finish the projects in time for the fair. Other than that, in their day to day learning there were no projects or activities done relating to waste management or any other environmental issue. As this was normally done only before the fair and with a selected few learners, there was no link between these mini projects and waste management or environmental education in terms of knowledge and skills and competencies developed on the part of learners. The main objective was for learners to enter the competition and win for the benefit of the school's image. The extracts below show the focus on fairs and competitions from learners and the teacher.

Extract A6.11 Learners view on environmental fairs

> *R: You have been telling me about your involvement in cleaning the school grounds and issues around the state of toilets, in class don't you do any activities relating to waste management like recycling or any other activities you do, for example recycling...?*
> *L4:*(All of them giggle) *We never do anything like that except if there is an upcoming environment subject fair, that is when some of us prepare for it, and in any case afterwards the items which we would have made get damaged and no one cares about them anymore. And these days we never win... aaahh!*
> *R: Only when there is a subject fair, tell me more about them?*
> *L3: Yes and even then you are being forced to do it (projects) in a rush when there are a few days left before the fair. That is when we use some of the paper we pick up to produce these items for the subject fair and when it's over they are of no use and sometimes the teachers take these items for themselves to their homes like last year, we made slippers and the teachers took them afterwards when we had been told earlier that*

they were going to be taken to the subject fair, but when we didn't go teachers took them (items) (AFL1.1).

Sometimes learners were made to collect litter generated from a specific product, as part of a marketing strategy by some private company which is supposed to be pursuing an anti-litter agenda in which the school competes with other schools. Schools stopped collecting the litter as soon as the competition was over because the whole object was to win the prize. This raises the problem of extrinsic versus intrinsic motivational drivers for waste management activities in the school.

Extract A6.12 Teacher's comment on competitions

> *T: We normally mmm, say there are other companies like PEO which for advertising they will say for example children should pick up the SIMBA chips wrappers and they give money to the school that collects the largest amount of paper. But you can only get that money when you win, when you don't win you don't get the money and children stop picking up the wrappers (ATI1.1).*

6.2.1.4 (e) Classroom pedagogical practices

Other than classroom cleaning and litter pick-up activities, there was not much class activity focussed on waste management. Teaching predominantly followed the normative didactic approach where teachers generally use very few instructional tools and largely it was teacher-centred. Learners copied notes from the board or directly from their textbooks which they shared, an arrangement they were not so happy about. The classroom walls were generally bare and where there were charts, they were designed and produced by teachers. There seemed to be no relationship between their litter pick-up and class activities as reflected in the communication below.

Extract A6.13 Learners commenting about teaching

> *L1: I also feel that teachers should be taking us around the school, teaching us that when we say environment, what we mean is... we should be clearing grass, picking litter. We should be moving around the school checking that is everything is in order. Not to just talk about it in class without seeing/knowing what we are talking about.*

> *L2: I feel the teachers should explain when they are teaching what the environment is. What it's all about, like cleaning the school and keeping it clean and toilets and clearing the grass etc and moving around the school to check if things are clean. You are told to just write down notes in your books. When you ask questions or suggest something they ignore you. They don't listen to us. They never take us seriously*

R: In your lessons, what do you learn about waste?
L2: I see us learning nothing, Sometimes in Science, which is the subject that has a lot to do with the environment, you are just given a text book to copy from it and you don't understand it when you are made to copy from the textbook and don't understand what environment means and there are some learners who can't read and there is no explanation to all these terms and if there is no explanation by the teacher, you won't understand. The children won't understand what is being talked about in Science and we end up not knowing anything, because we are not given explanations. The books are also not enough, because when you are still copying notes from the, book, you are told the other children from another class need them, so they are taken away from you before you finish (AFI1.1).

On the other hand according to the teachers, when learners pick up litter and clean classrooms, the curriculum objective of applying what they taught was being met in the context of learning.

Extract A6.14 Teacher's comment about teaching and learning

T: In the classrooms on daily basis they are taught about it by their teachers, when it comes to litter picking, normally we have litter campaigns, where we just go around the grounds there with them picking up litter, so that's when we take the upper classes especially, for litter picking hoping that they will learn by doing it (ATI1.1)

The textbooks and exercise books were in short supply. In some classes learners had to share the text books at times with learners from other classes, reflecting the gross shortage. The classroom walls were bare with no charts or pictures. Learners copy notes directly from their textbooks and the teacher believes that the illustrations in the book will be sufficient for learning.

6.2.1.5 Rules

Rules governing waste management were largely influenced by the external policies, specifically the infusion policy (2.6.4) and Ministerial directive (2.6.5), which determined internal school policies. Internal rules were in turn designed by the SEC and implemented by teachers in general.

Extract A6.15 Learners on the directive that bars them from cleaning

L2: We used to clear grass and weeds from around the school grounds and rake and collect it in one place.
L4: And toilets as well, we used to clean them and they were better that the way they are now
R: When you say you used to clear grass, and clean toilets what do you exactly mean?
L2: I mean that we used to clear grass and toilets but we are told that the law no longer allows us to do so.
R: Do you know why?
L2: We don't know why, were just told that the law does not permit us to do it anymore. Because we used to do it and the school looked better than this. Now there is no one doing it. Like last year, it was done just once and the people who were doing it did not finish (AFL1.1).

For each class, it was expected that the class teacher be responsible for designing a cleaning rota, allocating cleaning duties to, and supervising learners. In some classes the teachers supervised learners as they undertook their cleaning duties, but in others, the learners did it on their own. The SEC coordinator and the school head, who was still relatively new to the school revealed that teachers were not very cooperative regarding their supervision and support duties for learners. Within these constraints, generally learners would submissively comply with the rules as they were afraid of bringing up their concerns with their teachers whom they saw as adults they were afraid to challenge (see Section 1.8). Some would simply display some form of indirect resistance by refusing to cooperate especially when not supervised. And even where they had pressing needs and concerns children could not approach their teachers freely as there was a rule that they had to communicate in English only, a language they were not proficient in. Examples of these feelings are expressed in the next extracts

Extract A6.16 Learners on their teachers and rule to speak English

L3: The other problem is that when we go to the office we are required to speak in English and some of us are afraid because we don't know how to speak English well
R: It's OK what do you think?
L: [All laughing] *But we can't speak English*
L5: Other words "choke" us
R: Words choke you? Then at that point can't you suggest that you should speak in Setswana.
[I later asked teachers. The explanation was that they have to practice speaking English otherwise they will not be able to learn]
L: Aaaahh!
R: So you are afraid of calling meetings with them because you are afraid of speaking in English?
L6: Yes!!

L2: They are saying they want our English vocabulary to improve (AFL2.2).

6.2.1.6 Division of labour (Roles)

The SEC drew regulations on role allocation which class teachers implemented by allocating roles and duties to learners and they were supposed to supervise all cleaning activities. There were class monitors selected by teachers and their duty included supervising other children in the absence of the teacher, a role they were unable to execute satisfactorily due to the insubordination of their peers and lack of support from their teachers.

Contrary to policy stipulation, the cleaner who was tasked with the cleaning of classrooms and offices, school grounds, and toilets, only cleaned offices and girls' and staff toilets, as all learners from Std 1 to 7 cleaned their classrooms, including the Standard 1s and 2s she claimed she was cleaning for (see extract A6.8). Cleaning of classrooms which was carried out exclusively by learners in most cases was done without teacher supervision in spite of the fact that the SEC and school administration expected them to do the supervision. But the cleaner seemed to focus more on the cleaning of offices and photocopying to which she was assigned, than other duties stated above which were her officially designated duties. She was not keen on toilet cleaning as it did not seem to be her priority among her duties. She hardly ever cleaned the Std 1 and 2 classrooms to which she was assigned. Plate A6.4 shows Std 2s cleaning.

Plate A6.4: Standard 2 learners sweeping their classroom with broom stumps

When it came to the actual cleaning of classrooms, learners allocated themselves roles, with some moving furniture, while others swept and rearranged furniture; generally they would do a relatively good job. But in some classes cleaning was poorly done and incomplete. Where learners attempted to make some positive contribution in terms of roles that they played in these activities, there was minimal or no support from some teachers. This was evident in some situations where learners failed to cooperate with learners in charge who received no support or assistance from their teachers. There were no adequate monitoring strategies in place which resulted in discouragement and frustration for those learners whose efforts were proactive. Class monitors were supposed to take the supervisory role of the teachers in their absence, but they were virtually insignificant in these activities as they were not held in high regard given by their peers. Even in cases where the teacher played her/his supervisory role, this would not go beyond issuing instructions and reprimanding.

Extract A6.17 Learners on role allocation

R: Going back to cleaning, how is it arranged, how is it organised, who does what and who allocates duties? Like you were just telling me that those who don't contribute are required to clean alone, who decides that and how and so on and so on. How is arranged, how is it organised?

L6: In our class our teacher is the one who writes the names of those who are going to clean on such and such a day, when we should sweep and apply polish and like who is going to clean on Monday, Tuesday, up to Friday.

R: How does the teacher select who is going to do what, and what does he/she base this decision on, how does he/she allocate duties?

L1: The teacher tells us who has to clean every day and on Fridays at times there are no people to clean and we all have to do it, sweeping and mopping, but others will refuse to clean. Other go home and when they come back on Monday and ask them why they did not participate in the cleaning, they will be saying they were hungry and we will also tell them that we were also hungry, "Can you stay in a dirty environment just because you are hungry?" And when we tell the teacher she says she will punish them but they never do anything about them.

L5: Allocation of duty in classroom cleaning we do it ourselves and some children refuse to do it because they will be saying they are going home because they are hungry and when we tell them we are also hungry, and some of us ask them if they think it's right for us to stay in an unclean environment they just go and the teachers don't do anything about them

R: What about your monitors? Don't they supervise you as you clean?

L3: Aaaahh, they [learners].*They don't care about monitors. They don't listen to them (AFL1.1)*

Figure 6.1 presents a picture illustrating the school waste management activity system in the school using each component of the activity system.

Tools used to mediate learner participation in waste management activities; SEC, teachers, cleaner, learners, district council, teaching and learning support materials

Subjects: Learners

Object

Waste management activities that are evident in which learners are participating (litter pick-ups and cleaning of classrooms by some)

Outcomes: 1. clean school
2. learner participation

Rules	**Community**	**Division of labour**
Govt and school policies	958 learners	All children pick up litter
infusion policy, directive,	23 teachers	All children clean classrooms
traditional authority structures	1 cleaner	SEC allocates roles, supervises & monitors
Clean schools achieved	Peri-urban context	Teachers supervise children
through normalised		Cleaner cleans toilets and offices
cleaning classrooms		Casual labour clearing grass
and picking up litter		

Figure 6.1: School A waste management activity system

6.2.2 Case study B

6.2.2.1 Subjects

The participating group in this school comprised of seven 12 year old Standard 7 learners, three boys and four girls. They were drawn from the two Std 7 classes in the school according to the criteria highlighted in Section 5.4.2. This group of learners were initially shy and withdrawn and exhibited very low levels of motivation. But during our subsequent workshops they began to discuss freely and openly except L7 who was the smallest in the group and never spoke unless directly addressed. L1 was very talkative and vocal, most of the time dominating the discussions. L2 was subdued and articulated herself very clearly. She was elected leader of the group (see Section 5.8.1.3). Later when children were doing their activities in the second phase of the study, she would take the initiative of making requests related to their activities from the community around the school. L3 was not very talkative but contributed consistently in the discussions. L4 tended to be the spokesperson of the group. She was very lively and seemed to be always eager to talk. She was the one who always consulted with the teacher. L5 never seemed to be serious in our discussions and was always distracted. I

felt ethically challenged by him and confess that at times both myself and the other learners were impatient with him. L6 was a serious boy whose comments were always very constructive and his suggestions were taken up most of the time. He was elected secretary of the group (see Section 5.8.1.3). These learners were supposed to work together with teachers and cleaners towards a common object.

6.2.2.2 Community

The school had 598 learners, 19 teachers including the school head and deputy, and three GDAs or cleaners. The teacher pupil ratio was an average of one teacher to 35 learners. The school falls within the greater Gaborone City Council which is charged with the administration of all the primary schools within the city (42 in total excluding high schools and private schools). The school is located in a predominantly low income residential area with families ranging from very poor backgrounds to lower middle income by the City Council's designation of residential areas by economic and social indicators in Gaborone, capital of Botswana.

This residential area, like most low-income residential areas in urban centres of Botswana and sub-Saharan Africa, has experienced rapid population growth mainly due to rural-urban migration (Molebatsi, 1998; Gwebu, 2003a). Its history can be traced to the designation and construction of Gaborone as the national capital of Botswana in the early 1960s, and it is one of the oldest low-income residential areas in the city which has seen rapid population growth (see Section 1.2). Most units in this residential neighbourhood are small and overcrowded. This is mainly because of a high incidence of renting, subletting and sharing mostly for poor families who want to generate income (Gwebu, 2003a, p. 410). The rapid population growth of Gaborone over a period time, for areas like these, has "created unprecedented and severe social, economic, technical and administrative problems for the Gaborone City Council" (ibid., p.415) (see Section 6.1.2.4(c)). This has resulted in most households resorting to cheap sanitation facilities like pit latrines whose maintenance, because of overcrowding, is poor, negatively impacting on the quality of life for residents. The poor provision of services coupled with "congestion and overcrowding in the area is not conducive for the creation of a good living environment" (p. 417) and also impacts on security and the general livelihoods of children. Gwebu (2003a) notes that

> Because of the failure by council authorities to match demand with supply for the infrastructural and human needs of their growing populations, serious environmental problems are now threatening the sustainability of the major metropolitan areas, particularly their low income neighbourhoods (p. 410).

There were a few vendors within the vicinity of the school only patronised after school hours as the children were not allowed to leave the premises during school hours. The school had a mobile tuck-shop run by teachers in which a limited choice of snacks was sold at tea break, snacks which some children didn't particularly like (see extract B6.14). Litter increased during tea break after the children had bought these snacks; litter including food they felt wasn't properly cooked was thrown indiscriminately all over the place (see Section 6.2.2.3) and the school bins would frequently overflow (see Plate B6.1).

Plate B6.1 Bins overflowing with litter and beans thrown away by children

A considerable number of children brought with them packed snacks from home and these added to the volume of litter in the school. By the end of each day the three[5] tanks would be full and spilling over with litter. A considerable amount of litter was also generated during class activities and this contributed substantially to the volume that went into the litter tanks. The tanks were supposed to be regularly emptied by the City Council but they were emptied only once a fortnight and sometimes only after several weeks.

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[5] At the start of the study there were only three old bins and upon the learners' request three more bins were donated (see Chapter 9 and Plate 6.1 above)

A feeding scheme was also in place to ensure that children had at least one meal a day as is the case with all government schools in Botswana. But a considerable amount of food was thrown away by children who lamented that the food was not properly cooked; this, as far as they were concerned, was another source of waste generation that they felt the school had to deal with (see Plate B6.1 above). They complained that the discarded food attracted flies around the taps and litter tanks and learners saw this as a health hazard. This was partly the reason why some children brought their own food to school.

The school buildings were generally clean and well maintained. Litter was found throughout the school premises especially near the entrance where the tanks were located and around classrooms and toilets. There was also overgrown grass behind the toilets, around some classrooms and towards the borders of the school compound (see plate B6.2). Children complained about blocked water drainage too.

Plate B6.2 Overgrown grass behind classrooms and around toilets and leakages

There were two sets of fourteen toilets each for boys and girls but half of these were locked at the beginning of this study, awaiting maintenance, hence only fourteen were functional. The functional ones had leakages resulting in water flowing and flooding the surrounding area around the toilets (see plate B6.2). Some boys utilized the grass around the toilets. This seemed to have not been cleared in a very long time working conveniently for the boys.

But generally the school was relatively organised as far as its functions and operations regarding waste management were concerned.

6.2.2.3 Object of Activity

The main object of the school environmental education agenda regarding waste management was to maintain a clean school. To achieve this object the school activities included litter pick-ups, classroom cleaning, weeding of the school grounds and toilet cleaning. The general duty assistants (cleaners) generally keep the school clean by regularly sweeping offices, classrooms and toilets. They also swept and weeded grass in the surroundings, particularly around classrooms and the office block.

The children were mainly involved in litter pick-ups and senior learners (Standard 5-7) sometimes cleaned their own classrooms. The lower classes did not clean theirs at all as this duty was done by the three GDAs. Litter was managed through a rota where different classes were allocated days for picking up litter. For classroom cleaning each class teacher designed a class sweeping rota. But the rota was not regularly adhered to as some teachers forgot to take their learners for their litter duty or did not supervise the litter pick-ups or cleaning. This appeared to be linked to the fact that the cleaners were largely responsible for the general cleanliness of the school. There seemed to be resistance from some teachers to involve children in the cleaning and litter activities as evidenced in the next quote from the teachers.

Extract B6.1 Learners on litter pick-ups

> *L5: Teachers don't remind us to pick up litter*
> *L: Aaahh* (laughs shyly)
> *L5: Yes! They are supposed to remind us because we forget (BFL1.1).*

Extract B6.2 Deputy head on litter pick-ups

> *DH: The committee. The environmental committee, Mrs Kelesi and her colleagues. It's the responsibility of the committee. And they should also inspect that papers have been picked. Usually we hear Mrs Setati complaining at assembly that "You Std 7s, you have not picked you're your litter because this morning I went around and I found that you haven't picked up behind the special education block. At times it's the fault of teachers who also forget their duties. While we know cleaning is the duty of cleaners, children also have to do something Mrs Silo. But I think some teachers feel children should not do it. So we have to deal with both teachers and children (BDHI1).*

The general motivation and interest of learners towards the school's waste management activities was very low. The bulk of the cleaning duties was done by GDAs.

While the teacher and the deputy head emphasised litter as the main challenge for maintaining a clean school, learners felt the main issues of concern were dirty toilets which had no facilities for the girls' sanitary needs and leaking taps. This different focus is illustrated in the following extracts from the deputy head, the teacher and learners as well as plate B6.3. The deputy head regarded the children's use of outside areas for their sanitary needs as insubordination.

Extract B6.3 Teacher and deputy head on litter as a focus for waste management

R: How do your children participate in this waste management project you are saying you came up with?
T: Like I said we came up with this project after discussing it at length and said with this problem of litter should do something as committee for children to learn that it is not good to live in surroundings and that when we said let us make a cleaning rota and this cleaning rota divides classes and each class having a day allocated to them for picking litter and how they do it as well as cleaning the portion allocated to them, so that every child should participate. No child is left out. The cleaning rota, I draw it and give it to them and I display it in the office (BTI1)

DH: Firstly, I would say that after establishing that there is a lot of litter in the school we then established this environmental health club. We made a litter picking rota and then each day there will be picking of litter...
But we also have naughty children here Ma Silo. They mess up their toilets and the next thing they go outside and want to mess up the environment too (BDHI1).

Extract B6.4 Learners on dirty toilets as their concern

L2: We are not living in a healthy environment in the school.
R:You are not living in a healthy environment in the school. What is not healthy about your environment?
L2:The toilets. Because our classes are near the toilets and we breathe the dirty air from the toilets.
R: What's wrong with the toilets?
L1: The toilets? They are dirty… the children urinate everywhere. So people end up not using them but outside in the grass.
L6: Especially these young ones. And there are snakes in that grass.
R: Why don't they use toilets?
L4: Because they are not well cleaned and they are not cleaned everyday and then they urinate wherever they want and even outside in the grass.
L1: The ladies who clean do not clean them because they are afraid that the toilets are dirty. That's why they don't clean them (BFI1.1).
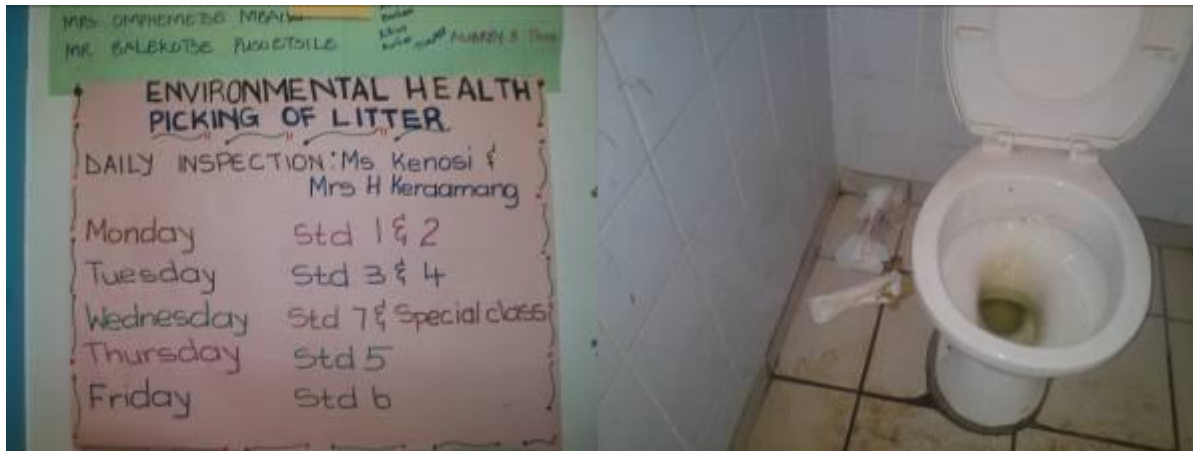
(a)   **(b)**

Plate B6.3: The different concerns for (a) teachers (litter) and (b) learners (toilets)

Learners also identified food that was not properly cooked as an issue that resulted in it being thrown away. They felt this posed health challenges as illustrated in the next extracts by learners and as shown in plate 6.3.

Extract B6.5 Children's displeasure with food

> *L6: And the food that we eat is not healthy. We always eat beans every day.*
> *R: You always eat beans? Don't you like beans?*
> *L[chorus]: Yes*
> *R: Okay, remember we are looking at waste in the school…so how are the beans not good in relation to waste?*
> *L6: Some children don't eat them and they just throw them away…*
> *L1: Some children just throw them anywhere and then there are these green flies all over and they can cause disease….*
> *L5: It [food] rots, it smells and attracts mosquitoes which cause malaria.*
> *L1: Some flies go to the toilet and to the beans which are being cooked by the cooks and this can make us sick (BFL1.1, see Plate B6.2).*

The learners and teachers were also concerned about the long grass around toilets which they felt was posing a safety threat from snakes (see plate B6.2 & extract B6.9).

6.2.2.4 Mediating tools to achieve the object

It was identified that tools mediating learner participation in waste management included the SEC (teachers), the three cleaners who perform a major role in this school's waste management and the learners themselves. Teaching support materials and all the mediating tools are considered in sections 6.2.2.4 (a-f).

6.2.2.4(a) School Environmental Committee (SEC)

The SEC which was made up of four teachers (including the coordinator and the deputy head) is the major mediating tool in this school's waste management activities. This is the main school body that is tasked with identifying any environmental issue related to waste. It should develop solutions to waste issues and draws up rules and regulations governing waste management in the school (see extract 6.15). The committee is also tasked with allocation of roles in these activities. The coordinator, a Science teacher was very passionate about her responsibilities. She has a very warm and interactive relationship with learners, particularly those in the school environmental club with whom she regularly works. She had twenty six years of teaching experience and had a Primary School Diploma and Environmental Education was not covered in the programme. She however revealed that she had been exposed to some short in-service training in Environmental Education through workshops organised by the Ministry of Education and the Department of Environmental Affairs and had attended a couple of Environmental Education Association of Southern Africa (EEASA) conferences in the Southern African region. As an SEC coordinator she makes most of the decisions, ensures that they are implemented and monitors them as reflected in extract B6.3 and B6.6 below.

B6.6 Teacher on her role as SEC coordinator

> *T: I am the Science teacher. I am the one who teaches upper classes Science and Maths. As a Science teacher, you have to know issues that affect the environment more than any other. So as a Science teacher I became the coordinator, besides I really love what I am doing because I love the environment, I even attend a lot of workshops organized by the Department of Wildlife and I am a member of the Association of Environmental Clubs of Botswana* (AECB). *Even EEASA* [Environmental Education Association of Southern Africa]*, I have attended EEASA.*

> *T: That's how we saw the need to divide ourselves and have two teachers in classrooms, to take care and supervise classrooms and children's toilets so that they be cleaned from time to time, two teachers in the kitchen, they have to look at the kitchen to see to it that the kitchen and utensils used are clean and they should look whether the children's food is healthy and properly prepared because the Food Resources Dept can bring expired food and that would not be healthy for children. And I oversee everything (BTI1).*

Other internal tools that the SEC uses to mediate waste management include cleaning timetables and a litter pick-up rota (see plate B6.3). The rota is in the deputy head's

office for every teacher to refer to and for the deputy to assist the coordinator in monitoring that it is adhered to. However some teachers and learners have to be reminded from time to time when they do not meet their cleaning obligations. But generally there is significant effort by teachers to follow the rota owing to the diligent monitoring by the SEC coordinator.

6.2.2.4(b) General Duty Assistants (Cleaners)

The school had three General Duty Assistants (GDAs) or cleaners who were part of the school community but who also mediated waste management activities in the school. The three GDAs or cleaners who are employed by the city council are tasked with the duty of cleaning all classrooms and offices, school grounds, and toilets. They seem to do this diligently (except for toilets which are not regularly cleaned) as they work from morning until the late hours of the afternoon after the children have left cleaning classrooms. Learners complained that toilets were only cleaned once a week which at times resulted in them degenerating into an unusable state (see extract B6.4). The GDAs indicated that partly this state of toilets was caused by some learners who did not use toilets properly, messing them up. This resulted in some learners utilizing grass outside the toilets. It was for this reason, according to them, that at times they are not so keen to clean toilets as they felt it posed a health challenge for them. They felt children were not being properly taught to be responsible by denying them (children) opportunities to clean toilets, clear grass and clean classrooms themselves. The GDAs only cleared grass around offices and classrooms, but not beyond. They also complained of work overload.

Extract B6.7 Cleaner on learners' poor use of toilets

> *C2: We sweep and then move to clean toilets, and these children don't know how to use toilets at all they relieve themselves on the floor and having messed up the floor we have to clear the mess and then flood the floor to clear the mess and wash it outside. The job is heavy for us to be honest. And as you know cleaning toilets in that state is such a messy job. We have since for many years pleaded with the council to give us an allowance for the dirt that we handle but nothing positive has come out in response to our plea (BCI1)*

6.2.2.4(c) City Council

The city council was another important mediating tool in the school's waste management activities but it did not fulfil its obligatory mandate of providing adequate supplies of cleaning materials and technical maintenance of the school infrastructure. This obviously impacted on the quality and efficiency of waste management in the school. The council services cover the greater city area and this school is one of the many that it has to cater for in Gaborone. It also supplies material resources for waste management to the school. It seems unable to maintain toilets, an issue that children were concerned about as reflected in the following extracts by the learners and teachers.

Extract B6.8 Learners and teacher on Council's responsibility

> *R: I mean your bins, aren't they collected by council?*
> *L (In chorus): They are collected after a long time.*
> *L2: At times the come after maybe two weeks*
> *R: And then what happens in the meantime?*
> *L1: They are always full and the wind … they flow out… away all over the school*
> *...*
> *L2: Toilets also need to be fixed*
> *R: The toilets need to be fixed*
> *L6: And the leaking taps (BFL1.1)*
>
> *T: If it was not for the problem of blockage and drainage, and the council taking time to come and fix, I had also made a made a programme for them to ensure that the toilets are cleaned daily…. The challenges are these leakages, and as result toilets not flushing this and that not working and this results in children using any place, I mean they use any place in the school and this leaves the school in an unpleasant state, and this goes beyond our control because of these broken toilets…*
> *Otherwise if council was cooperating with us we would be working together very well. We wouldn't be having all these problems. At times we call them to come and trim trees but we end up getting ourselves people to come and do it at our* [school] *expense. And the grass as you can see, but they will come at their own time (BTI1).*

This failure by council to maintain toilets resulted in learners utilizing the grass outside toilets for their sanitary needs (see Section 6.2.2.2). There was also a shortage of cleaning materials (particularly bins, brooms, floor polish and toilet paper). But the situation in this school did not seem to be as dire as in School A. Sometimes the school was supplied with only four brooms for the whole school for one year. In that instance the school would raise funds to buy extra brooms especially the traditional grass brooms and candles and paraffin for making polish. In classrooms, boxes were used for

litter collection as there were no bins supplied for classrooms. The City Council was also responsible for employing casual labour to clear grass but it usually did so only once a year. The school, in collaboration with the Parents Teachers Association (PTA) (which was actively involved in supporting the school), sometimes employed labour to clear grass.

Extract B6.9 Teacher on assistance from PTA

R: So normally what do you do when you now find yourself stuck waiting for them?
T: We just wait until they come at their own time when they decide to come. But it's not healthy because when it has rained like this it's a problem. Even inside that grass it's not OK because there are certain creatures some of which might be dangerous to the kids. Some parents sometimes help through the Parents Teachers Association (PTA). The chairman is the counsellor of this ward. He always comes to check if there is a serious problem and they sometimes organize funds or ask some parents who are not working to come and clear grass (BTI1).

6.2.2.4(d) Environmental club

There was an environmental club which was member of the Association of Environmental Clubs of Botswana (AECB) (see Section 2.6.5) which the SEC coordinator worked closely with. Its 50 members were Standard 5-7 learners. The learners in the club mainly participate in waste management activities outside the school, mostly through litter pick-up campaigns. But they were also sometimes taken on tours around the country if funds were available.

Extract B6.10 Teacher's comments on Environmental club

T: We are part of the Association of Environmental Clubs of Botswana. So the children do a lot outside. We have gone to do litter campaigns, one at Old Naledi, one in Tlokweng. These children participate in environmental activities outside.
R: These children, you are referring to?
T: Environmental club, environmental club but we are challenged by funds as well. Our school has no money. When they are supposed to travel like they were supposed to travel to Kasane but there were no funds. Sometimes even environmental fairs we don't go because of that. And they would be sad because these children are good. They can do some really nice projects and win (BTI1.1)

The group of learner participants in this study were drawn from the club and it was the same group that the teacher worked with on litter campaigns which were sometimes extended to communities in the neighbourhood and further. Learners were taken on

annual field tours, but the year that this study was conducted they were financially constrained so they could not go, a problem they face regularly. Club membership was voluntary though limited to the senior class learners, who according to the teacher, were able to rationalise and take responsibility for environmental issues more than younger ones as indicated by this quote from the teacher.

Extract B6.11 Teacher on Club membership

> R: So this environmental club, which learners are in? I mean is it voluntary
> T: It is voluntary and mostly I have learners from the two classes, like the ones you are right now working with.
> R: You mean Standard 7s only?
> T: No even Standard 6 and 5. There are some children who are really interested in what we are doing from those classes as well. So we cannot stop them from joining because it is a learning exercise.
> R: What about the young ones, Standard 1, 2…
> T: Those ones we feel are still too young. So we don't include them as they still don't understand much, besides it would be a challenge when one takes them out for a long period of time like on trips and some of the projects like litter pick up campaigns are demanding. In this heat!! They require more mature children, you can imagine taking those small ones to Kasane, even their parents would not agree (BTI1).

6.2.2.4(e) Learners

Learners also constitute part of the tools used by the school to manage waste. Teachers see this as fulfilling their mandatory role in the participatory approach as demanded by the infusion policy as all learners are involved in litter pick-ups (see plate B6.3). Some teachers involve learners in classroom cleaning which according to school policy is not mandatory as the responsibility for cleaning lies clearly the GDAs or cleaners as instructed by the directive (see Section 2.6.5). Communication with the teacher coordinator revealed that the school is actually not even allowed to use learners in the cleaning of classrooms as reflected in this extract.

Extract B6.11: Teacher coordinator about the directive

> T: Children mma, no longer clean at all. It's a big offence. They don't clean they don't clear grass, they don't sweep classrooms, they don't mop. Because these women have been employed specifically for that, because if children start doing that they are taking those ladies' job which will mean that they end up with no job and they will relax knowing that after all the children will do the job for them. That is why we decided just to get them something to do, litter picking, and litter picking campaigns in the neighbourhood, that's

the only way we can have them at least contribute something because they have to learn that a clean environment is important. (BTI1)

DH: I found them… [children] *not cleaning. I think this* [directive] *was implemented around 2004-2005. But all these years children have been the ones doing the cleaning and the weeding (DHI1).*

However those teachers who involve their learners in any form of cleaning feel that this forms part of participatory teaching and learning which responds to the infusion policy. Previously children used to weed grass from the school grounds, clean classrooms and toilets but with the ministerial directive that bars them from doing these tasks, they no longer take part in most of these activities. Where children were still involved in any cleaning activities, which teachers believed fostered values of responsibility and served to meet the policy participatory imperative, learners saw themselves participating as cleaners which, according to them, should not have been the case.

Extract B6.12 Learner on their cleaning of classrooms

L5: But sometimes some classes do not do the cleaning like Mrs Gaone's class yet our teacher makes us do it.
R: Do you have a problem with doing it Kago?
L5: Yes, those ladies should do it, they do it for all classes, but we are made to clean ours sometimes (BFL1.1)

6.2.2.4(f) Teaching and Learning Support Materials (TLSM)

Learners had textbooks that they used alongside the notes that were given by teachers in class. Engaging learners in litter pick-ups is viewed as a practical activity that offers the opportunity for the lesson objectives to be put into practice. The teacher indicated that for her teaching aids she drew largely from textbooks, charts and flyers supplied by the Department of Education, the City Council or some NGOs. None were generated by learners.

The environmental topics that were covered included health and waste management at junior levels (Standards 1-4). The senior syllabus does not cover any issues related to waste so waste issues or any subject relating to waste management were not covered during lessons in the upper classes. Another way of meeting curricular objectives was through addressing children about issues relating to waste and health at assembly or in class. The teachers indicated that this knowledge was also applied by having children

wash their plates after eating, which was also considered a practical activity to meet this objective.

Extract B6.13: Teacher on teaching and learning support for learners

> *T: There are objectives when you go to the Science and Environmental Science syllabus which are based on the environment. Up to Std 4 its Environmental Science. It becomes Science upwards but in both cases the environment issues are there, even though waste is only covered in the lower primary syllabus specifically. Their textbook deals with waste issues. But we talk to them about these issues at assembly from time to time. It's only that children being children, you have to keep on reminding them about the advantages of living in a healthy environment … the dangers of living in a dirty environment, that their surroundings should always be clean… otherwise they forget and start littering again if you don't talk …These children? They are terrible when it comes to papers … If you can spend the whole day here, you will see after break or twelve. They tear papers, chips, packed food … they are just taught using their books and there are no projects that the children can do (BTI1).*

6.2.2.5 Rules

Rules mediating learners' participation in these waste management activities included both external (policies) and internal (school rules and practices). External policies, mainly the infusion policy (see Section 2.6.4) and the ministerial directive activities (see Section 2.6.5) have largely influenced internal rules that govern waste management in the school. In addition rules in the school had also been influenced by cultural and historical factors such as normalization (Ketlhoilwe, 2007a, 2007b) of environmental education activities whereby working towards a 'clean school' through classroom cleaning and litter pick-ups was perceived to meet the infusion policy objective. This largely impacted on internal policies of the school where rules were designed according to these policies within the prevailing culture.

Though learners were involved mainly in litter pick-ups and to a limited degree cleaning of classrooms, as classroom cleaning was not mandatory, rules were prescribed by the SEC and teachers. Teachers decided which children did the cleaning, and in this particular school, only the upper primary learners, Standards 5-7 cleaned, while lower primary classrooms were entirely cleaned by the GDAs. Another internal rule was one in which the SEC set up a tuck shop in the school in order to prevent children from buying from vendors outside the school. The learners were not entirely happy with this arrangement as it left them with a limited choice of items to buy. This resulted in some

children bringing their own food from home or waiting to buy from the vendors outside the school at lunch time. This is shown in this quote.

Extract B6.14 Teacher and learners' comments on the tuck-shop

T: If you can spend the whole day here, you will see after break or twelve . They tear papers, chips, packed food … they buy and so on.
R: At tea break they are allowed to go outside to buy?
T: No we decided to stop them as the environmental committee that they should not buy outside because of this problem where they bring a lot of litter from outside. We were just addressing them about it. We have a tuck-shop they can buy from in the school
R: There is a tuck-shop in school?
T: There is a mini-shop where we sell chips to the children. This has helped a lot as they don't go outside and bring all sorts of litter from outside.
R: Who decided that you should sell chips only?
T: Ijoo! We know how they love them. When they go outside they will only be going to buy them (BTI1).

L2: They buy chips from the tuck-shop at break and throw papers all over the place.
R: Oh so you have a tuck-shop? What does it sell?
L3: Yes, but they only sell chips.
L4: They only sell chips, chips, chips everyday that is why some children bring food from home (BFL2.1).

The SEC designed and issued rules and regulations and decided how they were instituted and implemented – see, for example, plate 6.7 and extract B6.6. The rest of the members of the community, particularly the GDAs and the learners have to adhere to these rules. All teachers, for example, were expected to supervise their classes during litter pick-ups.

6.2.2.6 Division of labour

External policies and specifically the ministerial directive mentioned in section 6.2.2.5 above largely influenced how roles and tasks were divided. Internal roles are determined by the school administration and largely by the SEC which allocates roles and tasks within all the waste management activities undertaken in the school (see plate B6.3 and the extract B6.15 below).

Extract B6.15 Roles based on directive

T: Classrooms are cleaned by the cleaning ladies who have been employed specifically to do the cleaning, but then because children do not clear the grass, and clean toilets, they

pick up litter and in classrooms it's the cleaning ladies because that is the job they have been employed to do, but at the same time we continue to monitor that, even in classrooms where some teachers choose to have children do a bit of cleaning, but they should continue picking up litter (BTI1).

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In this school since there were three GDAs for a school of about 598 learners, each GDA cleaned offices and toilets and seven classrooms, and the quality of their work was relatively good, except for the children's toilets which they didn't regularly clean as mentioned in Section 6.2.2.3, above. For Standard 5 to 7 classrooms, though teachers were expected to supervise learners who sometimes cleaned their classrooms, when it came to the actual cleaning, learners allocated duties and roles among themselves and managed to do a fairly good job.

Extract B6.16 Learners on role allocation

R: Who allocates you those duties, what I mean who decides that one will move the mat, the others…?
L4: Us, ourselves
L[chorus]: Ourselves (BFL1.1).

The school waste management activity system is summarised in Figure 6.2.

Tools are used to mediate learners' participation in waste management activities; SEC, teachers, Environmental club, cleaners, City council, learners, teaching and learning support materials, cleaning and litter rota in classes

Subjects: Learners

Object: Waste management activities that are evident in which learners are participating (litter pick-ups and cleaning of classrooms).
Outcomes: 1. clean school
2. learner participation

Rules	**Community**	**Division of labour**
Govt and school policies	598 learners	All learners pick up litter
Infusion policy and directive	19 Teachers	Std 5-7 learners clean
Traditional authority structures	3 GDAs	classrooms(sometimes)
'Clean schools' achieved	City context	GDAs clean all classrooms
through normalised		SEC identifies, monitors and supervises
litter pick-ups and		Teachers supervise
cleaning classrooms		Casual labour clearing grass

Figure 6.2: School B waste management activity system

6.2.3 Case study C

6.2.3.1 Subjects

The participants in this study were seven highly motivated and enthusiastic Standard 6 learners who were very keen to participate in the study. They formed the unit of analysis which was a group made up of three boys and four girls of an average age of 11 years (among which there was one 10 year old girl and one 15 year old boy). L1 was the youngest and very vocal, not at all shy to express her views. She was elected chairperson and was the most dominant in the group. L2 was another girl who also liked to express her points boldly. L3 was a reserved boy who was the group stabiliser - he thought through what he was saying and always made very useful contributions especially when there was conflict. I actually came to rely on him for resolving conflicts - it was important for the learners to take ownership in their mediation of conflicts without me appearing to impose my suggestions. L4 was a 15 year old boy who was very sickly and frail and looked much younger than his age. He was always coughing and he said

he had asthma. He did not speak a lot but contributed very constructively to the discussions. L5 was another very cheerful boy. His goats were always roaming outside the school because he drove them in this direction each morning when he came to school. L6 was another very pleasant girl who was also always very cheerful. L7 joined in the second workshop after asking her peers to join the group; L1 invited her and brought her to the next workshop and we agreed that she could join. This group was consistently very enthusiastic and eager to do their best in whatever they were doing. They really took the project seriously.

6.2.3.2 Community

The school community comprised of 146 learners, 9 teachers and one GDA who worked together on waste management in the school. The average ratio of teacher to learners is 1:20. This is a small school owing to the history of the development of the village which is explained next.

The school is located in a village which is in a typical Botswana rural area surrounded by fields and cattle posts and most families are very poor. The origin of this village can be traced back to the Botswana settlement pattern in which rural areas fall under the category of tribal lands, which together with cattle posts (commonly called *meraka*) and fields (known as *masimo*) make up some approximately 71% of the country (Botswana Government, 1993; Campbell, Main & Hitchcock, 2006). This small village was originally designated a cattle post area which over the years developed into a village settlement. This cattle post village is located in communal land that is designated as commercial under the Tribal Grazing Land Policy (Botswana Government, 1993). These are areas where local livestock owners who mostly work and reside in cities, towns and bigger villages, keep their livestock and own fields. The people therefore living in this village were/are still mostly cattle post labourers (or herdsmen), those who work in the fields and subsistence farmers. This was confirmed by the school head (see extract C6.1).

Extract C6.1: School head on the history of the village

> *H: Mma, you would have seen as you were driving here that this place is mainly fields and cattle posts. Actually this place was mainly cattle posts and fields for people from Mochudi. Some people would then spend more time here to care for their livestock and fields while most would be hired hands. The place then grew from that and as you know about government policy which says any settlement with more than....how many people is it by the way? It becomes gazetted as a village that is entitled to a school, clinic etc. That's*

212

how the school came to be. It was there to serve the children of those people…. Not much really except working their fields and a few with livestock, goats and cattle. As you can expect, it's a poor community, the families are very poor. Very few of them are employed in Mochudi. If you move around you will find that most of them work their fields and they generally spend time drinking traditional brews. They really have nothing much to do (CHI1).

These people usually include female-headed households, people who do not have jobs or sources of income, the infirm and the elderly (Campbell et al., 2006; Osei-Hwedie, 2004). Though poverty in Botswana has steadily declined over time, according to the Botswana system's socio-economic indices, several groups of people in these areas are still living at or below the Poverty Datum Line (PDL) (Campbell et al., 2006). The area also faces challenges of people living with HIV/AIDS. Many children live with their grandparents - they are either orphans or their parents work in towns or the next big village of Mochudi. Three of the participants in this group, stayed with their grandparents. The village is characterised by drinking spots in a lot of households. The typical livelihood of villagers is illustrated in the learner's drawing and photos in plate C6.1 and C6.2.

Plate C6.1: Livelihoods in the village (learner drawing)

Plate C6.2 Livelihoods in the village

The school is isolated from the main village whose homesteads are sparsely scattered. The school falls under the local district administration which is responsible for supplying the school with all the material resources and the general technical maintenance of the school infrastructure. The school sometimes had to deal with an acute shortage of resources required for waste management but since the school is small, it managed to operate with the limited resources available. There are no litter bins. The single 50 litre bin which was in front of the school office block only serviced the school offices. Because the District Council hardly, if ever, collected litter, the school had dug a pit for litter and when it got full the litter was burnt and learners said that this contributed to global warming (see extract C6.2 & plate C6.3).

Extract C6.2 Learners on global warming

> *L5: Or we dig more pits*
> *R: Then what to do you do when they also fill up since you said you don't want to burn litter?*
> *L2: Yes, we don't want to burn the litter because we are increasing air pollution and causing global warming (CFL2.1).*

Plate C6.3: A full litter pit

The school buildings were modern and very well maintained. There was a lot of overgrown grass and bushes. The area in front of all the buildings is clear of grass and generally looks very clean in terms of litter except for a few papers from the children's class activities. There was a feeding scheme in the school and some of the parents were employed by the Council through a drought relief project to come and stamp grain for the children's porridge. Once a week the children were supplied with milk and it was on such a day that there would be a slight increase in the volume of litter as the empty cartons were thrown around the school grounds. Goats from the village regularly come into the school compound to graze on the overgrown grass when the gate is left open.

There were two types of toilets, pit latrines which were being used by children at the time of the study and water system toilets which were locked and which had not been in use for years as they were non-functional. The grass and bushes around these toilets had grown so high that they were not easily accessible (see plate 6.4). This was a concern to both teachers and learners who felt it was dangerous as there had been snakes sighted in the school grounds.

Plate C6.4: Locked water system or flush toilets and pit latrines

6.2.3.3 Object of Activity

Teachers, learners and the GDA could be seen as members of the community acting on a shared object of waste management. To achieve the main object of waste management, the school is involved in picking up litter, classroom cleaning, weeding of the school grounds and toilet cleaning. In spite of the low level of litter generation in the school, picking up litter and classroom cleaning still formed the priority waste management activity that the school engaged in, and where learners were actively involved as seen in plate C6.5.

Plate C6.5: Clean school ground with barely any litter

The main focus of the school's waste management is on litter which does not seem to constitute a major problem. This area formed the main object of the school's waste management to which the children's participation was directed in order to embrace/incorporate the participatory approach as demanded by the infusion policy (see Section 2.6.4) as illustrated by the teacher and head in the following extracts.

Extract C6.3: Teacher and head's comments on litter as the main focus in the school

> *T: I believe these days what we do in class is driven by objectives, objectives in the syllabus. My assumption is that they do environmental education when these objectives are being addressed in class and they apply what they learn in class when they do all these things….making sure that they leave in a clean environment, that is not littered… which is not dirty…(CTI1).*
>
> *H: The main challenge is litter, getting these children to keep their school clean by picking up litter without being told. But hey, children, as you know them, you always have to push them. They should know that ... what do they say in English?* [smiles] *Cleanliness is Godliness* [laughs] *(CHI1)*

The children were not happy with the state of their toilets generally. The reason cited for the non-functional state of the flush toilets was that the water pipes were damaged. Also the children used inappropriate material such as book covers in place of toilet paper, leading to the blockage of most of these toilets. The pit latrines were not regularly cleaned. There was a lot of graffiti specifically in the girls' toilets. Most of the time, children, especially boys utilized the grass around the toilets for their sanitary needs. Each class was allocated one toilet roll once a week which remained on the teacher's table until the children needed it, but it usually got used up quickly and some children seemed not to be happy with this arrangement.

Plate C6.6 and the following extracts from two focus group discussions illustrate the school's focus on litter and the learners' feelings about the state of toilets.

Plate C6.6: Learners' concern about toilet sanitation

Extract C6.4 Learner's concern about toilets

L1: Our school is always clean. There are not many litters in our school.
L2: Yes, because every Friday we pick up litters. Our teachers teach us to pick litters.
R: Every Friday you pick up litter? What do you like about picking litter?
L1: Because the school I was at in the city, they were not picking up litters. It was dirty, schools in the city are dirty. They have many litters.
R: What is it that you don't like about your school?
….
L3: I am worried about dirty toilets and children not using toilets properly...The toilets are dirty….
L4: …She [cleaner] *cleans them sometimes, but sometimes she doesn't clean them properly because she cleans maybe once a month*
L3: There are other toilets, the 'English ones' [flushing toilets] *but they are not being used because they are not working. So we wish they could be fixed and teachers would show and teach children how to use them because when the children finish using them they would not know how to flush them (CFLI1.1).*
…
L5: It's [toilet paper] *kept by the teacher on his/her table and we take it from there each time we go to the toilet.*
L7: [Smiles shyly] *And depending on the amount you take, everybody knows what you are going to do*
L: [All laugh]
R: Do you have a problem with that?
L: Yes (CFLI2.1)

218

This they felt needed more urgent attention but it had not been brought to the teachers' attention. The teachers were also unaware of the children's concern. The teacher coordinator in this school was not even aware of the state of the children's toilets and exhibited minimum interest in that direction. This is expressed in the next extract from the teacher.

Extract C6.5 Teacher's unawareness of the toilet situation

R: So what are they using now?
T: They are using the pit latrines
R: And how are they?
T: I really don't know because normally they are cleaned by the lady who is a cleaner, I'm not sure about their state, because I never go there. To be honest with you it's one area I don't pay much attention on them because I am very busy, there is a lot of work that we do in the school which require you to concentrate on, like I am in all the committees, like, which organise for environmental fairs and other duties, I am really busy. But as far as I know they are being cleaned (CTI1).

6.2.3.4 Mediating tools used in waste management activities

Rules that seemed to influence mediation of learners' participation in waste management activities included both external government policies (see Sections 2.6.4 & 2.6.5) and internal school policies, structures and practices, which I outline in the next sections.

6.2.3.4(a) School Environmental Committee (SEC)

The SEC comprising three teachers including the coordinator who was a Science teacher who had been teaching for eight years, was pivotal in the mediation of the children's participation in waste management activities in this school. The coordinator teaches Environmental Science and Science and this is why he was chosen as the SEC coordinator as reflected in this extract.

Extract C6.6 Teachers' comments on the constitution of the committee

T: To be honest these are committees that are formed by teachers. Like myself I am really not learned in issues of the environment, I haven't really had any training to do with such issues. But because I am a Science teacher I have to be in the committee. But I am also interested in environmental issues. The other two teachers are just people who had an interest and decided to form a committee. We are three in the committee. Not that we

have a formal responsibility which can say we are really good at when it comes to expertise in the area and look at the needs of the school (CTI1).

Like the other two teachers in Schools A and B, he held a Primary School Diploma and as the extract above reveals, had never been exposed to Environmental Education training. He, however, seemed to be engaged in a number of other external official school duties such as government departments, NGOs and organising committees for the Environmental Fairs. This he said gave him the little experience he had in Environmental Education. However, his involvement in these activities gave him very limited time to attend to waste management issues of the school (see extract C6.5). All decisions pertaining to identification of waste management issues, rule governing the activities and role allocation was supposed to be done by this committee under the coordination of the coordinator. However given his busy schedule, his colleagues in the committee and class teachers assumed a more active role later in the children's activities (see Chapter 9).

While there was an obvious warm and 'family' interactive relationship that seemed to exist between the children and their teachers, all decisions were however made without consultation and collaboration with children. The committee identified litter as the main waste challenge that the school faces, hence this is the activity in which children participate (see extract C6.3). Compared to the other two schools there seemed to be more interaction between teachers and children. Teachers were more accessible to children and children seemed to feel more free around their teachers especially during the second phase of the study when learners were undertaking their activities (see Chapter 9).

6.2.3.4(b) The General Duty assistant (Cleaner)

The one GDA or cleaner is a major tool in the waste management activity system. She was employed by the District Council to take on duties which were previously done by children (see Section 2.6.4). Though she was supposed to be cleaning all classrooms, she was assigned to clean only Standard 1 and 2 classrooms, offices, school grounds, and toilets. Due to her work overload upper classes had to assist by cleaning their own classrooms. She was also assigned to other side duties like going to post and collect mail from Mochudi, the next big village which is about 20kms away twice a week. She played the role of messenger as well. Because of the work overload, she claimed that

she cleaned latrines once a week or once a fortnight (see extract C6.7). Learners indicated that latrines are cleaned sometimes only once a month (see extract C6.4).

Extract C6.7: Cleaner's comments on her duties

> *C: Toilets, I clean on Wednesdays, because on Tuesday…. I collect mail, I collect mail twice a week. Tuesdays and Thursdays.*
> *R: Where do you collect the mail from?*
> *C: In Mochudi*
> *R: And toilets, children's toilets, you clean only on Wednesdays?*
> *C: Yes, including the ones in offices. But sometimes I get busy and skip a week and clean them the other Wednesday.*
> *…*
> *C: Yes because during the week I have got a lot of work and I have divided my work, on Monday completely I cannot do any other work because that office is big and I have to sweep and mop all of it (CCI1).*

6.2.3.4(c) District Council

The District Council is supposed to provide maintenance and resources to facilitate the school's waste management activities. It, however, seemed unable to do this. This posed a challenge for the school in terms of efficiently carrying out the stipulated activities. It failed to maintain toilets and clear grass which resulted in sanitation challenges (see plate C6.4) and learners being used to assist the GDA in her cleaning duties (*6.2.3.4(e)).* Council is responsible for litter collection, maintenance of the school infrastructure and supply of all the required material resources for carrying out these activities. Sometimes classes had to share brooms and children were made to contribute towards the buying of candles and paraffin to make floor polish. They were also asked to bring their old worn out clothes from home for cleaning. This was challenging as these children came from a community which is largely poor (see Section 6.2.3.2).

6.2.3.4(d) Environmental club – Environmental subject fairs

The school had an environmental club which was formed under the auspices of the Association of Environmental Clubs of Botswana (AECB) (see Section 2.8.3). Through this club children are involved in environmental debates, drama and essay competitions with other schools. Membership of the club was however determined by teachers and the selection was based on the learners' talents and abilities in areas of drama, singing,

debating, and poetic skills. The children sometimes competed with neighbouring schools and annually in environmental fairs at the District level. The purpose, according to the teacher, was partly to make learners aware of environmental issues. According to both learners and teachers, the purpose of their participation however seemed to be placed on winning of prizes more than on learning from these competitions.

Extract C6.8 Learners and teacher on subject fairs

> *R: What is that, subject fair?*
> *L2: It's where the environmental* (club) *children, we go and compete with other schools, we do drama, songs and debates, poems or anything that you are good at.*
> *R: Oh! Who goes to these fairs?*
> *L2: Those who go to compete. Who are good in drama and poetry and singing and debate.*
> *R: Who are the members of this club?*
> *L6: It's those who are good in something that they can do, like drama, singing, debate...*
> *R: Then how are those who go to these fairs selected?*
> *L3: It's the teachers who select and they select only those who are good (talented) in something to be members.*
> *L1: Some of us in the club can debate... about...and we sometimes win prizes but last year we did not win (disappointed) because we had not practised enough. But this year... we should win!!! (CFL2.1).*
>
> *T: Different activities... drama, poetry, eeh, some conversations and competitions but it should be a learning environment for them rather than competition (CTI1).*

6.2.3.4(e) Learners

Learners picked up litter and cleaned classrooms. Cleaning of classrooms was carried out by learners from Standards 3 to 7 with teachers supervising Standards 3 to 5 and Standards 6 and 7 working mostly independently. Children were cleaning classrooms in order to assist the cleaner who was overburdened with work. They were normally able to execute their duties diligently albeit with lack of cooperation at times from their peers but it was not a major issue. Litter pick-ups and clearing of grass were also used as forms of punishment for learners who came late to school. The teachers were generally very supportive of learners when it came to providing assistance to them in terms of supervision and motivating learners in their cleaning activities.

Extract C6.9 Learners on their teachers' support

> *L3: I like our school because … our teachers love us and help us to learn. They want us to pass, they don't want us to fail.*
> *L4: I like my school because the teachers that teach us, they love us, help us with everything we do in school (CFL1.1).*

6.2.3.4(f) Pedagogical Practices

While waste management as a learning area is covered specifically in Environmental Science for lower primary and pollution in the Science syllabus at upper primary, in terms of the impact of waste to the environment, children repeatedly made reference to pollution and global warming, seemingly without fully understanding the concept when probed further (see extract C6.2) as shown in the next quote from learners.

Extract C6.10 Learners on global warming upon being probed

> *R: Which is a very good point for you to dig pits because you are addressing the problem of lack of bins, but the burning of litter which you said causes air pollution and global warming. What is that by the way, global warming?*
> *L2: It's eeh when the environment gets hot… and*
> *L5: It means when you produce a lot of smoke trees around are going to be affected and die*
> *R: Kitso. What is global warming?*
> *L7: (Smiles) I always hear our teacher say global warming, global warming, and it is…*
> *L2: Yes he said when the environment gets hot…*
> *R: Okay, why don't you go and ask your teacher again to explain what it means (CFL2.1).*

Teaching and learning support materials (TLSMs) which included books supplied by the District Council were used to aid and supplement the teaching and learning of waste management at lower primary. The classroom walls were generally bare, with no posters or charts. It seemed the teachers' didactic pedagogical practices that are characteristic of most Botswana schools still prevailed (see Sections 1.6 &1.8.2). There was no evidence even at lower primary where waste management is covered, of any application in the form of practical activities such as recycling projects as recommended in the syllabus. Teachers, however, indicated that the knowledge acquired in the classroom was applied through the participation of learners in picking up of litter, classroom cleaning and involvement in environmental fairs as reflected in extract C6.3 and C6.8 by both the teacher and learners. These activities, according to him should be able to equip learners with the appropriate participatory skills to deal with real life

environmental challenges that they meet beyond the classroom as corroborated in the same extract by the school head.

6.2.3.5 Rules

Internal rules that govern waste management activities were generally informed by both the infusion policy and ministerial directive (see Sections 2.6.4, 2.6.5 & 6.2.3.4) and some cultural practices that have historically evolved and become normalised (Ketlhoilwe, 2007) in which learners were seen as participants in the school's environmental education programme that works towards a 'clean school'. Parents, according to the school head also encouraged the teachers to engage children in these cleaning activities as they viewed this as a way of equipping their children with life skills, even if it meant using picking up litter or clearing of grass as a form of punishment. This is revealed in the next quote from the school head.

Extract C6.11: Head on parents' support of children to clean

> *H: We really don't have many challenges. Parents in villages are not like town parents who will say their children should not clean if anything they encourage us to make their children to work as is expected in the Tswana culture otherwise we will be depriving them of skills which they have to be taught while they are small. If they sweep at home they should also sweep at school. They were really supportive and were caught up in the same dilemma with us that if now there is this new policy, what is really expected to be achieved by it. Like even if I punish a child for late coming, there is no parent that can come and complain about their child being punished. They understand that we do it out of love in order to build that child to be a better person tomorrow...(CHI1)*

In this school teachers decided which category of children did the cleaning and picking up of litter and how they had to do it. The cleaning exercise by learners in each class was done on specific days of the week according to the instructions prescribed by the SEC and the teachers, but the rule was not regularly adhered to since there was barely any litter around the school grounds.

Extract C6.12: School head on role of SEC

> *H: It is a committee that is responsible for issues to do with the environment. Mr Saone is the one who is responsible for it because he is the Science teacher and in Science that is where they deal with issues of the environment. But there are other teachers who help him.*
> *R: What do they do?*

H: They identify issues which need attention and suggest how they can be solved and they work with other teachers to see things that can be done to address any problems that they identify accordingly (CHI1).

Teachers instructed children to pick litter up in the mornings as soon as they came to school or after school during cleaning time, especially those who came late, as a form of punishment.

6.2.3.6 Division of Labour (Roles)

The Ministerial directive (see Section 2.6.5) which prohibited learners from undertaking certain activities had to a greater degree determined how the division of labour in the waste management activities was instituted. Internal roles were determined by the school administration and the SEC.

In the past children used to be responsible for all cleaning duties, but these duties had been officially shifted to the GDA. Teachers and the GDA also supervised children's cleaning. Standard 5, 6 and 7 children mostly worked independently and did a fairly good job of the cleaning. There were class monitors selected by teachers but their roles were not clear or at best limited to keeping an eye on noise makers in the absence of a teacher. The division of labour within this school community, responsibilities, tasks and power were largely not negotiated with children as roles were clearly stipulated and determined largely by the SEC and teachers. Primarily the role of learners, at the most basic level, was to act as instructed by the teachers and to respond as expected.

Figure 6.3 shows School C's waste management activity system at an operational level.

Tools used to mediate learner participation in waste management activities, school environmental committee (SEC), cleaner, district council and classrooms and litter rota

Subject: Learners

Object: Waste management activities evident in which learners are participating; litter pick-up and cleaning

Outcomes: 1. Learner participation
2. Clean school

Rules	**Community**	**Division of labour**
Govt and school policies	146 learners	SEC identifies issues, allocates roles &
Infusion policy, directive	9 Teachers	monitors
Traditional authority structures	1 GDA	Teachers and GDA supervise
Clean school achieved	rural context	All children pick up litter
through normalised		and clean classrooms
picking up of litter		
and classroom cleaning		GDA cleans toilets, classrooms, offices,
by children		and surroundings, collects mail
		Casual labour and GDA clearing grass

Figure 6.3: School waste management activity system

6.3 Chapter summary

This chapter presented the findings of the analyses of the data from categories arising from both empirical data and from second generation CHAT, which enabled an understanding of waste management activity systems for the three schools. The Eight-Step-Model adapted from Mwanza (2002) was used to structure reporting on the activity systems. It enabled me to present a simplified systematic illustration of the process of identifying and labelling constitutive components of the activity systems. Following the model also helped to focus the analysis "by prompting the researcher to identify the '*activity of interest*'" (p.129) from the various waste management activities that were taking place within each school.

This analytical framework allowed me to construct historical narratives and identify cultural tools used to mediate learner participation, rules governing learner participation in the waste management activities, allocation of roles in the school community. I was also able to identify the object of activity for the subjects, mediating tools and other components in the activity system. Furthermore, the presentation of the data and

empirical findings in this chapter demonstrated the strength of the activity system model as a methodological and analysis tool. The CHAT model enabled me to understand participation of learners in the activity as the complex result of tool mediated interactions, rather than the material activity that is summarised at the end of each case. This tool also helped me to understand how culturally and historically formed views of environmental education in schools created contradictions and tensions, which are highlighted and discussed in more depth in the next chapter.

CHAPTER 7: CONTRADICTIONS AND TENSIONS AFFECTING LEARNER PARTICIPATION IN SCHOOL WASTE MANAGEMENT ACTIVITY SYSTEMS

7.1 Introduction

Chapter 6 provided a comprehensive overview of the three case studies of school waste management activity systems as units of analysis. In this chapter, I provide a micro-analysis of the waste management activities to reveal the dynamics in the activity systems. This shows how mediation of learner participation shifted across the different contexts of the activity systems. It also illustrates how this leads to a shift in how the mediating tools seek to achieve the object of the activity system, leading to shifts at all levels of the system as a result of inner contradictions and tensions (see Section 4.2.3.3 and 5.7.1). I use Engeström's (1987) model of activity systems as an analytical tool for identifying those contradictions and tensions that characterized learner participation. The aim was to identify those contradictions and tensions that were present, firstly in all the three schools' waste management activity systems and secondly, those that were peculiar to each school. These tensions were to be later used as a framework for more focused analyses of specific interactions that characterised learner participation on the basis of a broader view of participation (Uzzell, 1999; Hart, 1992, 1997; Graham et al., 2006; Stevenson, 2007; O'Donoghue, 1999; Rahnema, 1992), within an action competence framework as described in section 4.5 and which will be the focus of Chapter 9.

7.2 From case studies to contradictions and tensions in activity systems

Revealing the activity systems in the case studies (see Chapter 6) and identifying contradictions and tensions within them proved challenging as there are multiple activity systems that can emerge from the rich body of data of the schools' waste management activity systems and learners' participate. Yamagata-Lynch (2003) observed that:

> Drawing activity systems from a rich body of data is a novel and not necessarily straightforward analysis technique. There are many aspects of this process that are difficult for researchers to share in their study write-up because it is not entirely objective. As the researcher vicariously experiences the study participants' activities over time, a personal involvement develops between the researcher and the study participants, which then affects the data analysis. Although this personal involvement could be regarded as a

loss of objectivity, without it the researcher would not be able to share his or her rich understanding and interpretations of the data set (p.106).

What she cautions against here is a validity threat affecting the analysis and interpretation of the data which could emanate from the researcher's biased selection of activity systems and identification of contradictions and tensions that appeal to her. In this study I had to pay particular attention to emerging contradictions and tensions as identified by the participants and those that I, as the researcher, was able to identify from my interpretation of the data. The activity systems portrayed in Chapter 6 were an attempt to provide the context, descriptions of the issues and a comprehensive picture of learner participation in the school waste management activity systems. The activity system summaries at the end of each case study describe the macro-social level. These summaries have been developed by reading and rereading the data and coding and categorizing the data according to Mwanza's (2002) eight-step model (see Sections 4.3, 5.7.1 & Appendix A17.1, A17.3 & A17.5). I identified contradictions and tensions that emerged from the micro activity systems and analysed these within the history of the broader context (see Chapters 1 & 2), local context (see Chapter 6) and the concept of participation discussed in Chapter 3. This, as recommended by Yamagata-Lynch (2003) meant that I had to make several meticulous revisions of the narratives in the case stories reported in Chapter 6 in order to highlight sufficient components of the activity systems. I also needed to identify the "historical interpersonal interactions" (p. 107) between participants and the prevailing mediating tools, rules guiding the activities and how roles were allocated. This meant that identifying tensions was an "iterative process that involved multiple stages of revisions rather than a one-time linear process" (ibid.).

7.2.1 Identifying contradictions and tensions within activity systems

In identifying contradictions and tensions that emerged within and between the activity systems, it was important, as Yamagata-Lynch (2003, p.104) recommends, for me to "shift the focus of the examination to understanding the motive–goal–instrumental conditions rather than the observable individual behaviours and use that information to understand the collective meaning-making process" of the components in the activity system. In this analysis I had to identify the contradictions and tensions linked to how the object of participation was selected and mediated. I also had to explore how the rules mediating participation were set and designed, how roles were allocated, who

made decisions on what actions should be undertaken and who evaluated activities across and within schools. It was not, however, possible to analyse the emerging contradictions and tensions within and between the different components of the activity systems in a clearly distinct separate approach without conflating some aspects of the various components. This is because the activity system components are inextricably linked to each other. For example, a contradiction arising between the rules and mediating tools cannot be analysed outside the allocation of roles. I first highlight and analyse contradictions and tensions common to all three schools and then those that were peculiar to specific schools.

7.3 Common contradictions and tensions across case schools

This section discusses contradictions and tensions that were common across the three schools. The discussion focuses on the emerging contradictions arising in the school waste management activity systems to establish what objects the learners and mediation tools (e.g. teachers) were acting on in all the three contexts. I also consider the rules that patterned these objects and the form of participation that learners were taking in these activities, how this participation was mediated to achieve the objects as well as their roles in these activities. The basis for this is that, while on a macro social and cultural level, the school might appear to be working on the same object, internal to the activity system there is "a complex and often messy network of tool mediated human relationships that must be explored" (Russell, 2002, p. 73). Specific personal objects that each component of the activity system might have been working on need to be viewed against the "social and cultural practices which people bring to their uses of the tools they [seemingly] share" (ibid.). Before beginning the general discussion of the contradictions that were surfaced in these activity systems, it should be noted that the first contradiction is the major one: it is the contradiction between the policy imperative and its interpretation by teachers, who were the main mediating tools in the schools waste management activity systems. This contradiction largely arises from the history of the infusion policy interpretation by teachers. Through normalizing strategies inscribed by policy implementation documents, teachers created new technologies of power in schools and other strategies of self governance in order to respond to the policy imperative (see Sections 1.6 & 2.6.4). This contradiction manifested itself at various levels in the different schools' waste management activity systems.

7.3.1 Contradiction between infusion policy imperative and its interpretation by teachers

This is a secondary contradiction (see Section 4.2.3.3) between the infusion policy imperative as a rule and its interpretation by teachers as mediating tools. The infusion policy requires schools to use learner-centred participatory approaches that benefit learners to accommodate their environmental needs and interests (see Section 2.6.4). Figure 7.1 illustrates the activity system that the teachers occupied in the school waste management systems and extracts 7.1, 7.2, 7.3 & plate B6.3 suggest a developing contradiction (represented by double headed arrows) between the policy imperative of developing meaningful participation for learners and the teachers' desire to meet this imperative by creating a clean school.

(Government Policy)
Rule producing activity svstem

Teachers' (**as mediating tools**) interpretation and representation of participation resulting in normalised activities

Subjects:
Teachers

Object
Learner participation

Anticipated
Outcome
Clean school

Policy imperative (**rule**) for learner-centred participatory approaches to learner participation in environmental education

Community
Teachers,
Learners,
Cleaners, etc

Teachers
ascribing roles
to learners

Figure 7.1: Secondary contradiction between policy imperative and teachers' interpretation of the policy

Extract 7.1: Interview with teacher (T) who is a member of SEC from School C

T: I believe these days what we do in class is driven by objectives, objectives in the syllabus. My assumption is that they do environmental education when these objectives are being addressed in class and they apply what they learn in class when they do all

*these things….making sure that they live in a clean environment, that is not littered…
which is not dirty…(CTI1)*

In relation to the extract above, it is worth noting that the syllabus objectives draw from
the infusion policy (see Section 2.6.4).

**Extract 7.2:   Interview with teacher (T) who is the coordinator of the school
environmental committee from School B**

> *R: How do your children participate in this waste management project you are saying you
> came up with?*
> *T: Like I said we came up with this project after discussing it at length and said with this
> problem of litter and said we should do something as a committee for children to learn that
> it is not good to live in dirty surroundings and that when we said let us make a cleaning
> rota and this cleaning rota divides classes and each class having a day allocated to them
> for picking litter and how they do it as well as cleaning the portion allocated to them, so
> that every child should participate. No child is left out. The cleaning rota, I draw it* [up] *and
> give it to them and I display it in the office. (BTI1)*

**Extract 7.3: Interview with teacher (T) who is the coordinator of the school environmental
committee from School A**

> *T: We schedule them, we schedule them according to their classes. This week, these
> ones will be picking up the litter and next week another group will be picking up the litter
> just like that. But normally in the mornings, the children who come late are the ones who
> move around picking litter. Before, our children used to clean the toilets and when they
> cleaned the toilets, when they cleaned the toilets they were also involved in the picking up
> of the litter (ATI1).*

Driven by the need to implement the objective of making the participatory approach part
of the infusion of environmental education in the school curriculum as prescribed by the
infusion policy, teachers had developed activities and initiatives to involve learners in
waste management activities that seemed to have "a direct, perceived benefit to the
learners" (Botswana Government, 2007, p. 9). Within this approach it was expected that
learners should participate in environmental education processes. On a micro level it
became evident that schools had decided to use waste management activities for
incorporating the participation of learners in environmental education. These seemed to
form the central component of environmental education processes in the schools. The
main waste management activities in schools were picking up of litter, toilet and
classroom cleaning and clearing of grass in the school premises (Chapter 6). Learners
were mainly participating in the picking up of litter and classroom cleaning. This focus
could be seen as part of a comprehensive environmental education programme that
addressed waste generation at source geared towards reducing waste in the schools to

create clean schools through normalised strategies (see Section 1.6). These normalizing strategies are a result of what Ketlhoilwe (2007a) views as an influence of the technologies of power in the policy implementation documents (environmental guidelines and syllabuses, see Section 2.6.4) which require teachers to interpret the role of the environmental education in schools as the development of

> desirable attitudes and behavioural patterns. The aim of such material processes is to encourage protective, preserving, and nurturing interacting manners with the environment (p. 197).

This is contrary to the new discourses of participation within the sustainability discourses that SADC-REEP ESD participatory approaches, and the infusion policy which is informed by these discourses, envisage.

7.3.2 Primary contradiction between policy imperative and ministerial directive[6]

A primary contradiction emerged in all the three schools, between the infusion policy imperative (see Section 2.6.4) and the introduction of a new tool: the ministerial directive which barred learners from undertaking certain cleaning activities, in particular weeding, and schools have also now added toilet cleaning (see Section 2.6.5, Chapter 6 & Appendix A10). This contradiction is represented in Figure 7.2 and emphasized in the subsequent extracts, 7.2 and 7.3 as revealed in School A and B teachers' remarks and School C head's comments.

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[6] Note that this contradiction is only at school level not at policy level

Government policies **Rule** producing activity systems

Teachers' (**as mediating tools**) interpretation and representation of infusion policy participation directive resulting in action paralysis as cleaners are not coping with cleaning

Teacher activity system

Subjects: Learners

Rules Policy & directive

Object Learner participation ➡️ Anticipated **outcome** Clean school

Policy imperative (**rule**) of learner-centred participatory approach to learning and directive (**rule**) that bars learners from cleaning learners

Community Teachers, Learners, Cleaners, etc

Teachers **ascribing roles** to learners

Figure 7.2: Primary contradiction between policy imperative and teachers' interpretation of the ministerial directive

Extract 7.4: School A teacher's remark on limitation created by the directive

T3: Waii, [expression of resignation] *they* [council] *have knocked off, there is nowhere you can see or hear about them when it comes to surroundings. Before mma! these children were the ones who were doing all the cleaning, but now as we speak, and as you can see the way things are and since the policy came into being, there should be people employed to clean but as you can see. After we were told emphatically that children should not clean. Now everything has stopped tsii!! tsii!...I mean tsii!* [This is a description of something coming to a halt like car brakes] *You can see for yourself how dirty the school is. Wherever you throw your eyes its dirt, dirt just all over the place (ATI1.T3)*

Extract 7.5: Teacher coordinator at School B about the directive

T: Children mma, no longer clean at all. It's a big offence. They don't clean they don't clear grass, they don't sweep classrooms, they don't mop. Because these women have been employed specifically for that, because if children start doing that they are taking those ladies' job which will mean that they end up with no job and they will relax knowing that after all the children will do the job for them. That is why we decided just to get them something to do, litter picking, and litter picking campaigns in the neighbourhood, that's

the only way we can have them at least contribute something because they have to learn that a clean environment is important. (BTI1)

Extract 7.6: School C head (H)'s dilemma in response to the ministerial directive

H:…we don't really feel good about it [directive] *because that's* [children's cleaning] *part of learning. Besides keeping the school clean which is important, as well the child has to be responsible because by so doing you are trying to build the child to be divergent, without them expecting things to be done for them all the time. The child has to know that if he goes out there and comes across a can he has to pick it, or if he doesn't clear grass, he can be bitten by a snake as you can see how tall that grass is. But now our hands are tied because if now they say we should not use children to do all these things how can they learn to be responsible… (CHI1).*

Within the last extract's understanding, the school seems to place value on the learners' potential "for what they will grow up to be but are devalued in terms of their present perspective and experiences" (Greene & Hill, 2006, p.3). This is a view consistent with developmental psychology's tendency to see children as less than adult and as people in the making rather that competent and complete social actors in their current contexts (ibid.). This, according to Carlsson and Jensen (2006), is to see the school as a laboratory where children are perceived not as current citizens but rather as citizens of tomorrow "who have to learn good values and habits" (p.245), in this case responsibility and cleanliness.

This contradiction has impacted on learners' participation in waste management activities in the schools as far as the school's desire to meet the policy objective is concerned. At policy level there is no contradiction or conflicting objective but at practice level, the mediating tools (teachers) interpreted policy to suit their perceived outcome. While there seems to be no obvious tension between the curriculum motive arising from the infusion policy and the directive, one begins to note a primary contradiction emerging between the infusion policy imperative to have learners participate in environmental education and the directive which according to teachers limits learners' participation in waste management activities that previously kept the school clean.

7.3.3 Contradiction between school culture and the object of participation – SEC as decision making body

This secondary contradiction is between the school culture of having the SEC making decisions and the object of having learners participate in decision making as envisaged

in the policy framework (see Sections 3.4 & 2.6.4). The existence of the School Environmental Committee (SEC) in the school was probably one of the greatest sources of contradictions that emerged in the case studies. The SEC consisted of teachers only and it was tasked with identifying waste management issues and choosing actions to address these issues in which children could participate. The contradiction is illustrated in Figure 7.3 and extracts that follow.

SEC (**as mediating tools**)
for decision making on
waste management issues
in the schools

Subjects
Learners

Object
Learner participation

Anticipated
Outcome
Clean school

School culture (**rule**) of
having the SEC as the
sole decision making
body on waste
management issues
without involving learners
in decision making.

Community
Teachers,
Learners,
Cleaners, etc

Teachers
ascribing roles
to learners

Figure 7.3: Secondary contradiction between school culture (rule) and object of learner participation

The contradiction, illustrated by extracts A6.7, B6.3 and C6.6, manifests itself as a tension between the school rule in which the school environmental committee (SEC) makes all decisions in waste management and the object of learners participating in decision making as conceptualised in the policy (see Section 2.6.4 & 3.4). The contradiction played itself out in the manner in which the SEC prescribed the rules and regulations that governed waste management activities and the position that learners occupied in these activities without being involved in the decision making process and without consideration of how this had limited learner participation.

At a micro level in the day to day participation in waste management activities the teachers in the school environmental committees therefore made their own decisions on how children should participate in these activities which created constraints (Engeström, 1999). These decisions created constraints in that they generally discouraged children from exploring other creative ways in which they could positively participate in these activities and from understanding their purpose for doing this in line with the policy imperative. It became clear that the rules within these school communities, responsibilities, tasks and power were not negotiated with learners, as rules were clearly stipulated and determined largely by the SEC and teachers in general. Primarily the role of learners, at the most basic level, was to act at an operational level on directives in these activities (Leontiev, 1981, see Section 4.2.3.2) as instructed by the teachers and to respond as expected in submissive compliance. Within these strongly normative approaches, teachers clearly thought learners were genuinely participating. This seems to arise from the way the policy implementation has inscribed self governance strategies which have "created new technologies of power in schools, influencing teachers and learners' knowledge construction and behaviours" (Ketlhoilwe, 2007a). This aspect is discussed in more detail in Sections 7.4.3 and 2.6.5.

But this contradiction also manifested itself in misplaced assumptions by teachers on learners' needs and concerns as illustrated in the following examples.

Extract 7.7: School C learner's concern about the state of grass in the school

> *L: I am complaining about the grass because there was a time a snake was killed in the grass, and this is dangerous for our lives. I think people from the village should be employed or asked to come and clear the grass and bushes. A lot of people are doing nothing in our village. They spend most of their time just drinking (CFL2.1).*

Extract 7.8: School C head's misplaced assumption on the learners' concern about the state of the grass

> *R: Then the grass around the toilets. Don't they (children) ever complain about it?*
> *H: No they don't complain, instead we are the ones who are worried about their safety. Children being children, they don't see any problem. It scares us because there are snakes around here (CHI1).*

The extract from the learner in school C shows not only the learner's concern about safety, of which the school head is unaware, but also provides some evidence of action

competence in the learner in that he could link waste management issues to the socio-ecological context of the community by highlighting the problem of unemployment in the community and drinking.

This tension is further illustrated in school B where members of the SEC, had allocated among themselves supervision and monitoring roles over different areas relating to waste management (see extract B6.6). It is worth noting that while the teachers supervised and monitored cooking and toilet cleaning, ironically these two areas constituted the main areas of concern for learners in which they felt the service delivery was poor. In School A, in spite of the fact that children were very aggrieved by the shortage and the poor state of toilets, this was not the priority concern for teachers as revealed in Section 7.3.4. In all the decisions that were taken regarding these areas, learners were not consulted; neither were they granted an opportunity for evaluation, which is in contrast with the basic tenets of democratic participation (Botswana Government, 1977; Hart, 1992; Mogensen & Schnack, 2010; Schnack, 2000; Jensen & Schnack, 2006; Carlsson & Jensen, 2006, Jensen, 2004a). Participation in a democratic environment entails the process of sharing with children decisions which affect their lives (Hart, 1992, p. 4). In School B for example, related to the waste food council's inability to regularly empty litter tanks (see plate B6.1), while teachers probably were genuinely interested in children's welfare, their lack of engagement with the children sometimes resulted in misplaced assumptions of the children's actual needs as illustrated in the extracts below.

Extract 7.9: School B teacher on the preparation of learners' food

> *R: Do you feel the food is properly prepared?*
> *T: Cooking mma, they cook properly. Most children really enjoy their food.*
> *R: I have seen some food thrown away around the bin…*
> *T: They don't like it if it's plain beans. They like them mixed with samp. If its beans alone, they don't eat. They don't seem to go well with them. They cause stomach problems for them (BTI1).*

Extract 7.10 School B learners on their food preparation

> *L3: Sometimes they* [food] *are not properly cooked*
> *R: Really, How is it not properly cooked?*
> *L5: No taste, no salt, not fully cooked, no cooking oil. They just boil them and then take them to the classes…*
> *L3: Maybe because they think we are just children we will just eat it.*

R: But do the children eat the food?
L1: No, they don't eat
L3: And they throw it away anywhere
L2: And it makes the grounds dirty (BFL1.1)

Both the extracts above (see extracts 7.7 & 7.10) indicate that children seemed to be equally, if not more concerned about their own needs and welfare, than their teachers assumed yet the latter felt they were acting in the best interest of children. This misplaced assumption was due to the fact that children were not provided with an opportunity to make decisions or evaluate issues that affected them. This contradiction could probably have provided an opportunity to engage learners in playing an active role as creative participants. As illustrated in the extracts from schools B and C above, engaging with children could have brought some of these issues to the fore (see Chapter 9).

7.3.4 Contradiction between the learners' (subjects) concerns and the teachers' (mediating tools) concerns

The secondary contradiction identified in Section 7.3.3 above was clearly depicted in the learners' identification of sanitation (toilets) as the main waste issue requiring urgent attention. This was contrary to the teachers' choice of litter as the schools' main waste issue and problem as reflected in Sections 6.2.1.3, 6.2.2.3 & 6.2.3.3 and illustrated in Figure 7.4 that follows.
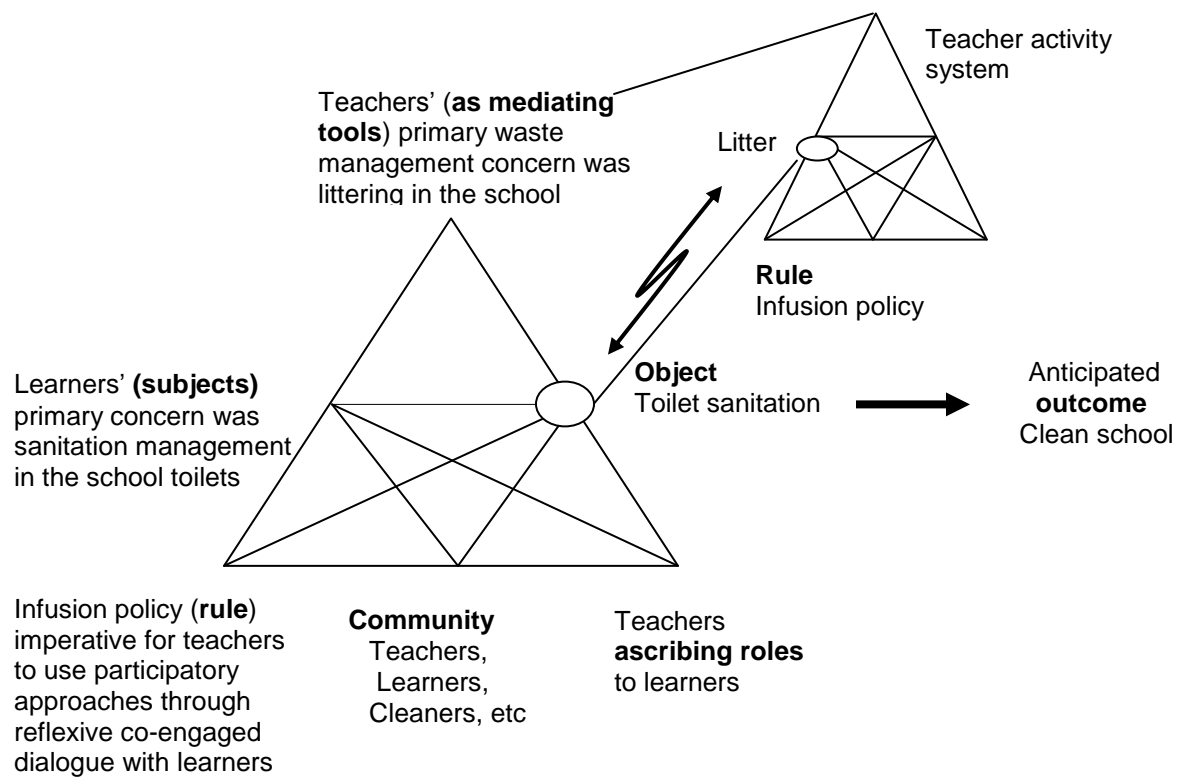
Figure 7.4: Quaternary contradiction between subjects mediating tools

Due to culturally and historically formed views of environmental education where it has been normalised into school practices of cleaning and litter pick-ups, there was no dialogue with learners regarding their concerns and interests. This resulted in teachers and learners' objects being at cross-purposes. This quaternary contradiction (see Section 4.2.3.3) becomes particularly clear in School C in which the teacher and the school head both identified picking up of litter as the main activity of primary focus in spite of the fact that in that particular school, litter should not even have been an issue. It manifested itself into a common tension across the three schools where there was a consistent trend of children using areas outside toilets and pit-latrines for their sanitary needs because of the unsanitary state of the toilets. In School A, for example, no boys used their pit latrines at all and over 500 girls had to share only two toilets (see Section 6.2.1.2(c)). This is also captured in the extract C6.4 from the learner focus group interviews of the rural school where emphasis on litter featured prominently amongst teachers' directive practices in spite of the fact that toilets were of more concern to children. In School B the deputy head even went on to perceive children's use of outside for their sanitary needs as a form of insubordination (see extract B6.3).

In schools A and B litter was indeed a challenge. In School C, litter generating activities were very minimal, but learners were also interested and concerned about the state of the litter. One would expect the focus to be on other waste issues of practical concern as depicted by children in the extract that follows, instead of litter. This extract shows some ambivalence as children still expressed some allegiance to their teachers and the teachers' object.

Extract 7.11: School C learners' allegiance to teachers

> *L3: The other thing that I don't like in our school is that other children spoil the name of the school.*
> *R: How?*
> *L3: They don't follow the rules from teachers. They don't pick up litters in morning in front of the school when they see papers lying around…(CFL1.1)*

Learners were not offered opportunities to raise their concerns in these activities nor the choice of means to work towards resolving issues, at times resulting in their lack of cooperation and utilising the area outside the toilets (see extracts 6.2.1.3, 6.2.2.3 & 6.2.3.3 & plate 6.3 & 6.6). This curtailed the development of the learners' environmental action competence as the learners' interests and concerns were not discussed, despite the object being of concern to the learners; dysfunctional and unsanitary toilets were not addressed in the school activity systems or discourses. Enabling fuller participation of learners in the school learning discourses by providing them with opportunities to identify waste management issues that concern them may have brought this to the surface (see Chapter 9).

7.3.5 Contradiction between incapacitated Councils and teachers' mediation of learner participation

There is another primary contradiction (see Section 4.2.3.3) between mediating tools, namely Councils and teachers, in the waste management activity systems. Councils are tasked with the responsibility of providing all waste management resources for schools and maintenance of school infrastructure (see Sections 6.2.1.4(c), 6.2.2.4(c) and 6.2.3.4(c)). Councils were tasked with this responsibility in order to ensure that learners were relieved of cleaning duties and could focus more on learning (see Section 2.6.5). Teachers on the other hand were the main mediating tools responsible for facilitating waste management through learner participation. But it was evident that the local

councils especially in Schools A and C were incapacitated in both the provision of services and supply of required materials resources to facilitate the waste management activities in all schools. When this mediating tool failed to meet its mandate, teachers were compelled to either utilize learners as cleaners in order to fill the gap created by councils' lack of capacity. This then created a tension in how teachers mediate learner participation in these activities as envisaged by the infusion policy.
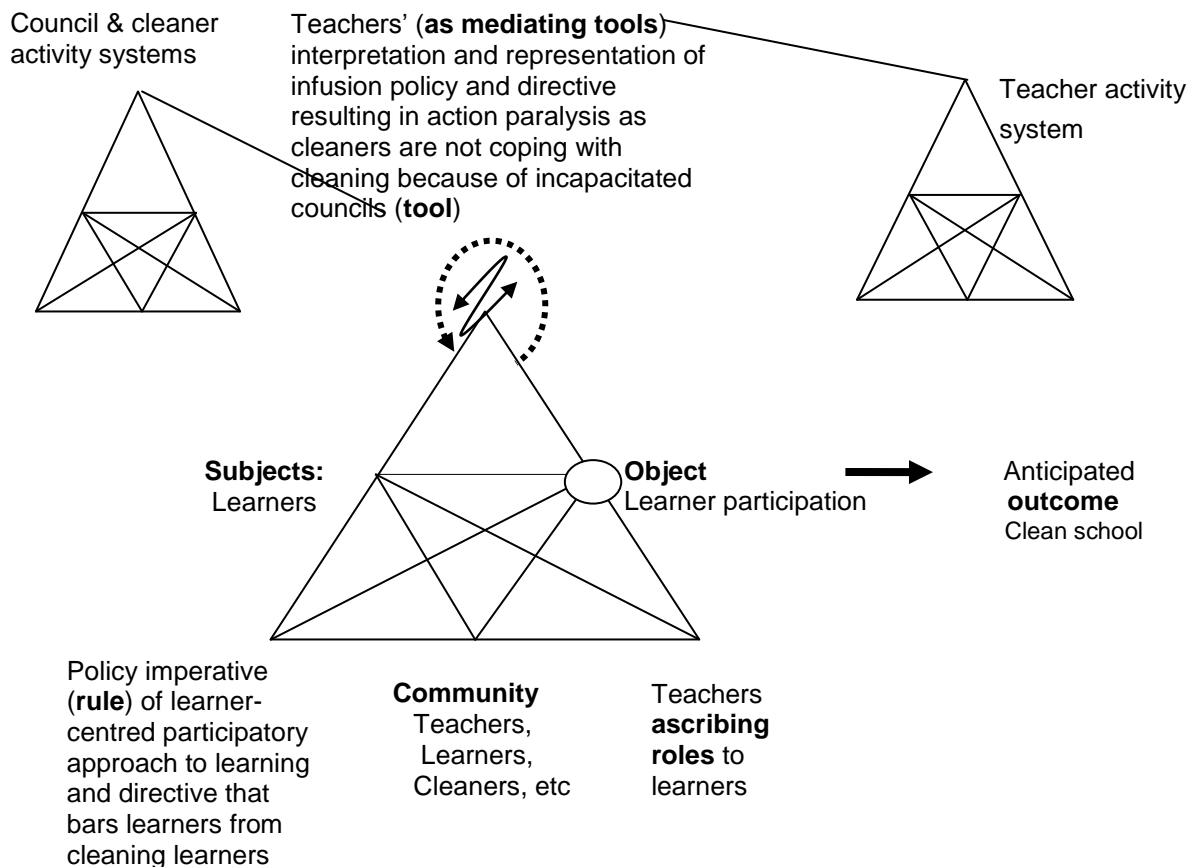
Figure 7.5: Primary contradiction between mediating tools: teachers and councils

This tension was particularly noticeable in School A which had 958 learners and one cleaner and School C whose single cleaner was assigned to other official duties other than those covered in their job descriptions. This resulted in children (including Standard 1s and 2s), being made to clean, and in toilets not being properly cleaned. This re-allocation of roles went against the directive intent of moving children from being cleaners to learners. But because cleaners were unable to meet their job demands that learners participated in waste management activities to fulfil the cleaning needs of the

school. This tension left schools in a state of paralysis in terms of maintaining clean and healthy schools as roles were no longer clearly defined according to the directive. The casual labour which was usually engaged once a year was unable to clear all the grass and bushes from the school premises resulting in children utilizing them for their sanitary needs. This is captured by the teacher in extract 7.12 (see also extracts 6.2.1.4(c), 6.2.2.4(c) & 6.2.3.4(c)).

Extract 7.12: School C teacher on Council's lack of capacity to meet its obligation

T: Council is the one that is supposed to hire casual labour to clear that grass but last time they had said they will do it but they had no funds to employ people... If the funds were there they would have cleared it already, but as you can see…

…The General Duty Assistant is the one who cleans toilets. She's supposed to clean them daily but she's not managing because she has other things to do, like the cleaning of classrooms. We also send her to go and collect mail from Mochudi. So she's unable to do all this work alone (CTI1).

This was a total shift from the initial teachers' mediation role of meeting the curriculum imperative through engaging children as learners as portrayed in Section 7.3.1. This depicts the elusive nature of the teacher's object (Hardman, 2005) under different contexts hence bringing into question the mediation of learner participation in these activities for meaningful learning and for children becoming action competent learners (Simovska, 2008; Jensen, 2000; Jensen, 1997). This shift in the teachers' object between children being used as mediating tools for cleaning and children as learner participants raises questions on the teachers' understanding of the concept of learner participation.

7.3.6 Contradiction between rules of traditional culture and the infusion policy imperative

It also became evident that the unequal power relations between teachers and learners has led to learner compliance. Learners abide by the school rules which has become the normalized way of what teachers perceived as children's participation in the activities. This is a product of a history or a traditional culture in which the teacher is the ultimate authority and children must be submissive to their elders and where it is deemed unnecessary to explain one's motives to children (see Section 1.8), a culture that has been infused into school discourses (see Section 1.6).

Teachers (**mediating tools**) as
adults using their authority in
mediating learner participation

Subjects:
Learners

Object
Learner participation

Anticipated
outcome
Clean school

Policy imperative's (**rule**)
recommendation of learner-
centred democratic
participatory approaches
versus traditional
authoritarian culture (**rule**)
that demands submissive
compliance from children

Community
Teachers,
 Learners,
Cleaners, etc

Teachers
ascribing roles
to learners

Figure 7.6: Primary contradiction between policy imperative and traditional authority culture

In all three schools children were involved in classroom cleaning and picking up of litter under the supervision of their teachers and the cleaner (in school C). However at classroom level when learners were not supervised, which was also quite common in all the schools, they set their own rules and allocated themselves roles during classroom cleaning. These rules were, however, still subordinate to the rule of children having to clean classrooms.

On another level, because children were afraid of their teachers they could not raise their concerns, resulting in some children addressing these concerns through defiant means such as using bushes around toilets instead of toilets. Roche (1999) on power and domination, noted that;

> …children do resist and challenge adult practices, though not necessarily in obvious and constructive ways. However, the choices available to children, as a relatively powerless group in society, differ from those that are relatively powerful… Children often have little choice but to engage in such symbolic politics of protest when faced with an unlistening and prejudging adult world. Children have to start where they are socially positioned. This means that they have to make their own space in spaces not of their own making (p. 478-479).

While the policy has justified intentions of creating meaningful participation for learners, the cultural traditional contexts present constraining forces through norms and values that form a barrier to its intent. Obviously this compromises the space and opportunities that children occupy in terms of their place in these activities, hence infringing their right of being fully participating stakeholders of their school community (UNICEF, 2004; Barratt Hacking et al., 2007; Hart, 1992, 1997; Uzzell, 1999). As such it represents a missed opportunity for teachers to communicate and collaborate with children in order to establish their needs so as to work collectively towards a common solution. Children need to be recognized as full competent and capable stakeholders.

7.4 Peculiar contradictions in the different schools

In the following sections, contradictions and tensions arising from activity systems specific to particular schools are explored. Each of these tensions is embedded in the different basic understanding, selection and use of mediating tools in learner participation in the different school waste management activity systems. The tools which featured prominently, among others, included how punishment, subject fairs, the choice of a Science teacher as an SEC coordinator, and language were all used to mediate learner participation.

7.4.1 Contradiction between rules of policy imperative and forced participation - punishment

A primary contradiction was identified between rules; namely the policy imperative of democratic participation and the rule of punishment used for the participation of learners. This was particularly peculiar in schools A and C where picking up litter and clearing of grass were sometimes used as forms of punishment for various offences but in particular for coming late to school.
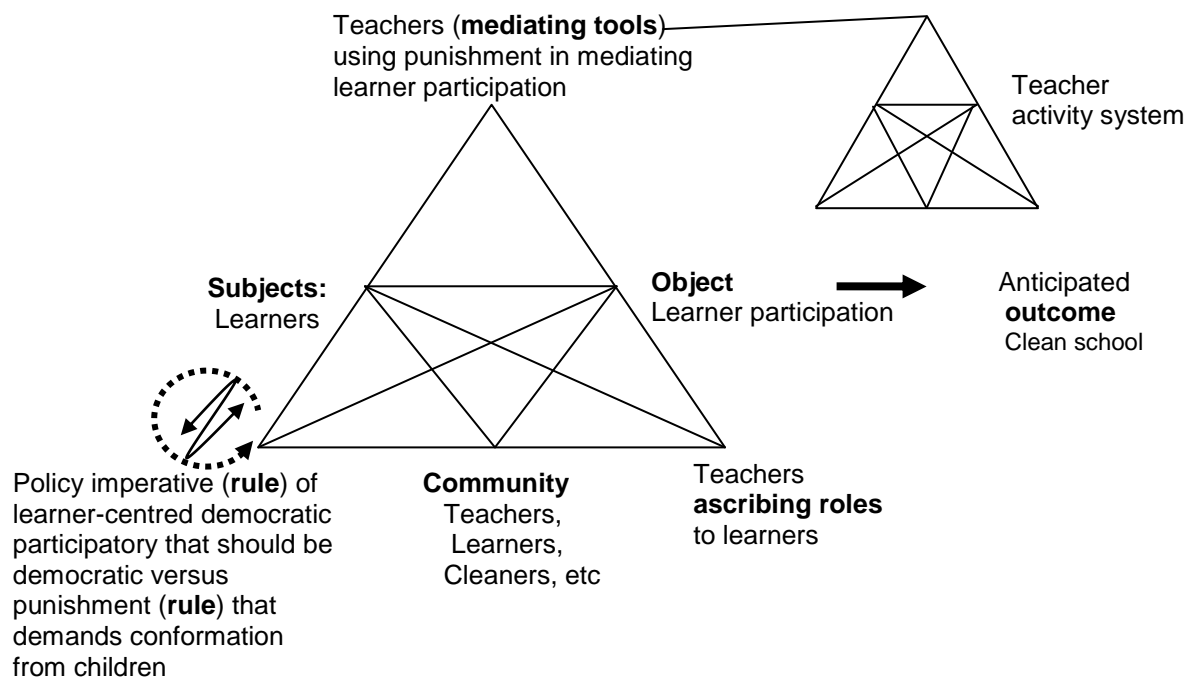
Figure 7.7: Primary contradiction between policy imperative and traditional authority culture (Schools A and C)

This created a tension in that it was perceived by both teachers and learners as a rule for participation which in the process was partly believed to modify the learners' undesirable behaviour as reflected in extracts A6.10 and C6.11.

This seemed to come from an accumulated history of using learners to clean up as a form of punishment (see extract A6.10 & Section 9.6.3.2, extract 9.14). The participatory aspect that this rule is expected to play, loses its intended objective as there is lack of recognition that carrying out an activity under such forced circumstances deprives the learner of the opportunity to participate in the exercise as a learning activity. Rather it becomes a rule for "passive and controlling mediation which is dysfunctional in relation to their democratic and societal needs as it stifles the children's creativity, autonomy, independent thinking, competence, confidence, and self-esteem and as making them dependent, conforming, and non-thinking" (Marlowe & Page, 1998, p.12).

7.4.2 Contradiction between perception of object by mediating tools – environmental subject fairs

This is another primary contradiction between mediating tools, namely teachers and environmental fairs. The Department of Wildlife and National Parks (DWNP)'s Association of Environmental Clubs Botswana (AECB)'s in collaboration with teachers organises annual competitions through environmental fairs in which children participate (see Section 2.8.3). Schools have, however, come to see them as a once-off practice for rewards and school trophies as illustrated by 6.2.1.4 (e) and 6.2.1.4 (e). The contradiction is illustrated in Figure 7.
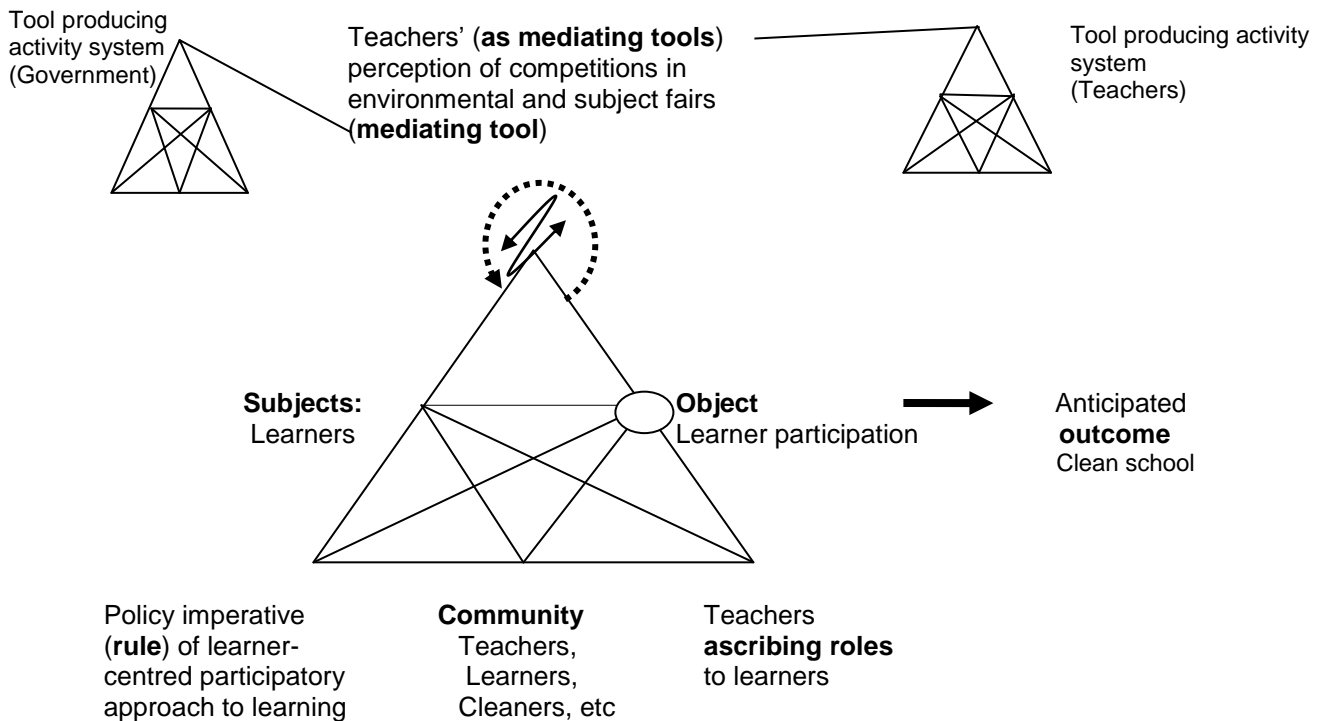
Figure 7.8: Primary contradiction between mediating tools: teachers and subject fairs

In schools A and C, teachers selected skilled, articulate and confident children to compete in drama, debate and small projects excluding other children who were less articulate and skilled in these activities. Teachers assigned projects to children without fully informing and consulting them about the meaning of them. They also failed to discuss what was learnt from the projects. Learners were not allowed to participate in

the initiation and planning of the projects. This did not give learners any sense of real ownership of these projects as reflected in these extracts.

Extract 7.13: Teacher on participation in environmental subject fairs

T: Normally we do recycling with some manila papers, we do some projects like paper recycling when we go for the subject fair.
R: So they do it only when they go for the subject fairs?
T: Yes, that is the only time that they really do something serious about recycling
R: Why? Why don't you do it throughout the year?
T: Heish! In actual fact Mrs Silo, there is just no time. You find yourself having so many responsibilities and working with so many children is a problem, Again just getting things that you want, simple things like black garbage bags, to get them it's like you have to beg and beg, so aah! (ATI1)

Extract 7.14 School A learners on Environmental subject fairs

R: Lebo, you were saying some of you prepare items for the fair, who are these 'some' AFI1.1)
L3: They select children who can do something, anything that is nice, like Chabo, can knit, last year she knit slippers, they select those who come up with beautiful things.
R: How do they know you can make beautiful things?
L4: They ask us to do anything and then they take the best and if you are good next year they will ask you to do something for the subject fair
R: But don't you think you are learning something when you do those things for the fair?
L6: We would be learning something if teachers were helping us to learn. The only help we get [from teachers] *is only when we are doing projects for the subject fair, when you told to do this or that, this way or that way, that's the only time that teachers show support and help us because they want us to win, but when it comes to cleaning here in the school, we do everything on our own without any guidance and help whatsoever (AFL1.1)*

R: But don't you hold meetings with your teachers when you prepare for the fairs
L: (All giggle)
L6: Meetings! There is never such a thing as meetings (AFL1.1)

In School A in particular, and School C, to a lesser degree (where participants in the environmental fair were selected from the Environmental club), children were not involved in meetings and planning for the fairs. The selected children had not been given the opportunity to critically reflect on their role and involvement in making choices of the projects. There was no discussion with their peers on the importance and value of their participation in these fairs. In addition, there was little understanding of the value of their participation to the school community apart from the desire to bring back the trophy or prize to the school. In School A work on the projects was done at a set time usually after school and when the date for the fair drew closer, the work on the projects was done during lessons, sometimes with the learners involved missing lessons in order to

complete their projects in time for the fair. During this time the teachers sit with learners, closely supervising and monitoring them while they did these projects as described in the data extracts above.

Learner's participated in these subject fairs without prior critical reflection on their engagement in the whole process of project development as they had not been given a chance to reflect on them, consider them, evaluate them and even learn from them. This is what Hart (1992), referred as tokenism (see Section 3.3.1). Unfortunately, this practice seemed to be very common among these very well-meaning teachers who seemingly were giving learners an opportunity to "participate" but with:

> … little or no choice about the subject or the style of communicating it, and little or no opportunity to formulate their own opinions. …There are many more instances of tokenism that there are genuine forms of children's participation in projects. Commonly, as far as the adults are concerned, the projects are in the best interests of children, but they are manipulative nevertheless (Hart, 1992, p. 9).

In this case the teachers might have been genuinely concerned about giving children an opportunity to participate, but they had not really begun to think carefully about the best approach for this. In view of what emerges from these extracts I concur with Hart (1992), who observed that

> There is a strong tendency on the part of adults to underestimate the competence of children while at the same time using them in events to influence some cause; the effect is patronizing. There are, however, many projects entirely designed and run by adults, with children merely acting out predetermined roles that are very positive experiences for both adults and children. Children's dance, song, or theatre performances are good examples of this as long as people understand that they are just that: performances. Problems arise when children's involvement is ambiguous or even manipulative (p. 9).

Participation of these learners in these subject fairs is what Hart (1992, 1997) views as symbolic, rather than actual engagement and involvement of learners in the activity. A more democratic process could have made their involvement in these activities purposeful and meaningful (ibid.).

This tension could create possibilities for learners to, for example, develop explanations for why they were participating in these fairs which would offer an expanded learning opportunity (see Section 4.4) and wider participation in the process. Learners completed their projects under teachers' instruction and supervision. The project items are disregarded after the fair, especially in the case of School A. Children's participation in

these fairs was in reality basically irrelevant. Hart (1992, p 11) argues that there are a number of important requirements for a project to be truly labelled as participatory, relating to projects such as the ones learners were involved in for Environmental subject fairs:

1. The children should understand the intentions of the project;
2. They should know who made the decisions concerning their involvement and why;
3. They should have a meaningful (rather than 'decorative') role in these competitions/fairs; and
4. They should volunteer for the project after the project was made clear to them.

This could contribute to the establishment of genuine processes of participation as conceptualized by the action competence framework (explained by Hart, Jensen, Schnack, Breiting and other theorists noted in Chapter 3).

7.4.3 Contradiction between policy imperative and choice of Science as a tool for organizing learner participation

The infusion policy imperative is responding to the SADC-REEP's initiatives to meet the ESD objectives of integrating sustainability practices into aspects of education and learning through environmental education (see Section 2.6.4). But in its implementation, Environmental Science (for lower primary) and Science (for upper primary) were identified as subjects into which environmental education should be infused (see Section 2.6.4). The assumption, according to Ketlhoilwe (2007a, p. 211) was "that [science] teachers have the pedagogical knowledge and experience to work with learner-centred approaches and that schools are resourced for a variety of interactive, enquiry-based participatory methods" (p. 211).

> It constitutes Science as an important subject capable of solving socio-economic problems and helping to develop mental processes such as logical and critical thinking. Scientific knowledge is also constituted and inscribed as capable of enhancing the learner's ability to make associations and generalizations about life, thus enabling the learner to adapt to various life situations (p. 216-217).

Figure 7.9 illustrates this contradiction.
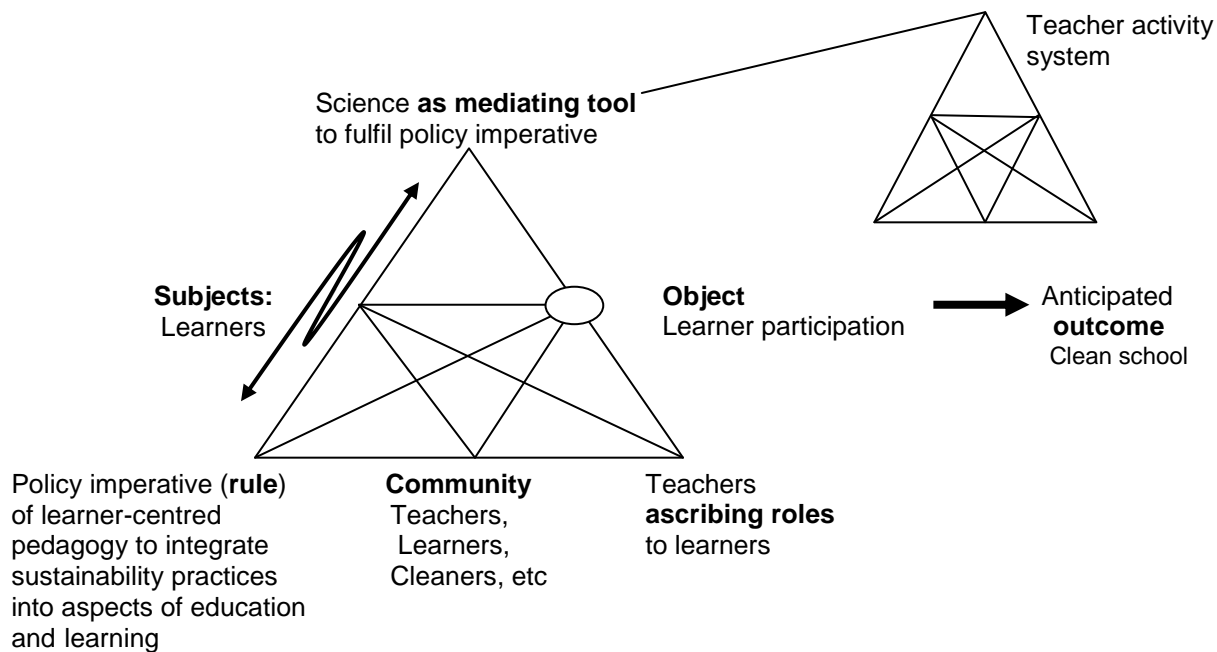
Figure 7.9: Secondary contradiction between policy imperative and Science as a mediating tool

This contradiction manifests itself as a tension at two levels, (a) the selection of Science teachers to mediate waste management activities as SEC coordinators, and (b) the teaching of environmentally related concepts.

7.4.3.1 The selection of Science teachers to mediate waste management activities

In all schools, the SEC coordinator, according to the school policy had to be a Science teacher (see Sections 6.2.1.4 (a), 6.2.2.4(a) and 6.2.3.4(a)).This is consistent with the policy implementation as revealed by Ketlhoilwe (2007a) above and the extracts from teachers. The decision is also based on the assumption that "there is a competent [Science teacher] who knows what is to be learnt" (Engeström, 2001, p. 137) as revealed by the extracts A6.7, B6.6 and C6.6 from SEC coordinators.

In School A, the teacher faced many challenges with her colleagues in the committee and other teachers in the school who were generally not adequately supportive and seemed to leave all responsibility to her (see extract A6.7). This also made children pin their expectations on her to provide them with the necessary support as expressed in

extract A6.1 by a learner. In School C, while the teacher was more actively involved with environmentally related issues, it was more with external government and NGOs, such as working with organising committees for the competitions. But he did not seem to have time to engage with learners on a level of collaborating with them on issues that were directly of concern to them daily (see extract C6.5). He also indicated that he had never been involved in any environmental education in-service training (see extract C6.6).

Unlike the two SEC teacher coordinators in Schools A and C, the SEC teacher coordinator in School B was actively involved with environmental issues and concerns that she had identified. Together with her colleagues, she had also tried to develop initiatives to respond to the school's environmental needs, particularly keeping the school clean (see extract B6.6). Teachers in this school also collaborated closely with the community through the Parents Teacher Association (PTA) and ward counsellor to source temporary labour for clearing grass among other things (see extract B6.9), all intended to benefit learners. The initiatives were, however, undertaken unilaterally by the school environmental committee without engaging children in the identification, consultative and evaluation process as already highlighted in Section 7.3.3. This approach created a barrier to and limited genuine learner participation that was supposed to respond to the policy imperative of using democratic processes that were inclusive of learners (see Chapters 1 & 3). The policy implementation texts fail to recognize that the social science subjects can also respond to the policy imperative, a point that was later proved in School C when children's activities were supported more by teachers from the social science subjects (see Section 9.8.3).

There was thus a contradiction between the infusion policy drive to develop creative learners, to assess the impact of its implementation and to accommodate new environmental needs and interests of learners (Botswana Government, 2007), and the school rule of selection of a coordinator based on an assumption that a Science teacher had all the answers to the environmental problems of the school. The rule curtailed learner creativity as the SEC coordinators in the two schools practically worked alone in their duties, which included keeping the school clean, meeting other curricular and official obligations and ensuring that children participated in environmental subject fairs. Ketlhoilwe (2007a) also observed that teachers in Botswana schools are confronted with various challenges ranging from and "including limited or inadequate material resources, funding and transport for outdoor learning, as well as lack of or inadequate

support from supervisors and colleagues' attitudes" (p. 336). Ketlhoilwe found that the lack of environmental education training for some of these Science teachers might be another source of constraint in their pedagogical practices as shown by the SEC coordinator of School C (see extract C6.6).

Learners cannot benefit much from such an approach which solely bases environmental education on Science. There is a need to take an inter-disciplinary approach which brings in the social sciences perspective to elucidate the whole spectrum of action possibilities collectively that exist in a democratic manner in order to clarify the barriers around these action-possibilities (Jensen, 2004, p. 407). Jensen argues that

> When environmental and health education is exclusively based on the sciences, environmental and health problems are not placed within their cultural and economic reality. The implicit viewpoint, offered students, is that the blame and cause of the problems lies with the individual. The complexity of 'causes' is not clarified, and the action level is never reached. More importantly, this dominant approach to environmental and health education provides a basically erroneous, individualistic conception of society. The challenge is to break environmental and health education out of the science framework. In this spirit, we can ask how much science is really needed in environmental education? I frame the issue this way not necessarily because little science is what is needed, but rather to ensure that perspectives from the humanities and social sciences are given attention, time, and energy in environmental and health education.

> The natural sciences have a role to play in describing the nature and extent of environmental problems. However, the humanities must also be drawn into the work as we consider desirable changes in the society of the future.

There is a need to meet curricula objectives by laying emphasis on opportunities that these activities could offer to mediate participation and learning processes through inter-disciplinarity across Science and Social Science subjects in a way that is oriented towards supporting the development of the learners' full participation and action competence.

7.4.3.2 The teaching of environmentally related concepts

This tension was highlighted in School A where children complained that they did not learn much about waste management in Science, a subject they felt dealt with environmental issues, as revealed in this extract.

Extract 7.15: Learner on Science as a tool for environmental learning

> *L1: I see us learning nothing.., in Science, which is the subject that has a lot to do with the environment, you are just given a textbook to copy from it and you don't understand it when you are made to copy from the textbook and don't understand what environment means and there are some learners who can't read and there is no explanation of all these terms and if there is no explanation by the teacher, you won't understand. The children won't understand what is being talked about in Science and we end up not knowing anything, because we are not given explanations (AFL2.1).*

Another example where this approach seemed to be highlighted was with children from School C, where reference to global warming featured recurrently without children fully understanding what the concept actually meant. This was shown in the children's comments in extract C6.10 when children were probed about what the concept meant.

This tension could have largely been influenced firstly, by what Ketlhoilwe (2007a) observed in his analysis of the policy (see Section 2.6.4), i.e. that, "the policy text was written in an imperative and directive style which does not provide adequate or consistent guidance to [teachers] as to what should be done implementing and [teaching] environmental education' (p. 340).

> According to him, the policy explicitly excludes the teacher and inferentially implies the learner as an object in pedagogic discourse. The role of the environmental education programme in this goal is to develop 'desirable attitudes and behavioural patterns'. The aim of such material processes is to encourage protective, preserving, and nurturing interacting manners with the environment (p. 197).

Secondly this tension could be related to the fact that the implementation documents constitute the teacher as a "dispenser of factual knowledge limiting the learner to a receiver of predefined information" (p.202). This approach draws from the positivist paradigm where traditionally the belief is to look to Science for solutions to environmental problems in terms of what Uzzell (1999) calls a 'technological fix'. The goal of environmental education within this belief and framework is mechanistic and piecemeal (p.402), characterized in these schools by further using the Science teacher who was supposed to see to it that the syllabus objectives on waste management were covered. The decision is also based on the assumption that "there is a competent [Science teacher], who knows what is to be learnt" (Engeström, 2001, p. 137) as revealed by the extracts in Section A6.7, B6.6 and C6.6.

Daniels, (2008) in his analysis of some aspects of Vygotsky's concept of cultural mediation in a school instructional process, sees this approach to teaching as dispensing scientific concepts or content knowledge to learners. The approach mainly took the form of copying of notes by children either from the board or from textbooks. The notes would cover certain scientific concepts that are linked to the effects of waste mismanagement; some reference was to children's everyday concepts and experiences and there is limited practical class activity with learners. Extracts A6.13 and 7.15 from a focus group discussion with children in School A captures a case in which this is illustrated.

There is limited interaction and dialogue on issues in class activities with learners; they are not given the opportunity to ask questions or critically engage with teachers to clarify issues. This defeats the objective of creating critical thinkers in children within the constructivist discourse which is seen as a major component of action competence development (see Sections 3.3.2 and 3.4). According to Daniels (2008), "children can make deliberate use of scientific concepts, they are consciously aware of" (p. 15), but in this case learners were not afforded the opportunity to reflect on this concept because there was little cooperation and collaboration which, according to him, are crucial features of effective teaching. Daniels (ibid.) goes on to cite Vygotsky to emphasise this point:

> The development of the scientific concept, a phenomenon that occurs as part of the educational process, constitutes a unique form of systematic cooperation between the teacher and the child. The maturation of the child's higher mental functions occurs in this cooperative process, that is, it occurs through the adult's assistance and participation...In a problem involving scientific concepts, he [sic] must be able to do, in collaboration with the teacher something that he has never done spontaneously...we know that the child can do more in collaboration than he can independently (Vygotsky, 1987, p 168, 169 and 216, cited by Daniels, 2008, p. 15).

What this reveals, Daniels argues, is that there should be an interdependent relationship between scientific and everyday concepts in the process of concept formation in the instructional process; failure to do this defeats the objective of creating critical thinkers. It does not provide learners with the opportunity to construct new knowledge from authentic experience of the socio-ecological issues that they face daily as the infusion policy requires.

Jensen (2004a) concurs with Vygotsky that learners acquire knowledge that is

is typically 'scientific' and, on its own, risks contributing to the development of concern on the part of students, but also an action-paralysis. It provides no explanation for why we have this or that problem, and no insight into how we can contribute to solving it (p. 415).

The crucial thing should not be the scientific knowledge and quantity of information children can memorise and recite. While the scientific content has a role to play in describing the nature and extent of the problem (Jensen, 2004, p. 407), it is very crucial and important, as Marlowe and Page (1998) correctly argue, that children should

> …uncover, discover, and reflect on content and their conceptions of such through inquiry, investigation, research, and analysis in the context of the problem, critical question, issue or theme. Students gain and are encouraged to develop through these processes the ability to think for themselves and to think critically; that is to discriminate between the relevant and the irrelevant, to look at issues from different perspectives to interpret and analyse written and electronic data (p.11).

They have to discover their own answers, solutions, concepts, and relationships and be provided with opportunities to create their own interpretations, activities and mini projects that they can relate to what they are learning (ibid., p. 12) as they participate in these activities. In this way, their participation becomes deeper, more comprehensive, and longer lasting and leads to an ability to think more critically (Mogensen, 1997) resulting in learning (ibid.) and competent action taking (Jensen, 2002, 2004a).

7.4.4 Contradiction between the teachers' interpretation of the directive and the object of learner participation

A secondary contradiction exists between the teachers' interpretation of the directive which has barred learners from taking part in certain cleaning duties (see Section 2.6.5) and how the teachers in School B perceive the directive in fulfilling its role of making available resources in schools to meet the object of learner participation. The contradiction is represented in Figure 7.10.
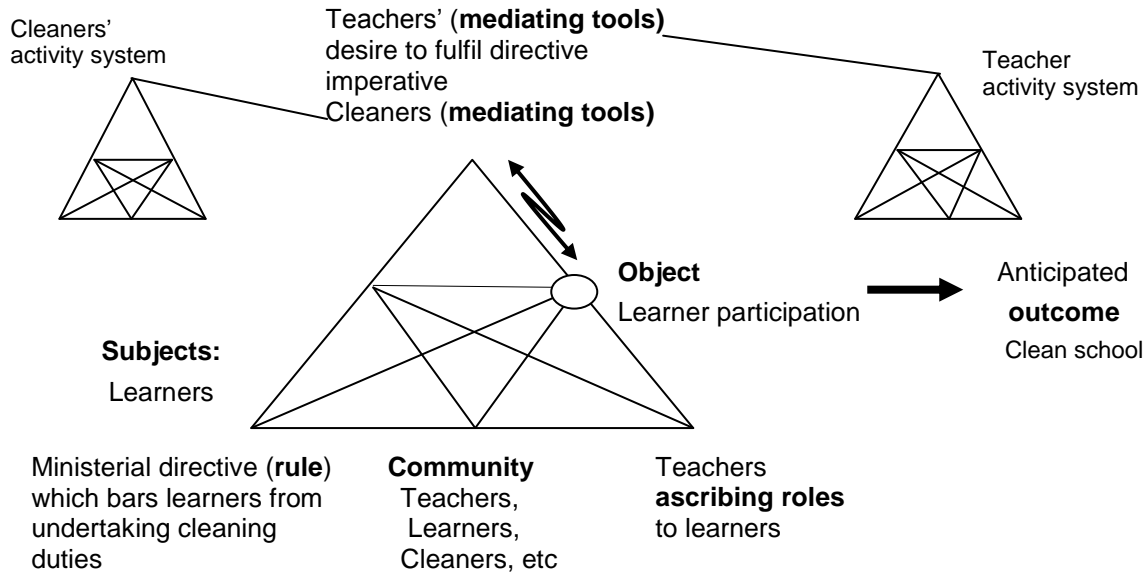
Figure 7.10: Secondary contradiction between teachers' interpretation of the directive and the object of learner participation

School B seemed to have better resources than the other two schools, for example more cleaners (see Section 6.2.2.4(b)). This, according to the SEC coordinator, served to relegate the role of children in participation in waste management to the background. This is reflected in her strong comment on their legal obligation towards the directive in extract B6.11 and 7.5, and in comment made by the deputy head provided below.

Extract 7.15 Deputy head's frustration with children

DH: A teacher will usually then come and educate them. Just addressing them on how to take care of their environment especially Mrs Kelesi by even taking them on litter campaigns, because that's what they can do. She usually does it time and again. If she sees that aah! now they have forgotten, because these kids will usually forget, you say something this week, later after two weeks they have forgotten it, she takes them again. Then you come back and address them again reminding them of how to take care of their surroundings (BDHI1)

The fact that children were actively involved in picking up litter seemed to be the main available opportunity to respond to the policy's call for their participation in environmental activities, according to the teacher. This created a constraint to children participating at the level she would have liked. She tried to vary activities that club members were involved in, by sometimes taking them on litter campaigns as a

community service endeavour and on outdoor trips and excursions to other parts of the country like game parks (see Section 6.2.2.4(d)). Jensen (1997) describes this as participation that emphasizes a passive view of the learners in programmes geared towards behaviour modification that is moralistic. Such activities are not oriented towards active involvement of pupils in constructing their own knowledge and action competence (p. 419).

7.4.5 Language rule of attempting to improve the learners' English language proficiency and the object of participation

For School A, the requirement by the internal school policy that learners communicate only in English for any official engagements presented a barrier. This constituted another contradiction between the rule of attempting to improve the learners' English language proficiency and the object of participation as reflected in the next figure and extract A6.16 in Section 6.2.1.5.

Teachers' (**mediating tools)** desire to improve the learners' proficiency in English

Subjects: Learners

Object Learner participation

Anticipated **outcome** Proficient English communicators

Learners compelled to speak in English language (**rule**) which restricts them from approaching teachers when they have concerns

Community Teachers, Learners, Cleaners, etc

Teachers **ascribing roles** to learners

Figure 7.11: Secondary contradiction between the rule of language and object of participation

Teachers insisted that learners, especially the senior ones, communicate in English as this would improve the children's command of English which is an official language in Botswana. On the surface this is a reasonable rule aimed to enhance the learners' linguistic skills in English. English is the language of instruction in the school, and also

an international language of engagement that would eventually benefit them. However, this rule created a tension, influencing learner participation, as learners could not freely approach teachers in their home language on issues that were of concern to them for fear of reprimand. Certainly English became a constraint for learners to articulate and express their concerns and ideas as they would not, in most cases, have the correct vocabulary (see Sections 5.4.1 & 5.8.1.2). In their analysis on the contribution of mother tongue in ESD initiatives, Kamwendo (2009), Molosiwa (2009) and Mooko (2009) found that use of learners' mother tongue as a medium of instruction and communication at the initial stages of their education builds trust and initiative, and also encourages participation in the learning process. Molosiwa (2009), in her research on sustaining Botswana cultures through school curriculum found that "It is vital that children be educated through their ethnic languages – alongside English – to enable them to participate in national development, and to help them understand any issues of local and national importance" (Molosiwa, 2009, p. 82). Mooko (2009) corroborates her point and suggests that there is a need to make room for using different languages in addressing environmental issues as "language is a vital instrument used to explore issues pertaining to sustainable development" (Mooko, 2009, p. 22).

7.5 Summary of contradictions and tensions

All the contradictions described in this chapter revealed tensions between the schools' epistemological assumptions regarding the need to mediate learner participation through cleaning and the infusion policy's demand for a more learner-centred meaningful participatory approach in environmental education as demanded by the policy (see Sections 1.5, 2.5 & 2.6.4).

What the teachers did not seem to recognise was that while it is important that children were physically and practically involved in these waste management activities, it is essential that the children were supported to make meaning out of their participation in these activities and create links to their practices. Mediation of their participation could be structured so that children become active learners while teachers use their superior knowledge base to meaningfully guide learning (Rogoff, 1990, 1998; Daniels, 2001, 2008; Rogoff & Wertsch, 1984; Palinscar, 1986, 1998; Wells, 2002, 2007), link it to the practical activities that children participate in and the socio-ecological issues that they face daily. Jensen (2004a) comments on teachers who seek behaviour change in

learners instead of developing learners' abilities to act. He distinguishes these and questions whether teaching that concentrates on behaviour change

> can contribute to the development of students' environmental action-competence. *Here it is the teacher who is the actor* (as she [sic] acts upon her [sic] students). The first element in the definition of action is that students themselves are involved in taking the decision to do something, whether it is a question of a change in their behaviour or an attempt to influence their broader environments (p. 411).

It is an approach that may be considered totalitarian (Jensen, 1997) as it does not give space for the learners' own thinking and decisions about concepts of waste management and what this might mean to them in terms of their socio-ecological contexts. Such teaching practices are based on traditions of moralistic didactic education such as these that have pervaded Botswana schools. Jensen notes that this is linked to teachers who see themselves as experts who know what is good for learners (Jensen, 1997, p. 420). This type of moralistic approach, according to Jensen (1997), has generally proven to be ineffective, because it rarely leads to the desired behavioural changes (p. 420). This is indicated in the citation above where teachers, for example, lament learners' 'inability' to take responsibility for picking up litter as shown by the deputy head in School B (see extract 7.15).

7.6 Forms of learner participation in the waste management activity systems

Drawing on Jensen's (2004) matrix developed to document participation in learning within an action competence discourse (see Section 5.7.1.2, Table 5.5) and how learners participated in the activity systems outlined in Chapter 6 and the contradictions surfaced in this chapter, evidence of existing forms of learner participation and how it is mediated, is depicted in Table 7.1. Rows represent different forms of learner participation in the waste management activities. Columns illustrate how themes of participation are selected, where rules and roles emerge from, and who decides on the actions to be undertaken. The forms of learner participation according to the matrix fall into three major categories, those that are a) teacher directed, b) teacher-learner directed, and c) learner directed (see Table 7.1). From the surfaced contradictions, in order to move learners to action competence development, the focus would be on b), the teacher-learner directed forms of participation. These forms of participation can be opened up through critical and collaborative **dialogue** between learners and teachers,

an aspect which is crucial for scaffolding learners' participation in the ZPD (see Chapter 8, Sections 4.5.2 & 5.8.1.2).

Table 7.1: Matrix of forms of participation and action competence (*Adapted from Jensen, 2004b*)

Action competence / Forms of participation	Who identifies the waste management problem?	Who comes up with visions for WMAs?	Who sets the rules in the WMAs?	Who allocates roles in the WMAs?	Who decides what actions to be undertaken in WMAs?	Who evalu- ates
a Teachers' decisions Told clearly to learners	SEC identifies WMA issues that need attention	Teachers decided what is best for learners	Teachers/ SEC set rules in response to policy objectives	Teachers/SEC using directive barring learners from some roles	Teachers/SEC	T e a c h e r s
Teachers inform All learners accept		Teachers made all decisions	Learners follow teacher rules	Learners assume allocated roles	Not negotiated with learners	
Teachers inform Some learners accept Some learners reject	Some learners do not pick up litter or clean unless supervised			At a micro level learners allocate themselves roles		
Teachers inform All learners reject						
b Teachers' suggestions Common decisions						
Learners' decisions Told clearly to teachers						
Learners inform Teachers accept						
Learners inform Teachers reject						
c Learners' decisions Told clearly to other learners						
Learners inform Some learners accept						
Learners inform Some learners reject						
Learners inform All learners accept						
Learners inform All learners reject						
Learners' suggestions Common decisions						

a – Teacher directed

b – Teacher-learner **dialogue**

c – Learner directed

When analyzed using this matrix of learner participation, showing a wider range of participatory processes, the shaded top part of the matrix clearly reveals the limited participation of learners. They do not seem to influence any decisions and suggestions taken regarding the rules governing waste management activities and their roles in them. In the process, the learners' ideas, views and preferences regarding the roles that they can play in these decisions (Jensen, 1997, 2000, 2002, 2004b; Jensen & Schnack, 2006; Simovska, 2004, 2008; Hart, 1992) are almost totally ignored. This compromises the learners' commitment and drive in their participation as they lack coherent knowledge of how decisions that affect them are reached, and the nature and scope of the waste management in the school as they are not afforded opportunities to either specify the object or develop with means to work towards it. Contradictions therefore emerged, creating tensions. As Jensen (1997, p. 422) argues, "knowledge cannot be transformed into action if commitment and courage are not present" in the learners as they are not engaged as full competent partners in these activities, creating tensions as revealed in the activity systems.

Despite this and because of the fluid nature of the boundaries of participation some limited forms of participation, intended or unintended, still occurred (see Section 5.7.1.2). This is illustrated in the matrix in the case where some learners would not follow the rules of cleaning unless supervised and use bushes around toilets for their sanitary needs. This reflects evidence of the emerging tensions in the activity system. These tensions are in fact evidence of participation, albeit in the form of resistance or formation of alternative objects for participation.

But as tensions are suggestive for change (Hardman, 2005; Engeström, 1999), there is need to explore available learning opportunities, in which learners can be allowed to reposition themselves in relation to waste management activities. They need to be able to explore how their participation and motives can be re-conceptualised to embrace a radically wider horizon of possibilities than in the previous mode of their participation (Engeström, 2001, p. 137). This can be achieved when learners question their participation and are critical and reflective in a democratic way, forming their own criteria for decision making and choice of action (Jensen, 1997, 2000, 2002, 2004a, 2004b; Jensen & Schnack, 2006; Carlsson & Jensen, 2006). Opening up critical dialogue between teachers and learners for ZPD and expansive learning for action competence development has to take into consideration the following factors:

- teachers posing challenging activities and learners responding (Rogoff, 1990),
- spontaneous asking and answering of questions (Palinscar, 1986, 1998; Wells, 2002, 2007),
- asking for support (Rogoff & Wertsch, 1984),
- collaborative decision making (Jensen & Schnack, 2006; Rogoff & Wertsch, 1984),
- exchanging opinions, ideas etc. (Karlsson, 2001),
- modelling mature performance (Jensen, 2004a) and,
- reflecting and evaluating activities (Jensen, 2004a).

These are aspects of critical dialogue I discuss in more detail in Chapter 8. In Chapter 9, I look at whether by using critical dialogue in scaffolding learner participation, there is a shift in participation forms to the lower parts of the matrix after learners were provided with such opportunities.

7.7 Chapter summary

Findings from this chapter revealed that attempts by teachers, who are the main mediating tool, to meet the policy imperative through prescription of rules, and ascribing roles to learners in waste management activities, created contradictions and tensions. It has also emerged from this chapter that normalized cleaning activities, specifically picking up of litter, have been used in all the three schools to mediate learner participation in environmental education. The assumption appears to be that these activities will transform pedagogy and consequently change the learners into competent participants in environmental education.

But these findings reveal that there are clear developing contradictions and tensions between subjects, mediating tools, rules and objects for developing competent learners through their participation in waste management activities. In response to the policy, the teachers' object is either elusive (Hardman, 2005) or at cross purposes to the learners' object. This is because of their interpretation of the policy imperative resulting from the influence of technologies of governance in the policy implementation documents. Other main factors that have influenced the teachers' mediation of learner participation include a new tool, namely the ministerial directive and traditional authority structures. The activities that teachers used for learner participation were therefore used for lower level drill and enforced practice skills instead of being used to create action-oriented learners

in the sense of developing their action competence (Jensen, 1997, 2000, 2002, 2004a; Jensen & Schnack, 2006; Carlsson & Jensen, 2006). In all the activity systems across the three schools, attempts by teachers to meet the policy imperative through prescription of rules, and ascribing roles to learners in waste management activities, created contradictions and tensions. The emerging tensions opened up space to explore opportunities that were offered to learners to come up with their new visions and alternatives (Jensen, 2000, 2004a, 2004b; Jensen & Schnack, 2006). This was meant to develop the learners' capacities and capabilities, or action competence explored more fully in Chapter 9.

The analysis of the schools' waste management activity systems indicated that **dialogue** was a missing mediating tool for learner participation (see Chapter 8). Participation in the schools concerned is largely rhetorical, as revealed by the manner in which teachers tended to view participation of learners in waste management in a very limited and narrow way. Furthermore it became clear that the teachers' concept of participation lacks the understanding of **dialogue as necessary for ZPD expansion** in learners (see Section 10.3.3). As a result, neglect of dialogue and lack of understanding of participation compromises development of action competence.

It became clear that teachers, through the policy framework, are being challenged to find new ways of creating more mutuality in their relationships with children (Carlsson & Jensen, 2006). In schools, as in the rest of life, this does not mean that children should determine what happens and how, particularly as they operate within a history of pervasive Tswana culture that still largely accords adults authority and respect (Maundeni, 2002; Tabulawa, 1997, 2004; Monyatsi, 2005). But they should have opportunities not only to exercise influence in decisions and issues which concern them but to freely voice such concerns. An open dialogue between teachers and learners would be the starting point to create such opportunities which could further develop their action competence as shown in the matrix (see Table 7.1). Such an approach could strengthen the principle of democracy (see Section 1.7) enshrined in Botswana's education philosophy of *Kagisano.* This is one of its main principles for building a sustainable society as envisioned in the country's long term vision where they will be able to participate in dealing with socio-ecological issues outlined in the vision (see Section 2.7). The concept of dialogue and its role in enhancing learners' participation for action competence development is explored and discussed in the next chapter, in the context of the expansive learning opportunities afforded to the learners through Phase 2 of the research, discussed more fully in chapter 9.

SECTION 2
EXPANSIVE LEARNING PROCESSES

CHAPTER 8: SCAFFOLDING AND GUIDING LEARNER PARTICIPATION THROUGH DIALOGUE – EXPANDING THE LEARNERS' ZPD

8.1 Introduction

It has emerged from Chapters 6 and 7 that the significance of activity theory's activity systems for analyzing learner participation

> lies in its ability to analyze the dynamic human interactions mediated by [cultural tools] at both micro (psychological and interpersonal) and macro (sociological or cultural) levels to understand-and-construct zones of proximal development (Russell, 2002, p. 73).

The activity theory framework enabled me to analyze the participants' operations, actions and at the same time, looking at their goals and motives. This helped to identify the major contradictions within the waste management activity systems, in the object of activity, between the mediational means, rule formulation and division of labour. A major finding that emerged from this analysis was that **dialogue** was a crucial missing tool for learner participation in all the schools' activity systems. This missing tool and the contradictions from which it emerged, offers opportunities for expansive learning through scaffolding and guiding children's participation within Vygotsky's (1978) ZPD concept (see Sections 3.8.3 & 4.5.2) or 'construction zones' (Russell, 2002, p. 73) of learning. It is within these 'construction zones' that expansive learning as transformation of the object (ibid.) and mediation that scaffolding or guided participation (Rogoff, 1990; Wertsch; 1984; Rogoff & Wertsch, 1984) through dialogue (Wells, 2002, 2007; Palinscar, 1986; Cheyne & Tarulli, 1999; Karlsson, 2001) can take place towards action competence development in learners.

This chapter critically explores the role of dialogue and its importance in scaffolding learner participation within the (missed) opportunities for engaging learners in zones of construction or the ZPD, as revealed by the analysis presented in Chapter 7. It is important to recognize that dialogue as a mediating tool for expansive learning entails

both verbal and non-verbal interactions (Rogoff, 1990). Therefore the importance of **guided participation** within this broader view and as a process for action competence development is also going to be explored.

8.2 Dialogue - The missing tool in the waste management activity systems

Central to Vygostky's ZPD concept (see Section 3.8.3) is dialogue. Through dialogue, collaboration and consultation are the key conduits through which scaffolding (Palinscar, 1986) of learners' participation can be effected by teachers. Literature on scaffolded instruction which is similar to guided participation (Rogoff, 1990), according to Cheyne and Tarulli (1999) suggests that,

> a major feature of ZPD is its dialogical structure in the Vygotskian sense: one in which tutor and learner are engaged in an exchange that aims at creating a consensus regarding, among other things, the goal structure of the problem at hand and the actions most apposite to the problem's solution (p.16).

Palinscar (1986, p. 74) describes a scaffold as a "process that enables a child or novice to solve a problem, carry out a task, or achieve a goal that would be beyond his unassisted efforts". He sees the scaffold metaphor as particularly useful in its use for guiding learners within the ZPD such as during their participation in the waste management activities observed in this study. Palinscar (1986), like Cheyne and Tarulli (1999), notes that dialogue is the very means by which guided support is provided and modified in the ZPD, indicating the significance of dialogue as a meditational tool in enabling learner participation. She sees dialogue as a way in which teachers can play the role of nudging the learners "from one level of competence to the next and eventually to independent application of the instructed skill" (Palincsar, 1986, p. 74). Cheyne & Tarulli (1999) and Palincsar (1986) in essence seem to collectively understand Vygotsky (1978) to mean that dialogue constitutes the key conceptual pivot in the operationalising of the ZPD. Vygotsky emphasises the need for the teacher and the learner "to occupy the same epistemological space and for critical dialogue and communication to strive for congruence" (Cheyne & Tarulli, 1999, p. 14) in order for scaffolding or guided participation to be successful. Clearly, this key ingredient for realising the infusion policy imperative was missing in the mediation of learner participation in all three schools' waste management activity systems. Teachers and children apparently occupied the normalised (Ketlhoilwe, 2007a, 2007b) space where

both subjects were operating materially on the same object but conceptually or ideally on mismatched objects (see Sections 7.3.3 & 4.2.3.2).

8.2.1 The concept of dialogue in learner participation

Karlsson (2001) defines dialogue as an exchange of opinions, information, ideas and meanings, in which the purpose is learning, more than simply utterances. He sees the discourse of dialogue as "a spontaneous movement between asking and answering questions about issues that pertain to each other's lives" with the aim of establishing, maintaining or developing social contact (p.212). According to him, dialogue should take the form of engagement that takes interlocutors (Cheyne & Tarulli, 1999) beyond mere discussion characterised by unidirectional verbal exchange. Learners should rather collaboratively decide how things are or should be. Dialogue in the form that emerged in the tensions in the schools' activity systems where teachers were prescribing rules and ascribing roles to learners without democratic consultation, is merely a technical form of dialogue where it

> is a form of parallel monologues where two or more people come together in the same room, but in fact are talking to themselves without interest in what the others have to say. The debate is also a 'false' dialogue, very similar to a discussion in a negotiation context, i.e. most often a situation where various people state their opinions, theories and whatever reasons or evidence they have to support their opinions (Karlsson, 2001, p. 212).

The participation of learners in the waste management activity systems fell far short even of this definition as it was mainly characterised by unidirectional monologues from teachers to children (see Chapter 7). The way teachers engaged with children in the waste management activities under study was merely 'technical'; teachers used their authority in mediating participation of learners by telling them what should and should not be doing. The critical dialogue between teachers and children has seemingly been stifled by the traditional and cultural value system (see Section 1.8) and the discourses that influenced the implementation and interpretation of the infusion policy and gave rise to the self governance of teachers resulting in normalised teaching strategies (see Section 2.6.5) that have pervaded the pedagogical practices in Botswana schools. This has led to the narrow forms of participation identified in the matrix represented in Table 7.1. As a result of the lack of dialogue in their interactions, contradictions and tensions in the activity systems revealed a resultant parallel social interaction between teachers

and learners; they were operating like railroad lines, presumably pursuing a common object when in essence they were at cross purposes.

Genuine dialogue on the other hand is supposed to go further than exchanging utterances and must be interactive, inclusive, deliberative (Karlsson, 2001). It is concerned with exchange of ideas that allows for mediated forms of participation of learners which embrace the learners' needs and diverse views as well as of the teachers (Hart, 1992, 1997, 2008; Jensen & Schnack, 2006) which is a characteristic feature of democratic pedagogy (Schnack, 1995, 2000, 2008; Mogensen & Schnack, 2010). Dialogue in the participation of learners should be looked upon as a locus of democratic process (Karlsson, 2001; Lansdown, 2001) that allows an open line of communication between learners and teachers. The teachers' failure to provide a collaborative dialogical context widened the ZPD in learner participation, hence curtailing genuine participation and action competence development as shown in Chapter 7.

8.2.2 Dialogue in a traditional authoritarian culture – Is it possible?

Notwithstanding the culture and history of authoritarianism (see Section 1.8), democracy is one of the principles enshrined in the country's national education philosophy of *Kagisano* (see Section 1.7). It is the key tenet in action competence development (see Section 3.6) which claims that democratic strategies and opportunities should be created for dialogue with children when dealing with issues that affect them. Democratic dialogue therefore should be a central tool and the main vehicle towards realising the objective of learner participation as espoused by the infusion policy imperative (see Section 2.6.4) even within the historical and cultural constraints that could have led to, and indeed created patterns of exclusion of learners in environmental education discourses in Botswana schools. Based on this analysis, it would seem that pedagogical processes should be more dialogical than they are at present, if this policy imperative and the need "to encourage and further develop participatory approaches and methods in ways that are not superficial and token" (Lotz-Sisitka, 2006, p. 20) is to be realised. The dialogue can be adjusted to the cultural context and situations, as well as the needs of the learners. Teachers as mediators and brokers in the learning process might need to recognise this and seek strategies to represent the learners' interests and concerns in their selection of themes for waste

management activities, formulation of rules, allocation of roles, and evaluation of these activities within this cultural context.

Consistent with Ketlhoilwe's (2007b) observations, while teachers in this study seemed to have great interest in learner participation in environmental education processes "for its practical value and local relevance, teachers were not adopting practical approaches beyond the school based environmental management activities such as cleaning up classrooms and surroundings" (p. 181). While traditional authority structures played a role in the mediation of learner participation, teachers were reflexive of the normalising strategies they employed in mediating learner participation which emerged from constraints caused by the power inscribed in the interpretation and implementation of the infusion policy in the guideline documents. This policy equates environmental education to science (Ketlhoilwe, 2007b) and neglects the inter-disciplinary nature of environmental education across the sciences and social sciences (Jensen, 2004). Another major contextual factor that influenced teachers' conceptualisation of learner participation was the introduction of a new rule into the school waste management activities: the ministerial directive which affected teachers' pedagogical mediation of learner participation. Teachers also identified other contextual constraints which included limited resources due to incapacitated councils and the poor socio-economic status of the communities where the schools belonged. Against these constraints, Ketlhoilwe (2007b) suggests that "more attention needs to be given to supporting teachers to develop deeper understandings of social change processes in environmental education teacher education programmes" (p.183).

All these constraints compromised the objective of the infusion policy imperative and the goal of participation for lifelong learning for sustainable development within the capabilities approach as envisioned by SADC-REEP (see Section 2.3.2). Children's rights as advocated by the UNCRC (see Section 2.4) are also compromised. What is compromised is The policy's envisaged alignment with the call of producing an informed citizenry as envisioned by the Botswana's Vision 2016 (see Section 2.7) that should equip learners with the necessary capacity to address the socio-ecological issues such as poverty, HIV and others that continue to plague the youth in the country (see Section 1.2).

8.2.3 The role of dialogue in scaffolding participation of learners

Participation of learners in waste management activities is a critical concept of environmental learning processes that are located within social learning and its role in the learner's development of action competence (Jensen & Schnack, 2006, Jensen, 2002, 2004a; Jensen & Nielsen, 2003). Development of action competence relies upon enhancing the learners' cognitive structures and requires the kind of instruction that Palinscar (1986) casts "as a joint venture between students and teachers [who] share responsibility for learning and refining [these cognitive], strategies" (p. 73). Simovska's (2008) work (see Section 3.3.2) provides a three-pronged framework that highlights the quality of learner participation between learners and their teachers. This work identifies (i) the focus of learning activities in which learners are participating, (ii) the expected outcomes of the activities, and (iii) the target of change for their participation. Her framework draws on the democratic approach to participation that is key to action competence development and the socio-cultural approaches to learning which highlight the importance of collaborative participatory approaches to learning in activities in the learners' social contexts. She also highlights the importance of dialogue and reflexivity in the participatory approaches for the transformative process that seeks to bring about change in the learners' socio-ecological issues in their communities and society at large.

It therefore behests that a basic teaching strategy in such participation processes should continuously be scaffolded as this serves to expand the learners' ZPD (Vygotsky, 1978, Rogoff & Wertsch, 1984) in social interactions. Central to this scaffolded participation is dialogue which plays a critical role in providing such instruction (Palinscar, 1986, 1998; Wells, 2002, 2007). In this study, it became evident that specific aspects of dialogue and oral interaction between teachers and learners in these activities were relatively neglected in the learners' participation process. This was in spite of the evident construction zones that were available to build such a dialogical scaffold, as revealed in the dominant forms of participation evident (see matrix, Table 7.1). Because of the prevailing network of discourses that gave rise to the teachers' normalised teaching approaches, teachers have consistently engaged in what Vygotsky (1978) perceived to be a monologue, seldom supporting or considering, much less soliciting ideas generated by learners. There is need for continued and consistent emphasis on communicating with learners as they participate in the activities in order to provide opportunities for action competence development.

Critical to this scaffolded process is the means by which support is provided and adjusted as the teacher collaborates and engages with learners beyond utterances of rule prescription and role ascription to learners. Palinscar (1986) continues to make reference to the work of Vygotsky (1978) and Wertsch (1980) who observed the inherent nature and importance of dialogue in younger children when they engage in problem solving as

> they display the kind of behaviours that are characteristic of dialogue posing and responding to their own questions, essentially internalising the dialogue they have experienced in the initial stages of problem solving when they were collaborating with a more expert or an experienced individual. It is this dialogue occurring with initial instruction regarding the strategy that enables learners to participate in strategic activity even though they may not fully understand the activity and would most certainly not be able to exercise the strategy independently. The relationship between the learner and the teacher in this supportive dialogue is to be contrasted with that observed when students are left to discover or invent strategies independently or when students are passive observers who receive demonstration or are "talked at" regarding strategy use (p. 95).

In dialogical scaffolded instruction, according to Palinscar (1986, p 74), the teacher performs a number of functions: selection of themes or tasks is done together with learners; through supporting the learners' emerging skills, ongoing evaluation of the task's suitability to serve its purpose; the generation and maintenance of the learner's interest in the task through support; the use of modelling, allowing for questioning and explanation to clarify the goals of the task; and the presentation of approximations and appropriate approaches to the task as well as collective evaluation of the task (ibid.). Having provided such a scaffold, Palinscar (1986) recommends that this exercise has to be followed by the gradual withdrawal of the scaffold as the learners demonstrate increased action competence with the activity.

> Given this description, the metaphor of a scaffold becomes clearer because a scaffold is a means of providing support that is both adjustable and temporary. The hallmark of a scaffold is its interactive nature. There is ongoing interaction between teacher and learner in the joint completion of a task in the teaching learning process (p. 75).

But while the scaffold has to be gradually withdrawn, interaction between teachers and learners has to be sustained and informed by the teacher's "constant appraisal of, and sensitivity to the learner's level of functioning" in order to sustain this dialogue (Cheyne & Tarulli, 1999, p. 16). Sustaining the dialogue in the school activity systems is therefore a crucial element in action competence development.

8.2.4 Sustaining dialogue in the schools' activity systems

Emerging from the analysis of learner participation in the schools' waste management activity, was Activity Theory's inability to offer an explanation of the interactional perspectives between subjects and their meditational tools in the activity system because of "its unidirectional portrayal of activity. It was less able to portray reciprocal influences and effects across components" (McAteer & Marsden, 2004 n.p.). This is because the mode of interaction in Engeström's second generation activity systems, within which the dialogue is conducted, focuses more on the material object (Wells, 2002, 2007). Wells (2007) ascribes this focus to Vygotsky's (1978) principle of mediation in which he distinguished two modes of mediation, by tools and by signs without sharply distinguishing between these two kinds of mediation processes. He argues that

> in most work in Activity Theory, this distinction has been blurred or ignored, with discoursing generally being seen as just one of the mediating means that contributes to object-oriented action, functioning in conjunction with other artifacts, both material and symbolic (p.160).

The focus on the material object makes it "more difficult to see the reciprocal influences that participants in a dialogue have on each other through the (spoken) text that they co-construct" (Wells, 2002 p. 48). The mediational model does not well capture the mutual interactions that are involved in working in the ZPD (ibid.) between teachers and learners, learners and learners or other members of the community, and the extent to which this is resourced, supported and sustained in learner participation (McAteer & Marsden, 2004). It does not address how dialogue was constituted let alone sustained to facilitate learner participation within and around the schools' waste management activity systems. Dialogue needs to be looked at beyond the interface to the mode of social interactions where teachers' utterances should have been aimed at ensuring the learner's maximal participation. According to Wells (2002), dialogue as a mediation tool in the activity system should constitute the primary action. Material action (where learners participated according to rules prescribed and roles allocated to them) should play an ancillary role because productive interactions are those that orient instruction toward the ZPD.

> Oral discourse is an indispensable mediational means, for both coordinating the joint activity as a whole as well as its constituent actions, and enabling subjects to manage their

272

interpersonal relationship in such a way that both feel that they are participating on personally satisfying, if not entirely equal, terms (p. 58).

Focus on dialogue in this interaction would therefore highlight its importance as an appropriate mediational tool: children's freedom to voice out any disequilibrium would not have severely been constrained by the predominantly teacher-directed pedagogies which did not allow space or opportunity for the children to express themselves (see matrix, Table 7.1). Palinscar (1998 p. 350) suggests that sustained verbal interaction is the key to co-construction and cognitive change and growth in learners. She cautions, however, that such growth may not be enough if there is insufficient verbal interaction or if the social structure permits passive compliance as revealed in all the schools' activity systems reported in Chapter 7. It seems, according to Wells (2002, p. 48) "therefore, that a rather different form of representation [emphasis] is needed to highlight the reciprocal relationship between the semiotic actions of subjects engaged in dialogue". In this case the focus would be more on the sustained interaction between teachers and learners and how this interaction worked towards meeting the policy intended object, which the action competence framework attempted to accomplish. Perhaps this would have diverted the focus from the material tool mediated action of cleaning and picking up of litter by learners in order to embrace learner participation through a 'clean schools' discourse, to learner action competence development (see Chapter 10).

8.3 Learners participating within a constrained ZPD

In all the three cases under study, as reported in Chapter 7, picking up of litter and classroom cleaning were the main activities which the schools used as tools to mediate learner participation. While these were important and worthy areas for schools to pursue in terms of what teachers perceived as contributing to the development of practical skills in learners, they did not seek to develop learners' sense of agency. Teachers could have been focussing on supporting learners' potential from the point of their development by recognising and locating the children's ZPD (Vygotsky, 1978, Wertsch, 1985; Rogoff, 1990; Rogoff & Wertsch, 1984) in order to assist learners in expanding this zone by opening up available opportunities. Instead, their focus was on developing learners' behaviours and skills regarding their performance in maintaining a clean school. Without the required support and assistance from the teachers, learners failed to develop their action competence, capacities and capabilities further (see Section 2.3.2), depriving them of cognitively developing and participating beyond the level of what they were doing on their own, at their existing levels of development. Chisholm

and Leyendecker (2008), in their analysis of curriculum reforms geared towards learner-centred pedagogies in sub-Saharan Africa, call for "a critical link between the reform agenda and changing actual classroom practice" (p.203) (see Section 1.5). They acknowledge and suggest that

> curriculum changes probably work best when curriculum developers acknowledge existing realities, classroom cultures and implementation requirements. This requires understanding and sharing the meaning of the educational change, providing for adaptations to cultural circumstances, local context, and capacity building throughout the system. For learner-centred education to take root in local African contexts, teachers need to understand the underlying idea, be motivated to change practice, adapt and apply appropriate pedagogies, and have the capacity to do it (ibid.).

Chisholm and Leyendecker seem to suggest that this reform agenda can only be realised when it is realigned to focus on the contextual factors such as classroom cultures, socio-ecological issues and challenges children face. They concur with Tabulawa (2009) who suggests that the infusion policy was meant to provide a framework for curriculum reforms that would produce a 'self-programmable learner' who should possess qualities of communication skills, interpersonal skills, work activity skills, creativity, innovativeness and flexibility in order to respond to the socio-ecological challenges facing learners (ibid.).

8.4 Focus on task performance versus supporting learners' potential

In all the activities learners were essentially operating at what Wertsch (1984) would call their level of actual development. This is essentially a form of development in which their capacities, competencies and capabilities (Lotz-Sisitka, 2009; Sen, 2009) were not being developed. This was a result of historically developed activities that had been normalised into existing school culture culminating in the schools' choice of these activities as mediation tools that focussed mainly on low level learner participation, to the exclusion of the learners' participation potential. According to Wertsch (1984), Vygotsky

> was concerned with the relationship between two levels of development: a child's level of independent functioning (the level of "actual development") and the level at which he or she can function while participating in instructional social interaction (the level of "potential development"). It is these two levels of task performance that define the boundaries of the zone of proximal development (p. 2).

This can be read, in this study, as a critique of the schools' focus on those tools that mediate learner participation without due regard for the learners' potential growth, leading to an absence of opportunities for collaborative dialogue (Palinscar, 1986; Karlsson, 2001; Wells, 2002) with learners in order to stretch their potential in an action oriented manner (Jensen, 2000, 2004; Jensen & Nielsen, 2003). In all the schools studied, it became evident the teachers equated participation of learners in these normalised activities with genuine participation in which learning was supposed to have been taking place. Chisholm and Leyendecker (2008) and Tabulawa (2009) seem to concur with Ketlhoilwe's (2007b) point about inadequate teacher education to engage new forms of pedagogy.

According to Wertsch (1984), the form of participation taking place could only depend on which level of task performance the learners were operating at to fulfil the structured requirements and rules prescribed by the school or on a collaborative level (p.3). This analysis points out that from the teachers' point of view and their concept of learner participation (picking up litter or cleaning their classrooms), learners' participation was at their actual level of potential development. "From the point of view of their immediate potential development" (ibid.), as suggested by Wertsch, they were merely operating at lower levels of their potential development, as defined by teachers' assumptions and practices. He elaborates on this point by stating

> That which the child turns out to be able to do with the help of an adult points us towards the zone of his or her proximal development. This means that with the help of this method we can take stock not only of today's completed process of development, not only the cycles that are already concluded and done: we can also take stock of processes which are now in the state of coming into being, are only ripening, or are only developing (p. 3).

This study, however shows that potential zones of proximal development are influenced by teachers' knowledge, experiences and practices which are all influenced by the prevailing networks of dominant discourses as observed by Chisholm and Leyendecker (2008), Tabulawa (2009) and Ketlhoilwe (2007b).

The waste management activities in schools presented teachers with opportunities to devise strategies geared towards joint collaborative activity. Teachers could expand the learners' participation and cognitive and capacity development, using available cultural tools to advance the level of the learners' actual development to that of the learners' potential development. This could have allowed learners to be more pro-creative and

action competent in their participation. And as it emerged in this study, if teachers were to adopt this approach in their mediation of learner participation using available cultural tools accompanied with critical dialogue, this would have served "to awaken and arouse to life those functions which are in a stage of maturing, which still lie in the zone of proximal development" (ibid.). This form of joint cognition through collaboration and dialogue would be internalised to become the structure of the learners' cognitive functioning. Wertsch (1984) goes on to emphasise that collaborative participation and dialoguing with learners in these activities:

> sets in motion a variety of internal processes of development in the child. At this point, these processes are still possible for the child only in the sphere of interaction with surrounding people and in the sphere of collaboration with peers. But these processes, which constitute the course of internal development, then become the internal property of the child himself or herself (p.4).

It was in those construction zones that assistance and support should have come from teachers as they expanded their involvement with learners using the tools that were available. For example, the policies of infusion and the ministerial directive coupled with dialogue could have provided opportunities for new innovations for learner participation. This raises a fundamental question on how teachers and learners can be practical co-participants with teachers operating within the learners' ZPD, when teachers' own assumptions, knowledge and practices at the start of such a process appear to be so influential. This has implications for teacher education as suggested by Ketlhoilwe (2007b) as teachers need to fully understand the influential role they play in determining learners' potential development.

8.5 Clarifying and representing the object: Mismatched teachers' and learners' objects

The tensions arising from the mismatch in the teachers' and learners' perceived object (see Section 7.3.4) pointed towards a construction zone created by these mismatched objects. This provides both space and opportunity for dialogue in order for to clarify and represent their objects. It is important to recognise that children and teachers as subjects and mediating tools who were both operating within the same activity system each had a way in which they represented their object or what Wertsch (1984) calls a situation definition of the waste issues. Failure to engage dialogically in such situation

definitions, as shown in Chapter 7, led to teachers and learners functioning at cross-purposes. Thus he cautions us that,

> … even though the adult and the child are functioning on the same spatiotemporal context, they often understand this context in such different ways that they are not really doing the same task (p. 9).

Teachers and children thought they were both operating on the same object on a social level within the same activity system and at face value, this seemed to be so. But because there was no dialogue between the two, they ended up operating on different objects (see Section 4.2.3.2). The use of environmental fairs (see Section 7.4.2) as a tool for mediating learner participation was another example in which learners did not fully understand the purpose of their participation. This tension was also revealed in the case where children attempted to micro-manage themselves, though not constructively, through their use of the grass outside for their sanitary needs. Teachers interpreted this as insubordination by children who refused to listen to them (see extract B6.3). Consequently, teachers' interventions could be seen as utterances which had no meaning, relevance and use to learners as Rogoff (1990) observes

> Ideally, the teacher's utterances are aimed at ensuring the learner's maximal involvement in completing the task at hand, even in the absence of the latter's full understanding of the task situation (p.16).

In these examples, construction zones were obviously created between what children could do without, and what they could do through social interaction and collaboration with their teachers, using dialogue as the main cultural tool to make meaning of these utterances. The use of dialogue alone in these interactions in which learners were participating in these cultural activities that have historically developed would achieve little without the guidance of 'more skilled partners [which] allows children to internalize the tools for thinking and taking more mature approaches to problem solving' (Rogoff, 1990, p. 14). This is a role the teachers could have played.

8.6 Guided participation in expanding learners' participation

If constructive democratic dialogue is to be one of the crucial tools in developing learner action competence, there is need to resolve the impasse created by these tensions within the social and cultural structures of the school. This means that major demands are placed on teachers' abilities to provide the necessary support framework to

structure this interaction. This requires careful, close guidance and collaboration with their learners in a way that will develop the required competence and democratic skills (Carlsson & Jensen, 2006) to initiate joint action in addressing waste issues in the schools.

The concept of guided participation pioneered by Rogoff (1990) suggests that

> Guided participation involves learners and their teachers in the collaborative processes of 1) building bridges from children's present understanding and skills to reach a new understanding and skills, 2) arranging and structuring children's participation in activities, with dynamic shifts over development in children's responsibilities. Children use social guidance - both *support and challenge* - in assuming increasingly skilled roles in activities of their communities (p. 8, my emphasis).

Implied within this statement is that in the context of authentic learner participation in waste management activities, its meaning, selection of themes, rules, roles, how it is mediated and solutions, must be negotiated, reflected upon and meanings co-constructed in collaboration between teachers and learners. Teachers have to provide guidance and support to learners from their level of actual development by carefully and sensitively nudging them to a higher level of development. Rogoff (1990) further suggests that

> Guided participation involves adults or children challenging, constraining, and supporting children in the process of posing and solving problems – through material arrangements of children's activities and responsibilities as well as through interpersonal communication, with children observing and participating at a comfortable but *slightly challenging* level. The processes of communication and shared participation in activities, inherently engage children and their caregivers and companions in stretching the children's understanding and skill to apply to new problems (p. viii, my emphasis).

What she is suggesting is that both guidance and participation in these activities which are of cultural value are essential to the learners' apprenticeship in thinking and that this type of guidance may be "tacit or explicit, and participation may vary in the extent to which both learners and teachers are responsible for its arrangement" (p. 8). For example, in School A where children were complaining about lack of support from their teachers, learners were seeking assistance from teachers for solving different problems that they were facing. The intention is for learners to be personally active by appropriating competencies and capacities (Rogoff, 1990) and internalising them so that they can use them to solve any other new problems that arise through what Rogoff (ibid.) calls intersubjectivity.

278

> Underlying the processes of guided participation is *intersubjectivity*: a sharing of focus and purpose between children and their more skilled partners and their challenging and exploring peers. From guided participation involving shared understanding and problem solving, children appropriate an increasingly advanced understanding of and skill in managing the intellectual problems of their community (Rogoff, 1990, p. 8, emphasis original).

The whole notion of guided participation is intended to stress shared activity through open dialogue that should include prior consultation with learners. It should also entail actions that encompass the routine, tacit activities and arrangements of learners and their teachers (p. 17). Intersubjectivity concerns creation of meaning and understanding in a relational approach between teachers and learners - this forms the core and central component of meaningful participation since a common agreement that would have been dialogically reached could result in better understanding of the challenges faced in these activities and of what is possible and what is not. Teachers should

> arrange the occurrence of children's activities and facilitate learning by regulating the difficulty of the tasks and by *modelling mature performance* during joint participation in activities. While [teachers] may rarely regard themselves as explicitly teaching...young children, they routinely adjust their interaction and structure children's environments and activities in ways consistent with providing support for their learning (p. 17, my emphasis).

This approach would demonstrate in practice to learners that their participation was genuine (see Section 3.3.2) and taken seriously. It would be directed towards learners' critical reflections, through a process in which learners' contribution to knowledge and meaning of waste issues in their schools was in focus. This would be based on belief in their capacity to identify problems and solutions in collaboration with their peers and teachers which would naturally lead to the development of their action competence.

Consistent with the constructivist theory which accords significance to context, Rogoff (1998) sums up the whole purpose of guided participation by noting that this form of collaboration does not necessarily

> imply harmonious relations, but rather some degree of shared thinking and effort, which can be the sort that is necessary for an argument to proceed, or for a child to observe ... other companions' values and solutions to everyday problems (p. 726).

Implied by Rogoff in this statement is the need to provide learners with opportunities to construct new knowledge from their authentic experiences. The school becomes a zone in which learners can be afforded the opportunity to exchange their personal views and

critically evaluate those of others, with each of them building understanding based on empirical evidence. This approach emphasises and encourages learners' participation and involvement in learning by looking to them as incumbents of significant roles and as active agents exercising will and purpose, It fosters their natural curiosity, and also takes into account the children's affect, in terms of their beliefs, attitudes, and motivation (ibid.).

In the case of this study, this requires new ways of engaging children in clarifying their visions, themes and problems, decision making pertaining to rules and allocation of roles and reflecting on tools that mediate waste management activities. All this, involves negotiation rather than imposition (Hill et al., 1996). Ideally, this would entail children playing a substantial part in identifying their main concerns around waste issues and setting their visions and objectives as well as processes that they can use to work towards those visions and objectives. Such an approach would respond to the expansive learning model that advocates for participatory learning processes that are of benefit to learners as demanded by the infusion policy and challenges facing children in socio-ecological contexts (see Section 1.2).

8.7 Chapter summary

In this chapter, the importance of dialogue as a key concept and a crucial tool and its role in the collaboration between teachers and learners in learner participation was discussed. The focus was on the use of this tool in expanding the learners' ZPD in order to draw on their ability to move from their potential in the normalised activities to their maximal potential level where they can genuinely participate as critical individuals in their communities. The ZPD offers construction zones in which dialogue with teachers could play an important facilitating role in learners' participation. Teachers need to be aware of the learners' critical social and educational needs and experiences and provide them with the necessary participatory scaffolding and guidance around them.

The contradictions and tensions identified within and among the different components of the activity systems, opened up opportunities for dialogue and guided participation which characterise the concept of expansive learning (Engeström, 1987, 1999, 2001). These were used as starting points for generating learner responses, alternatives, visions, decisions, and other learning activities that characterised the development of working towards action competence in phase two of the research, the main focus of Chapter 9.

CHAPTER 9: EXPANDING LEARNER PARTICIPATION - ACTION COMPETENCE DEVELOPMENT

> "Children's cognitive development is an apprenticeship ... it occurs through guided participation in a social activity with companions who support and stretch children's understanding of and skill in using the tools of culture. The socio-cultural basis of human skills and activities ... is inseparable from the biological and historical basis of humans as a species. The particular skills and orientation that children develop are rooted in the specific historical and cultural activities of the community in which children and their companions interact" (Rogoff, 1990, p. vii)

9.1 Introduction

I have shown how contradictions and tensions that emerged from waste management activity systems in Chapter 7 opened up potential construction zones of learning in the learners' ZPD in which action competence can be developed in learners through guided or scaffolded participation (Rogoff, 1990, 1998; Rogoff & Wertsch, 1984). The need for and role of dialogue as a central collaborative mediating tool in these activities was discussed in Chapter 8. This chapter presents findings from the second phase of the study that sought to explore opportunities which use the tensions that emerged in Chapter 7 as sources for expansive learning (see Section 4.4) for the learners' **action competence** development (see Sections 3.4 & 4.4.1). Learners were guided to select problems or issues of concern, develop new visions and come up with alternative activities and evaluate them (Jensen & Schnack, 2006; Jensen, 2000, 2004a) as a starting point for this action competence development process. These activities were also meant to allow opportunities for social changes in the school activity systems, and meaningful learning, thereby responding to the SADC-REEP ESD initiatives that argue for meaningful participation in environment and sustainability education in southern Africa (see Sections 2.3.2 & 2.5) and the Botswana infusion policy imperative that calls for participatory approaches in environmental education processes that benefit learners (Botswana Government, 2007) (see Section 2.6.4).

9.2 Contradictions and tensions to action competence development

Arising from contradictions and tensions that emerged in Chapter 7, learners were provided with expanded learning opportunities, comprising a broader range of

opportunities and possibilities to come up with a new mode of participation (see Section 4.4). This was achieved when learners were provided with space to question and critically reflect (Mogensen, 1997) in a democratic process (Schnack, 1995, 2000, 2008; Jensen & Schnack, 2006), review the previous way of their participation and forming their own visions and criteria for decision making and choice of action (Jensen, 1997; Jensen & Schnack, 2006; Breiting & Mogensen, 1999; Breiting et al., 2009). This was achieved through a guided learning process in which my role as a researcher was to facilitate dialogue between teachers and learners and among learners to expand their ZPD (see Sections 4.5.2 & 5.8.1.2).

9.3 The action competence development cycle

The IVAC model of action competence (Jensen & Schnack, 2006; Jensen, 1997, 2004a) discussed in Section 4.5.1, was adapted and used for learners to identify and select problems or issues of concern, envision possible solutions and then, based on these, take some action to address these problems through selected activities, then reflect on and evaluate their new activities in an action competence development cycle (see Table 9.1). This provided a methodology for guided participation.

While it might appear that the first three components of the action competence development cycle (see Table 9.1) i.e. selection of themes and identification of problems, envisioning and action taking, were all undertaken in a linear way, practically these components formed an integral part with the fourth component of the action competence development cycle, reflecting and evaluating change, that occurred throughout the study and even after.

The components of the cycle are summarised in Table 5.6 and 9.1 below, from an adapted IVAC model for action competence development.

Table 9.1: The Action Competence Development Cycle *(Adapted from Jensen, 2004a)*

Component of Action Competence Cycle	Area of Focus
A. Selection of waste management themes (issues, problems and concerns)	What are our issues of concern/problems? What are the causes of the problem? What influences are we exposed to and why? Why is this important to us? What is its significance to us/others?–now/in the future? What influence does our lifestyle and living conditions have on the waste problems? How were things before and why have they changed
B. Vision building	What alternatives and solutions are imaginable? What alternatives do we prefer and why?
C. Activities (Action and change)	What changes will bring us closer to the visions? Changes within ourselves? In the classroom/school? In the community? What action possibilities exist for realizing these changes? What barriers might prevent the undertaking of these actions? What barriers might prevent actions from resulting in change? What actions will *we* initiate?
D. Evaluation	How will we evaluate those actions? What comes out of this evaluation?

Guided participation took the form of using questions to engage learners in the action competence development process (see Section 5.8.1.2).

9.3.1 Selection of problems and themes for waste management

The first step that learners were guided to do was to develop a critical starting point and discuss issues and problems that were of major concern to them. They were encouraged to discuss them in order to identify those that needed attention, stating the causes of the problem, how it affects them and others, its significance, history and how it has impacted on their participation. According to Jensen (2004), learners

> need to develop coherent knowledge about what the problems are, how they arose, and what possibilities there are for solving these problems. In addition, we need to promote students' sense of satisfaction and accomplishment, their commitment, and their drive. Knowledge about problems is not transformed into action if courage and commitment are not present; and commitment does not lead to actions without an associated insight into the problem. Put in another way, knowledge without commitment is empty and commitment without knowledge is blind (p. 414).

It was in this vein that the contradictions and tensions (see Chapter 7) identified within and among the different components of the activity system were used as starting points to open up a dialogue (Wells, 2002, 2007; Palinscar, 1986, 1998) with learners. The aim was to nudge learners towards participating to the potential level of development of their ZPD (Wertsch, 1984; Rogoff & Wertsch, 1984). Jensen, (1997) sees this as the major first component of action competence development that

> is concerned with pupils acquiring a coherent knowledge of the problem of concern to them—a knowledge about the nature and scope of the problem, how it arose, who it affects and the range of possibilities that exist for solving it (p. 422).

The next extracts illustrate how this process was opened up.

Extract 9.1: Researcher asking learners to open up the discussion on children's issues in School A

> *R: Do you like your school?*
> *L: Nooo!!! [chorus]*
> *R: What is it that you don't like about your school?*
> *L1: I don't like my school because as you can see it doesn't look nice. I'm worried about toilets, the toilets are so dirty ...   …*
> *R: Can you tell me more about that? Are you saying the council truck doesn't come at all?*
> *L: It comes, but sometimes!! [A couple of them responding at the same time] (AFLI1.1)*

In all the problems identified, they had to ultimately agree with each other and to do this I had to once again support their ideas and settle their arguments by making reference, for example, to their photographs or drawings as illustrated in the next extract.

Extract 9.2: Researcher supporting and moderating argument on prioritising problems and themes with School B learners

> *R: If you were to put those issues in order of importance which ones would you say are the major problems and why?*
> *L5: Leaking taps...*
> *L1: No, dirty toilets, leaking taps are better*
> *L3: I think littering everywhere...*
> *L6: No!!! Dirty toilets please what do you think?*
> *L1: Because we must have a healthy environment*
> *L5: Leaking taps because we cannot leave without water*
> *L1: We can!*
> *L5: Yes, we can't*
> *R: Why don't we look at the photos and see which ones you took pictures of most?...Pitso what do you think?*
> *L7:Toilets   L1:Toilets!!   L3: Toilets!! (BFLI2.1)*

9.3.2 Vision building

Having identified relevant themes or issues of concern, learners outlined their visions and suggested solutions to realise these visions. The aim was to enable them to find solutions to the problems they had identified in a democratic way which is the central feature of action competence and which is also consistent with the ESD initiative.

> In doing this, one key role for ESD in an action competence approach becomes that of developing the students' ability, motivation and desire to play an active role in finding democratic solutions to problems and issues connected to sustainable development (Mogensen & Schnack, 2010, p. 68).

Through questions learners were encouraged to develop their ideas and perceptions about their envisioned future (Jensen, 1997), participation, their roles and how they could do could do things in alternative ways to the normalised approaches that had been characteristic of the school culture over the years (see Chapter 7). One of the learners wrote the group's ideas on a flip chart while the secretary noted them on paper (see plate 9.1 & examples in Appendix A17.11).

Plate 9.1: Learners' focus group discussions

One of the learners had to write on the flip board the ideas that were agreed on by the rest of the group, while the secretary noted these ideas

I then offered to compile and type the list of theme areas of concern and suggested solutions (see Appendices A17.2, A17.4 & A17.6). Having compiled the list, I suggested that learners approach the school SEC coordinator and either the school heads or their deputies to further discuss the list with them, which they all did. I also followed up with the coordinators and the head of school A to follow up on their discussion and solicited support from them (see Section 5.8.1.2), carefully scaffolding dialogue between learners and teachers.

9.3.3 Learner activities

This component of the action competence model focussed on the learners' action experiences by stressing the benefits of taking concrete action during the participation process. Learners were encouraged to develop solutions to the problems that they identified in Section 9.3.1 (see Appendix A17.2, A17.4 & A17.6). The extent to which their activities involved some degree of action was analysed according to the children's attempts to take the initiative and to take the action whether direct or indirect (see Section 3.7.2). They initiated and participated in a wide range of different types of activities through various actions. Some were direct concrete actions and some indirect: all actions formed a vital step in the action competence development process. These are summarised in Tables 9.2, 9.3 and 9.4 and discussed in Section 9.5 and 9.6.

9.3.4 Evaluation

The evaluation of the activities took the form of continuous reflections by learners on their actions in the new activities. They highlighted both constraints and enabling factors. According to Mogensen and Schnack (2010), from an evaluation perspective, the action competence approach calls particular attention to self-evaluation. This provides learners with an opportunity in the participation process to assess their successes and barriers in their actions and their own strengths and weaknesses. This contrasts to evaluations being done solely from 'above' by teachers with a summative purpose (p. 69) as was the case in the previous activities highlighted in Chapters 6 and 7. But this evaluation process also involved teachers and other stakeholders in the school community. According to Jensen (2004a)

> it is important that a particular action not be viewed as an end-product of an environmental education project. Students must have the opportunity to evaluate, reflect, and restructure

their actions—within their project and with their teachers—in order to develop their action-competence (p. 414).

What was crucial in this phase was for children to demonstrate the power to act (agency) which is a fundamental characteristic of action competence by assessing and reflecting on their actions and activities. They need to consider barriers and constraints as well as enabling factors and the objective was to allow them to not merely react to, but importantly, to highlight how these activities could have changed their material and social worlds (Roth, 2004).

9.4 The schools' action competence development cycle

This section presents detailed empirical results and evidence of the action competence that developed or lack of it in the waste management activities that were initiated by learners in each of the schools, mainly guided by me with the help of their teachers. The main objective of the section is to present and analyse activities carried out by learners using the different components of the IVAC model of action competence outlined in Sections 9.3.1, 9.3.2, 9.3.3 and 9.3.4 above. The criteria for presentation and analysis of evidence of action competence described dynamics of learners' activities that:

- considered waste problems and proposed actions which were chosen jointly by the participating learners;
- selected waste problems which provided a scope for a local solution;
- involved concrete actions (direct or indirect) on the part of learners as integrated elements of the participation process;
- involved the development of new human relationships, i.e. social capital, in the community as a consequence of the activities;
- involved the strengthening of insight, commitment, and visions, i.e. action-competence, on the part of the participating learners; and
- shared dialogue between participants and/teachers, including a common understanding of the processes and aims of activities (Jensen, 2004a).

Tables 9.2, 9.3 and 9.4 below provide a summary outline of the selected waste management themes, envisioned solutions and activities by learners in each school. In Appendices A17.2, A17.4 and A17.6, the actual list and suggested solutions as it emerged from the workshops is shown. Further details of activities are discussed in Sections 9.5, 9.6 & 9.7 (see Appendices A17.2, A17.4 & A17.6).

Table 9.2: The Action Competence Cycle in School A (see Appendix A17.2)

Component of Action Competence Cycle	Area of Focus
A. Waste management themes	**Issues, problems and concerns**
a) Poor toilet sanitation	Inadequate and poor maintenance of toilets; poor usage of toilets by children; use of area outside toilets for sanitary needs; litter pick-ups around toilet area without gloves; lack of proper sanitary facilities in girls toilets; shortage of toilet paper
b) Poor maintenance of school infrastructure	Locked up non-functional toilets; old school buildings with peeling paint which makes the school ugly while other schools are well maintained; broken windows; locks and doors largely caused by children but not repaired; overcrowded small classrooms which make cleaning difficult; shortage of cleaning material resources; lack of plants and flowers which makes the school look ugly; broken fence and gate allowing goats into the school
c) Poor litter management	Littering caused by children buying from vendors outside school gate Lack of bins in classrooms and inadequate litter tanks for the school Council's failure to regularly collect and dispose of (take out space)litter
d) Poor maintenance of grass	Uncleared grass which provides a hide-out for children to use for sanitary needs Provides breeding environment for mosquitoes
e) Lack of teacher support	Teachers not listening to children when they need help nor taking their welfare seriously.
B. Vision building *Children's visions*	To be allowed to contribute in making their school a clean, sanitary healthy and aesthetic environment e.g. writing to a 'Builders World'[7] requesting paint To open a school tuck-shop so that children are not allowed to buy from vendors outside the school gate To create a culture in which they could freely approach and communicate with their teachers and school head to discuss their issues and problems To be allowed to clean toilets and clear grass as they used to do previously To ask teachers to support, respect and listen to them when they ask for help
C. Activities *Action and change* (Direct and indirect actions, see Sections 9.5 & 9.6)	Meeting with the EE coordinator, their teachers and school head to discuss their issues and problems; Addressing other children in class and at assembly Toilets, classroom doors, windows, locks fixed Tuck-shop opened but operated by teachers Grass partially cleared
D. Evaluation	Need to be partners with their teachers in evaluating activities Actions still largely undertaken without learner consultation Development of children's social interaction skills; conflict resolution and consultation

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[7] Builders World is one of the largest building material retailers in Botswana, which is quite often involved in charity work.

Table 9.3: The Action Competence Cycle in School B (see Appendix A17.4)

Component of Action Competence Cycle	Area of Focus
A. Waste management themes	**Issues, problems and concerns**
a) Poor toilet sanitation	Poor maintenance of toilets and leaking taps; poor usage of toilets by children; use of area outside toilets for sanitary needs; lack of proper sanitary facilities in girls' toilets; cleaners not properly cleaning the toilets
b) Poor litter management	Littering caused by children bringing packed snacks from home; council's failure to regularly collect and dispose of (space out) litter
c) Poor preparation of food	Poorly prepared food which children throw away leading to unhygienic conditions that attracts flies to the school
d) Poor maintenance of grass	Grass which goes for long periods without being cleared provides hide-out for children to use for their sanitary needs and is a breeding environment for mosquitoes
B. Vision building *Children's visions*	To communicate with the SEC teacher to get toilets fixed and cleaned properly; girls to request sanitary bins in their toilets; to suggest to their teacher to advise cooks to properly prepare food so that it doesn't get wasted; to request that school tuck-shop stocks varied snacks; proper maintenance of school grounds
C. Activities *Action and change* (Direct and indirect actions, see Sections 9.5 & 9.6)	Meeting with the SEC coordinator to discuss their issues and problems and drawing up an action plan; clearing of grass and landscaping; improvement in food preparation; supply of girls' sanitary bins in the toilets
D. Evaluation	Learners and teachers are partners in actions and evaluating activities, though still largely teacher driven Development of children's social interaction skills; conflict resolution and consultation

Table 9.4: The Action Competence Cycle in School C (see Appendix A17.6)

Component of Action Competence Cycle	Area of Focus
A. Waste management themes	Issues, problems and concerns
a) Poor toilet sanitation	Locked up non-functional water system toilets and poor maintenance of pit latrines; poor usage of latrines by children; children writing graffiti on toilet walls; use of area outside toilets by children for sanitary needs; shortage of toilet paper
b) Poor maintenance of grass	Grass which is overgrown provides hide-out for children to use for sanitary needs and attracts goats into the school which eat the children's plants
c) Poor litter management	Lack of litter bins and inadequate litter pits; burning of litter causes pollution; children throw papers around the school; council's failure to regularly collect and dispose of litter
B. Vision building Children's visions	To talk to their teachers and discuss their concerns and problems; to call meetings with their peers and talk to them about their issues and concerns; to teach the young ones on the proper use of latrines; to dig more litter pits; to fund-raise money for buying toilet paper and termite-poison for their plants; to fence their plants and remind children to always close the school gate; to request their parents to come and clear grass; to make children who come late clear grass; to use grass to make compost heap or sell it to livestock owners; to compose songs and create plays related to waste issues; to write letter to council to provide the school with litter bins and to collect litter
C. Activities Action and change (Direct and indirect actions, see Sections 9.5 & 9.6)	Meeting with the EE coordinator and other teachers and deputy school head to discuss their issues and problems; meetings with other children to discuss these issues; made donation sheet requesting funds; dug a second litter pit; made a litter pick-up schedule; extended activities to their homes and community (bus stop); maintained and fenced their plants; toilets fixed after many years
D. Evaluation	Activities continuously evaluated by children together with teachers and other children

9.5 Learners' identification and selection of problems and their visions

Tables 9.2, 9.3 and 9.4 highlight the action competence cycle for the three schools. These show that the learners' selection of problems and themes which covered areas of their concerns emerged directly from tensions and contradictions that were surfaced in Chapter 7. Their visions were mainly centred on creating a school culture where there would be balanced and responsible interaction between them and their teachers in order to collectively address waste management issues that affected them. They also considered the contribution that they could make towards waste management in the school. This was a move that could be viewed as a positive contribution to the school culture. The main issues of concern and problems that were selected and their

envisioned changes and alternatives were captured under the themes discussed in the following section.

9.5.1 Sanitation as a health and an environmental issue

It was clear that learners in all schools were concerned about the environmental health status of their school with particular emphasis on toilet sanitation (see Chapters 6 & 7). They felt the problems were specifically caused by poorly maintained and inadequate toilets and the shortage of facilities such as girls' sanitary bins, toilet paper and gloves for picking up litter around the toilet area, a practice they felt was highly unsanitary. In School A they largely blamed this poor state of sanitation to lack of care and concern for their welfare by their teachers whom they felt did not take their plight seriously (see extract A6.3). In this school they noted that poor waste management was due to inadequate labour, with only one cleaner for a school as large as theirs. They also seemed to feel strongly that the SEC should be the main tool for addressing the waste challenges of the school, a vision that could be achieved if there was dialogue between them and the SEC (see Chapter 8). In School B, though toilets were their main concern, they also identified poor food preparation as another waste management related problem. In School C children blamed the poor sanitation of toilets on the incorrect use by children and irregular cleaning by the cleaner (see extract C6.4). All this pointed towards the children's appreciation of the aesthetic value and health of the environment. Through dialogue, learners in all the schools could directly or indirectly have contributed towards the solutions to the problems. Some examples of the ways learners identified their concerns and how they were supported through dialogue are illustrated in the extracts below;

Extract 9.3: School A learners' problems and causes

R: Of the tasks that you do, which one do you find difficult?
L4: The difficult one is where we pick up litter without gloves around toilets and sometimes you find soiled toilet papers which has been used and you are told to pick it up and we complain that it can cause you disease and it's a hazard to your health we are told "what do you know, just pick it up?" And we are not given gloves.
L3: The lady who cleans toilets is also overburdened because there is a lot of work in those toilets. When girls use toilets, they leave without flushing them and they are not nice to look at.
R: So in other words what you are trying to say is children also don't use toilets properly?
L1: What I am trying to say is that toilet paper is not placed in the toilets for us and so the children will then use the toilets carelessly.

L1: They [older girls] *are showing kids horrible things* [soiled sanitary pads]. *Because after that, they* [little children] *touch and then go and eat food without washing hands, because they don't know what these things are. They should see what to do about this (AFL2.1).*

Extract 9.4: School B learners on health issues

L6: And the food that we eat is not healthy. We always eat beans every day.
R: You always eat beans? Don't you like beans?
L[chorus]: Yes
R: Okay, remember we are looking at waste in the school…so how are the beans not good in relation to waste?
L6: Some children don't eat them and they just throw them away…
L1: Some children just throw them anywhere and then there are these green flies all over and they can cause disease….
L5: It [food] *rots, it smells and attracts mosquitoes which cause malaria.*
L1: Some flies go to the toilet and to the beans which are being cooked by the cooks and this can make us sick (BFL1.1).

The emphasis on sanitation revealed that the children had knowledge of, concern about and were fully aware of waste related health issues, their causes and how they affect them. They were able to link these to environmental issues affirming that health and environmental issues cannot be separated and that they are intertwined.

9.5.2 Teacher support as an enabling/constraining factor in action competence development

Learners, particularly in School A, did not understand that their teacher had a legal obligation towards abiding with the directive (see Chapters 6 & 7). This was all due to the fact that the children were neither afforded opportunities for engagement with their teachers nor were their needs and views ever discussed with them. This concern was addressed with their teachers and their desire to contribute positively to the environmental welfare of their schools. It was this tension that I encouraged learners to focus on in their envisioned attempts to address their schools' waste management problems. Extract 9.5 is an example of how this was supported.

Extract 9.5: Tensions in learners' perception of teachers as mediating tools

L2: This issue, really Mrs Silo, we can improve by … if teachers can be serious about these issues, it would be easy to address them.
R: So how do you think you should approach them to make it easier and bring in teachers and have them take these issues seriously?
L6: They can first take us seriously and listen to us and also be involved in the contribution towards what we want to do, say each teacher paying P20.(AFL2.1)

L6: They don't see us as people. I mean imagine for us girls, only two toilets for so many of us!! How many are we? I guess more than 500 because I know we are more than boys (AFL1.1).

R: Let's hope that after we have compiled a list of all these problems you will go and talk to them, and they will listen, you will approach them, won't you?
L3: We are afraid of them, they won't listen.
R: Remember I have talked to them about this project, so they know that you want to come up with solutions to the problems in the school, they will listen. Because they are also interested in what you are doing.
L: Aaah!
R: You don't think so Tiro?
L2: Maybe when you talk to them yourself they will start to listen to us.
R: We will try and see (AFL2.1).

For learners, understanding and being involved in the identification and selection of problems, being allowed to come up with their visions and suggestions for solutions to the problems, was not merely an interactive exercise, but rather an exercise for learning how to interact positively with their teachers and each other. This was the starting point of a decision-making process and development of responsibility that would contribute towards their action competence development. Jensen (1997) contends that

> the fact that they have been given the opportunity to develop, discuss and share their visions with others—or perhaps participating in developing a common vision—is perhaps one of the prerequisites or precursors of the desire to act (p. 423).

In Schools B and C learners did not seem to be concerned about or uncomfortable with approaching their teachers after I had explained to their heads, deputies and teachers what the research entailed and solicited their support (see Section 5.4.3).

9.6 Learner initiated activities

This section outlines activities and actions that took place as a result of the children's direct actions or indirect influence as an initial attempt to fulfil their visions on a social level. In response to their identified problems and in an attempt to fulfil their visions, the activities that learners undertook assumed different forms of various direct and indirect actions and change (see Section 3.7.2). They started by modelling solutions (see Tables 9.2, 9.3 & 9.4).

9.6.1 Modelling solutions

Having identified their problems the learners suggested various solutions. As the researcher, I had to guide and support them in the focus group discussions. They were free to adjust and change these solutions. Some examples of this process are captured in these extracts from all three schools.

Extract 9.6: School A learners' modelled solutions

L4: We will employ someone once we have accumulated enough money
R: Do you think you can accumulate enough money to employ a person that way?
L5: Can't we contribute ourselves? [money to employ someone to help the cleaning lady with toilets]
L4: We can, and we don't contribute much. We can only contribute P1 only. All of us in the school can contribute P1's each.
R: How many are you in the school?
L3: We are many!
L1: But some of the children here have no money to be honest. Remember that this person has to receive a salary every month and we cannot be able to contribute every month and besides as time goes on this person's salary also has to increase and we cannot afford to sustain this. For this reason we cannot afford to employ a person. But if we do it ourselves without being paid it will be cheaper. We can talk to and ask other children to take part in the cleaning exercise. Dividing ourselves into groups, such that this group on a Monday can go and clean and another group on Tuesday, and so on and so on. We will not involve Std's 1 up to 4. Only Std's 5 up to 6 can do it. Boys will agree on how they do it there and we girls will also agree on how we do it on our side.
L3: I agree with Bataki because what worries me with the money suggestion is that others are never given money when they come to school.
R: Then I think Bataki seems to be correct in saying the solution of employing is not sustainable. But what happens in the event that you are not allowed to clean the toilets because policy does not allow you to?
L2: Then maybe the cooks can help her. There are these ladies who cook, and at times they can go for two months doing nothing without cooking. We can therefore pay them to do the cleaning while they are getting their steady salary for cooking and they get a lot of money without doing anything, so when they are not cooking, they can clean toilets.
...
L4: It [sanitary pads] *requires a place where they can be disposed of properly.*
R: Or if there could be a sanitary bin or garbage bags and then it can be incinerated? What do you think? You could ask for those, can't you?
L: Yes! Yes! [girls] *(AFL2.1).*

Extract 9.7: School B learners' suggested solutions

R: Can you see that we still can't come up with a specific solution for the toilets, but toilets seem to be the biggest waste management problem you seem to have in the school. How will you ensure that they are clean and fixed? What is the first step that you will take?
L3: We will inform Mrs Kelesi or the head-teacher
R: Good! You can go and tell them about your concerns, the things that you are worried about. And then with the children, what will you do?
L2: We can show them how to use the toilets.
R: You show them how to use the toilets and ...?
L1: The toilets can be locked and every class can be given a toilet...
L3: A toilet?
L1: ...and the key for that toilet, every class having a toilet for itself so that they should make sure that the toilet is taken care of and lock it. They do that in Mathethe [another school]
R: That's good. You are coming up with good ideas. So that when the toilets are fixed, each class will have its own toilet. I think what she's suggesting is that every class should be assigned a toilet. It should be given a toilet that they will be using and they keep the key to their toilet. So that they can monitor it, That what you mean Lesego isn't it?.
L3: Yes that's a good point.
R: I agree, that's a good point (BFL2.1).

Extract 9.8: School C learners' suggested solutions

L4: We can ask our parents.
R: To come and clear the grass?
L3: Yes because most of our parents stay at home without working, so they can be asked to come and clear this grass.
R: That's quite a good idea! What does every one think about the idea?
...
L1: What if each one of us brought a roll of toilet paper every month?
L6: Others don't have money. But in our class we sometimes bring toilet paper from home if there is no toilet paper.

R: So far you are doing very well with all these ideas. What is the first thing that you are going to do? Make sure you [secretary] record all these things because you are going to have to refer to them even when you bring them up with your teachers. So what is the first thing that you are going to do?
L2: Toilets, we can make posters that we can put inside toilets telling children to use them properly and we can tell them even at assembly.
L1: We are going to talk to the children tomorrow.
R: But you can't start tomorrow because you have to first talk to your teachers about it and make arrangements. Everything you do, you always have to consult with your teachers. You can't start doing anything without telling them. So tomorrow what you can do is to see Mr Saone and probably the head or deputy? To tell him or her what you intend doing.
L1: It means tomorrow we have to meet, us and we agree on what we are going to say, to the teachers and when he agrees, on Monday we start.
R: Good!! (CFL2.1).

After this the learners drew up a list of their concerns and suggested solutions which they gave to their teachers and heads (see Sections 9.3.2 & 9.4 and lists in Appendices A17.2, A17.4 & A17.6). I followed this up and requested that teachers provide necessary support to learners in their activities.

9.6.2 Opening dialogue with teachers

Having furnished either the SEC coordinators or the school heads with the list of their issues and concerns as well as the suggested solutions (see Section 9.3.2 and lists in Appendices A17.2, A17.4 & A17.6), learners arranged for meetings and actually met with the SEC coordinators, and other teachers in the SEC who they felt were approachable. In School A the children also met with the school head long after their project had started. This was done with some reluctance as they were compelled to communicate with her in English which they found difficult. This then was a further barrier to action competence development in learners (see extract A6.16 & Section 7.4.5). In all three schools these meetings which were direct forms of action (see Section 3.7.2) by learners, were either preceded or immediately followed by the maintenance of infrastructure (see Section 9.7.1) especially toilets. The latter was an indirect influence from learners' submission of the list of their concerns, albeit without further consultation with the children. In School A, children were informed during the meetings they held with teachers about some unused funds in the school's maintenance budget which had not been utilised and was due to be returned to government. They discussed with the SEC coordinator and school head how the money could be used to address some of the problems they had identified. Ironically, throughout the process of maintenance, children were not consulted, neither was any formal communication made to them about the specific intended actions and progress by the management in the maintenance process. But they were given an opportunity to communicate their concerns and this can be seen as an initial step to open up an interactional dialogue between them and their teachers, something that had never previously occurred in the history of the school. This is illustrated in the next extract from the learners' focus group discussions.

Extract 9.9: School A Learners on meeting with their teachers

> *R: So after you went to the office, the toilets were fixed?*
> *L1: Yes, last week after we met with our teachers. After we gave Mrs Seleti that paper* [list of concerns see Appendix A17.2] *she arranged a meeting with us and Mrs Kgalane and*

Mrs Nkafela [the school head]. *They told us that there was money, P10 000[8] that the school was given last year by government and it is supposed to be returned in April if it's not used (AFLI2.2).*

...

R: So today what can you tell me about what you have been doing?
L3: New doors!
R: What about new doors?
L3: They put new doors and locks.
L5: After we met and talked to them about those problems we gave them [list of concerns see Appendix A17.2] *and they told us that there was money from government they said they will use the money to fix doors and toilets (AFL2.2).*

School C learners' meeting with teachers

R: So what has been happening?
L1: We held a meeting with the teacher after our own meeting
R: Mr Saone? [The SEC coordinator]
L1: No Mrs Makwane [deputy head] *and Mrs Lepedi* [another teacher]. *Mr Saone was not there. He was busy, he had gone somewhere for a meeting (CFL2.2).*

In School B the children developed and worked on an action plan with the SEC coordinator (see Appendix A17.11). The action plan, according to them, was a framework to guide their activities and to set targets for themselves. Though they were not yet quite clear how they would specifically put the action plan into operation, it was important and positive to note that this time they would use the action plan to follow up with and solicit support from the SEC coordinator. They held frequent meetings with the SEC coordinator and developed new ways of tackling the challenges they were encountering. Even though they were coming up with innovative ideas themselves, it appeared that the teacher was supporting their activities because they made frequent reference to her as reflected in this quote.

Extract 9.10: School B learners' meetings with teacher

R: So tell me what has happened since we parted?
L4: We made an action plan.
R: You did a …plan, so you did meet?
L4: Yes... with Mrs Kelesi but we did not finish it.
R: What really happened when you met Mrs Kelesi?
L4: We met and decided to go and see Mrs Kelesi, We were supposed to see her on the 20th of February, but she wasn't there, she was sick. And the following Monday I went to see her in her class on the 23rd and I asked her when we will meet her and she said she didn't know and suggested that we call others after school. And she showed me this letter

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[8] P10 000 – Pula (P) is the Botswana currency in which $1 is equivalent to about P6.50

which stated that school children are not supposed to do grass clearing because it is a hazard
R: And then, what then did you do?
L2: She said we are supposed to do plots [flower/garden]. *She was asking us if we didn't want to do plots? And we said its OK we can make plots, and we can make plots for the Environment children* [i.e. the EE club]. *And the water we wash dishes with can be used to water those plots*
R: So it was Mrs Kelesi who was suggesting that?
L: Yes!
R: It wasn't you
L1: No. Mrs Kelesi suggested that and said we tell her if we need help
R: How often do you meet with her?
L3: Anytime when she's free, sometimes when we finish doing what we're doing in class she calls us around her table and we work on our action plan (BFL2.2)
...
R: So how are you going to monitor this, cleaning of the toilets?
L2: We will check every day, because they are not cleaning every day, may be they clean...
L3: Once a week
L4: Twice a week or once. When they have time, they clean twice, but when they don't have time maybe they clean once.
R: So what have you decided you'll do?
L2: We will check which day they have cleaned and then we record. We'll keep on recording, they have cleaned this day, they didn't clean this day
R: Then what do you do? What do you want use that information for?
L4: This information? We will discuss it with our environmental teachers, then we tell them this is not good for us, this is good for us.
R: OK, That's good (BFL2.1)!

9.6.3 Indirect actions' influence on extended dialogue

Another of the indirect actions that the learners had influenced were staff and parents meetings in Schools A (see extract 9.9) and C which were called by the school heads. During these meetings children's issues of concern were raised and discussed with the rest of the staff members soon after the children had met the SEC coordinators and the school heads.

Extract 9.11: Extended dialogue with teachers and parents (School A)

L3: The parents have decided to weed, the… part of the school, the grass
R: Who said they should come and weed the grass?
L7: There was a meeting for parents [chorus].
R: Ooh the school called a meeting?
L: Eeh! [chorus]
R: Tell me what exactly happened that led to the meeting being called.
L6: After we met and talked to them about those problems we gave them [list of concerns see Appendix A17.2]

R: So tell me more about the parents meeting.
L2: Teachers called the meeting so that parents can decide to weed the grass in the school or to pay P10…
L4: Ms Kgalane decided to call a meeting
R: That was all after they met with you?
L: Yes (AFLl2.2)

In School A learners were even told about some funds that the school had, that could be used to fix toilets (see Section 7.1). The complaint about lack of teacher support by learners was not well received by some teachers. It highlighted the tension that can emerge from a socially critical approach to action competence development. From another angle this can be seen as provocative as it might seek to promote what Mogensen (1997) calls a dangerous approach which "questions the interests and operations of certain groups in society" (p. 430) as reflected in extract 9.12. It was dangerous because it was also going against the traditional and cultural rules and regulations of the schools which had a long history of teachers' authority over children who had to respond in submissive compliance (see Section 1.8). I had to encourage them to try an approach that the other learners from another class had used.

Extract 9.12: Learners on teacher support and teacher authority (School A)

R: Yes once you have sought permission from your class teachers and discussed what you are planning to do, you can talk to them yourselves, isn't it? What else, Karabo wanted to say something.
L1: Again Mrs Seleti had said she will talk to the other teachers about our complaints against them and if they don't listen to us, she will talk to the head to talk to them. Because after our meeting with them our teacher was asking us why we reported them [about the list of concerns]
R: Mmhh…What did you say to him?
L3: Aah we said we were not reporting them, we were just raising issues that concerned us and we did not name anyone specifically. I don't know maybe the school head reprimanded them.
R: Maybe talk to him and suggest some things that you can do together with him and other children in your class.
L6: Yes, we talked to ours and she now allows us to talk to our classmates, like the other day we were addressing them about the problems we listed and asking them what they think should be done when she was there.
R: That's good. That is a good idea, so what were they saying?
L6: It was just a discussion in class and our teachers was listening and commenting too.
R: So you see, Erile, you can also ask your teacher that you want to talk and discuss these issues with him together with your classmates. Try it heh?
L2: Yes we will try... (AFL2.2).

The children's questioning and querying their teachers' attitudes, who were adults, a taboo in Tswana culture, could be seen as departing from the norm. It could result in antagonism of some teachers and this could hamper the children's action competence development. On the other hand, in Schools B and C where teachers were more receptive to the children's issues, this provided an opportunity to begin an open dialogue with children and expand their ZPD.

9.6.3.1 Indirect action – Exclusion of learners from dialogue

In Schools A and C parents' and teachers' meetings were called by the school heads. The children were disappointed to not be invited to these meetings. Not including children in the meetings, despite the agenda for the meeting dealing with issues they had raised, revealed the entrenched culture of authoritarianism in the schools (see Section 1.8). It was another missed opportunity for children to contribute as equal and able stakeholders in these meetings as revealed in the next extracts.

Extract 9.13: School A learners on their wish to attend parents' meeting

> *L1: We heard Mrs Seleti the other time say she will call us when the meeting is called but I was surprised when we saw the meeting go ahead without them calling us yet she had earlier on promised that they would call us*
> *R: Oh! really it would have been nice for you to attend and present your issues in the presence of both your teachers and parents.*
> *L2: And we are the ones who brought up these issues (AFL2.3).*

As a result of this exclusion, some of the decisions taken in those meetings were not in alignment with the learners' wishes and stated visions (see Tables 9.1, 9.2 & 9.3). For example, in Schools A and C teachers called on parents to clear grass on behalf of their children or alternatively pay a certain amount of money per child for employing people to do the job. This decision undermined the learners' proactive suggestions of doing the job themselves, creating conflicting ideas between teachers and learners. This could have been resolved through dialogue and consensus had learners been invited to the meeting to represent and justify their own ideas and suggestions. However, it was also a matter of legal compliance that learners were not allowed to do these jobs (see Section, 2.6.5 & Appendix. A10). This could however have been discussed with the learners.

9.6.3.2 Expanding participation and dialogue to peers

Participant learners regularly met among themselves and arranged for meetings with other children in various contexts including morning assemblies and their classrooms. Sometimes they called for special meetings (see plate 9.2).

9.6.3.2(a) Peer learners' resistance to rules

In School C initially learners moved from class to class addressing other children on their visions and expectations. They also issued rules and instructions and told their peers that they would be checking to ensure that they were followed. They did this in a supervisory capacity. Their initial emphasis was on ensuring that the other children picked up litter, which was barely there anyway and issuing rules for other learners to use the toilets properly, rules they expected to be adhered to with full compliance (see plate 9.3). This created some antagonism among other learners, especially those in the same standard and the older ones, who saw them as a new centre of authority. They became known as 'EE Police'. In some cases the posters would be removed or torn, another sign of resistance. But the approach created compliance with most children in the junior classes who sometimes were supervised by a participant who would be carrying a stick. Upon being questioned why they used the stick, learners felt that it instilled compliance with rules, a response which I critically questioned. This is reflected in these quotes.

Extract 9.14: Learners as new authority

> *L2: The other children are stubborn; they don't listen to our rules anymore. When we say they should pick up litter, they refuse to pick up litter. Like Std 7s. They say we can't issue instructions to them, they are the ones who should be issuing us with instructions since they are older.*
> *L1: Even other school children, when we are in class you will hear them calling us saying "Look how things are, what steps are you taking to address this or that, what are you doing about this. And, you are not doing your job!*
> *L6: And they say we should let them take over the job that we are doing because we are not doing anything but focusing on rubbish only.*
> *L1: They say "You are just there to eat the food only! You are not doing your job! "*
> *…*
> *L1: We can assign the latecomers to clear that grass, we give you punishment to clear the grass, if you don't we beat you.*
> *R: Why do you beat them?*
> *L1: They are scared of a stick.*

R: But do you think that will give you a lasting solution. Why don't you try to nicely talk to them without threatening them. What do you think?
L1: Yes, the problem is that they can be very stubborn. But we don't really beat them we just want to scare them so that they can cooperate
R: Just try talking to them without threatening them with the stick and see what happens (CFLl2.2).

This could also be seen to be a result of the embedded authoritarian culture in the school (see Section 1.8), which was highlighted in the tensions surfaced in Chapter 7. With senior classes there was resistance from some of their colleagues who felt that the participants were authoritative and domineering (see extract 9.15). Some would refuse to cooperate, claiming that the ones undertaking the activities should be the privileged participants in the project who had been rewarded with the food they were given for lunch. But together with teachers we attempted to explain to the other learners the role that participants were playing and the reason for the food (see Section 5.4.3.1).

9.6.3.2(b) Consultation as a step to action competence development

In School C, together with some other participants, I suggested that learners talk with their colleagues, especially the senior learners who were not cooperating well. This is reflected in the next extract.

Extract 9.15 Suggestion for participant learners to consult with peers and respect

R: Did you talk to the other children to find out why they are not cooperating and your teachers about these challenges you are facing with other children?
L6: We could ask for meeting with teachers and tell that the problems we have with school children are these ones and list them. So that they can talk to them, because with us they take it that we are just their peers and none of us is old enough.
R: But don't you think you should talk to them as well? [children]. *Would you be doing that as supervisors or would you be picking up papers as well. Because if they see you as supervisors without you picking up litter as well, they might resist.*

L3: My concern is our own discipline, because if we are not respectful to other children, there is no way that they can listen to us. … The other thing is that we also have to look at how we treat them. When you tell somebody to pick up a paper, and you say "Pick up that paper, can't you see that paper next to you?" The thing is we also have to talk to each other properly with respect. Even with adults, like that those ladies that prepare our food, when we tell them that they should not burn litter, we should do so with respect. They are adults and our parents. Things will work out well eventually.
R: That is very important, because you also have to look at how you treat them as Keke says, to see if they will change their attitude. Maybe you also can call a meeting with them not only teachers…

302

.. That is what was raised earlier on by Keke about respect for other children because you have to talk to them in a respectful manner. That is very important because if they feel that you are forcing all these activities on them and you don't treat them with respect, they might resist cooperating with you (CFL2.2).

As the project progressed the learners reviewed their approach with the support of the deputy head and other teachers. They then called meetings with fellow learners. During one of the meetings with the senior classes (Standard 5, 6 & 7) they discussed their concerns and visions in the presence of some of their teachers (see plate 9.2). This yielded a positive response from their peers as they were granted an opportunity to contribute their ideas as well. A few boys in the Standard 7 class started working with and supporting them in all their activities.
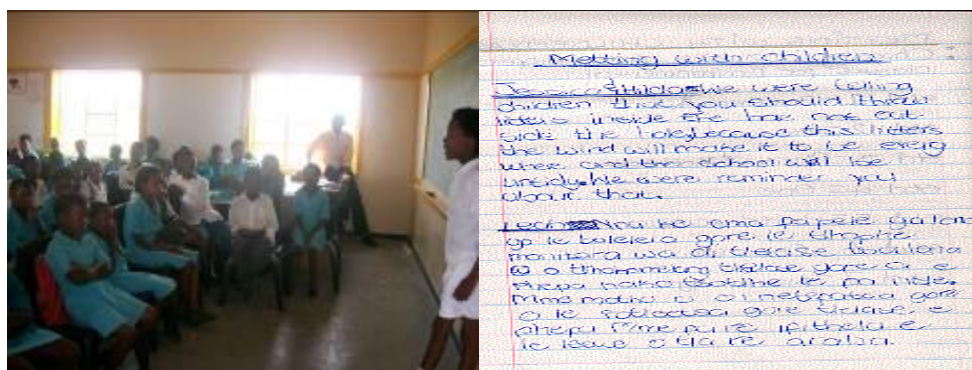
Plate 9.2: Learners meeting and consulting with their peers

After the meetings with other children, the participants designed new posters which for the toilet walls. This time they were not removed (see plate 9.4). To ease any tension with the younger children, they taught them the songs that we had sung at the beginning of our workshops (see Section 5.8.1.3) which they had adapted with new lyrics reflecting waste issues. They reported that the little ones seemed to enjoy this (see Section 9.8.3).

In School B the girls called a meeting with all senior girls and discussed the state of their toilets and ways in which this could be improved. During this meeting they decided to request sanitary disposal bins from Council through their SEC teacher coordinator. Their request was promptly honoured and they were supplied with sanitary bins for each of the girls' toilets by the City Council (see plate 9.4). The Council even committed to collecting the sanitary waste every Wednesday. This promise was kept, at least up to the end of this study. This illustrates the crucial role that dialogue can play in developing

a response to issues that concerned children which had gone unattended for years. Not only were learners able to open up a dialogue with their teachers, but they were able to engage with existing tensions (Chapter 7) and open a productive dialogue with their peers in a more organised and open way. This is crucial to action competence development and thus they were able to bring in a democratic perspective to their participation in the waste management activities.

9.7 Direct and indirect learner initiated physical actions

This section highlights those activities in which learners either directly undertook physical action or had an indirect influence on the schools' physical environment in response to their identified and selected thematic problems and visions for managing waste in their schools.

9.7.1 Maintenance of school infrastructure and sanitation management

Soon after learners had given their teachers their list of concerns and visions, and as a result of their meetings with school heads and their teachers, maintenance of toilets and the other infrastructure began to take place. In School A, for example, the school management decided to use part of the money which the school head and the teacher had told the children about, for repairing toilets, doors, locks and windows to the delight of children (see Section 9.6.3 & plate 9.3). In School C learners made posters with rules on toilet sanitation management which they placed on toilet walls to remind everyone about these rules (see plate 9.4). In School B, the girls, after meeting senior girls, requested a sanitary bin which was provided by the City Council (see plate 9.4).

Plate 9.3: New door and fixed window

Plate 9.4: Posters on toilet wall in School C   Sanitary bin in School B girls' toilets

9.7.2 Maintenance of school landscape

The children also highlighted the poorly managed landscape as a problem, specifically poor maintenance of grass which went for long periods without being cut (see Section 9.4 & Chapter 6). After the meetings held with parents, in School A and C a few parents volunteered to clear grass around the school. As there were only a few parents involved, they could not finish clearing all the grass and in Schools A and B casual labourers were subsequently engaged. In School A, these labourers also failed to complete the job in as there were only a couple of them and because it had been years since the grass had been cleared. In School B grass clearing was completed because the PTA provided funding for employing enough labourers to complete the job. In the other two schools the children wanted to complete the job themselves.

Plate 9.5: Grass cleared by casual labour

Learners insisted that they could fill the gaps by offering to complete grass clearing, just as in School A where expressed the desire to clean toilets. Teachers and school heads in Schools A and C agreed with the children's suggestion. They felt that children had always done this previously and that the task instilled a sense of responsibility. However, learners had to be reminded about the policy to which teachers had to adhere (see extract 9.6). It was an opportunity which, according to Mogensen (1997), was highly significant for children through their actions to be engaged "in understanding the mechanisms, phenomena and barriers that are connected with solutions to health and environmental problems" (p. 433) by providing them with understanding on all levels including an explanation of the policy. Doing this with learners was meant to put barriers and constraints into perspective which seemed to be significant. It was also important that the value aspect of participation of learners in the waste management process became more explicit not only through finding solutions of a technical nature.

The point here was to provide learners with the opportunity to evaluate, reflect, and restructure their actions, together with their teachers, within any project or policy that affected them in order to develop their action-competence. According to Jensen (2004, p. 414) this should be seen as a central component of participation in a critical democratic perspective as highlighted in Chapter 3. Learners had to realise that they could use other alternatives to address their issues. This aspect of action competence development was particularly demonstrated in Schools B and C as illustrated in the two examples that follow in the next sections.

9.7.2.1 Whole school collective landscaping

In School B the SEC coordinator organised plant donations from Barclays Bank and the learner participants, together with other members of the EE club, invited all children and teachers in the school to participate in the landscaping of their school grounds (see plate 9.6). They set aside one day for planting what had been donated. The participant group and other interested learners continued to care for the plants by watering them regularly. To make use of branches that had been cut during the school maintenance, children mobilised the building of a *kgotla* which is a small walled space or courtyard for discussing tribal issues and taking major decisions (see plate 9.6). It represents traditional government and a forum for free exchange of views in a village democratic system (Molutsi, 2004; Serema, 2002; Roberts, 1972; Botswana Embassy, 2010). It is in a *kgotla* that any member of the community has the opportunity to voice their opinion.

It is supposed to transcend gender and age, though children never participate in such forums (Molutsi, 2004). It varies from the form of Parliament on the national level to a small walled space next to a family home for resolving domestic matters. It is based on the

> way of life of Botswana society and it is entrenched on the belief in consultation and democratic practices which is encapsulated in the Setswana saying that, *'ntwa kgolo ke ya molomo'* (the highest form of war is dialogue). Tolerance of opposing views is a long established tradition, which predates the colonial period, and it is generally held that consultation is a process that can never be overdone (Botswana Embassy, n.p).

This *kgotla* is a symbol of democracy and became the place where learners held their regular meetings.

Plate 9.6: *Kgotla* **built from pruned tree branches from donated plants at the school entrance**

9.7.2.2 Tree planting and care

In School C, through their teachers, learners were supplied with trees from the Department of Forestry. Two or three children were allocated to a tree, to plant and nurture. Fencing of plants became one of the activities that learners initiated. They cared for their plants so passionately that they would either stay long after school had

ended or return to school after lunch to tend to their plants. They cut sticks to fence their plants for protection from the village goats.

Plate 9.7: Learners taking care of their plants by fencing and closing gate to prevent goats from gaining access

It was also interesting to note that children agreed on a rule that the school gate should continuously be kept closed. The young ones especially adhered to this rule - they would run to close the gate each time they saw it open without even being reminded. When some of the plants were attacked by termites, some children brought ash from home to add to their plants upon advice from their parents. Their parents told them that for generations ash has been used as a preservative for grain and plants to prevent them being attacked by pests. In spite of this, some plants continued to be attacked by termites and the children decided to seek financial donations to buy termite poison. At the end of the study they still had not secured any donations because of the bureaucracy which required an official authorised donation sheet. While learners had the will and determination to develop a solution to a problem, teachers, also within their contextual constraints (see Chapter 8) were unable to support the children's actions

within these activities. This created creating a condition that did not contribute to action-competence development (Jensen, 2004a, p. 414).

9.7.3 Litter management

In spite of the fact that litter management did not seem to be the learners' main object of concern in all the schools' activity systems (Section 7.3.4) nor was it their top priority thematic problem, especially in Schools A and C (see Section 9.4, Tables 9.2, 9.3. & 9.4), it became a significant focus for learners' direct actions. But this time learners developed a number of solutions to the litter problems some of which were successful while others met with a number of barriers.

9.7.3.1 Re-contextualising normalised litter management

Learners in Schools A and C still prioritised litter picking in their activities in spite of the fact that in their theme selection it was not a priority (see Chapters 6, 7 and section 9.4, Table 9.4). Learners in School C, for example, mobilised a litter pick-up exercise themselves, dug an extra litter pit and even appointed what they called EE monitors in each class to supervise their own classes for cleanliness. On set days the participants and some volunteer senior learners oversaw the general cleaning of the school by classes according to the rota they had designed and which was supervised by EE monitors in each class (see plate 9.8). They even took responsibility for cleaning areas outside of the school in the village. For example, they requested garbage bags from the clinic for picking up litter from the nearby bus stop. What is important however is that they had re-contextualised the litter exercise to make it more relevant to their context and meaningful in their participation. They still sought to achieve a common object of a 'clean school' in which litter pick-ups had become a normalised activity in the school's previous environmental education pedagogical discourses (see Chapters 6 & 7).

Plate 9.8 Learners mobilising other learners in litter management activities

Related to this aspect Jensen and Schnack (2006) in their analysis of the meaning of action competence remind us that

> A school does not become 'green' by conserving energy, collecting batteries or sorting waste. The crucial factor must be what the students learn from participating in such activities, or from deciding something else (Jensen and Schnack, p. 473).

What emerges from this statement is that, though the focus was still litter, and in spite of the fact that it wasn't a major issue in the school, this time it was done according to the learners' terms and rules within re-allocated roles and they felt directly responsible and accountable.

While it was important that learners were involved in ensuring that their school environment is clean, key to their involvement should have been what they were learning in these activities. It is not necessarily the task of learners to improve the cleanliness of the school but the educational value that comes out of these activities that should make "future citizens capable of acting on a societal as well as a personal

level" (Jensen & Schnack, 2006, p. 472). In other words concern for a clean school should be coupled with concern with democratic principles and learning by expanding the learners' ZPD (see Sections 1.7, 3.6 & Chapter 8). It is important to engage the learners through dialogue to enable them to develop alternatives of doing, probably in this case, the same things that they used to do, but in a different way that addresses their socio-ecological needs and which enhances their action competence development. At the same time, the emphasis on engaging learners as full participants acknowledges the sustainability of such the action competence approach. A school which genuinely involves its learners in this way in its waste management activities is more likely to respond adequately to future challenges than if it had a solution imposed upon them (Jensen & Schnack, 2006). Clearly there is a need for guided participation and challenging questions have to be asked such as why children had to use forced participation, for example, threatening with sticks (see extracts 9.14 & 9.15). Another important factor to note was that in all these activities, learners were supported by the deputy head and other teachers who took interest in the children's work as the SEC coordinator was away most of the time.

9.7.3.2 Need for sustained dialogue on learners actions in waste management

In School A, children suggested that a tuck-shop be opened in order to curb the littering caused by children buying from vendors at the school gate and partly to use the proceeds to buy materials for recycling milk cartons (see Section 9.4, Table 9.2).

Although the idea of operating a tuck-shop originated with learners, it was implemented without further consultation with them. To their disappointment and frustration, the teachers took over the running of the tuck-shop. Failure by teachers to engage and further consult with learners when implementing the children's ideas, frustrated learners, who at times would get agitated. I had to nudge them (Palinscar, 1986) into working with their teachers (see extract 9.16). I had to carefully manage this by mediating an amicable engagement with their teachers albeit, I should say, with some difficulty. This challenge also offered an opportunity to remind learners of the importance of extending their project to other members of the school community. This also responds to the challenge of sustainability of projects of this nature beyond the implementers (Ferreira & Welsh, 1997). The following extract from School A illustrates how this was done.

Extract 9.16: Encouraging learners to follow up on suggestions and include others

L3: But since we agreed that we will be selling, it's the teachers who have taken over and are now selling instead of us.
L2: They started selling after we discussed this issue and came up with the suggestion, Yesterday. They are not even telling us anything when we are the ones who came up with the idea.
....
R: But the other day you were talking about this very idea of operating the tuck-shop and we agreed you were to go and discuss it with your teachers when you saw them selling, how far is the idea? What did you do about it?
L6: Teachers are no longer selling.
R: Why?
L2: We don't know. When we asked Mrs Seleti about it, they stopped selling.
R: But don't you think you should follow that up, so that you don't find yourself going around the same idea over and over again and making assumptions about your teachers, just to try to find out the reason they have decided to do so? Because as you say, you are the ones who had come up with the idea and you wanted to do it yourself? You still want to continue with it don't you?
L8: We still want to.
R: But do you know what, you are always coming up with brilliant ideas, the challenge you seem to be facing now is to follow them up. You can still follow up that idea. Like one of you was just coming up with idea of locking up the gate. It can work, that is a very good idea.
...

L1: Or what we could do, is that when say Dirile and Lebo are selling, those of us who are not selling watch over the gates so that no one goes out.

R: Good! But remember you will not be working alone. This project is not supposed to be done by the eight of you only. You should include other children who are willing to work with you. I am only working with you so that you should be the ones driving the project and coordinating it by including other children. Remember, I told you I will be leaving you next month and you will be left with your teachers to work with. Besides you guys will also be leaving next year. Like the tuck-shop idea. You came up with it some time ago now you should be working on doing it and engaging with your teachers where there are challenges you are facing. Like when you say instead of you selling they had taken over now being the ones selling. These are the things you are supposed to talk to them about?
L1: We are supposed to meet with Mrs Nkafela today in the afternoon. The problem is that when you try to talk to them they always say they are busy.
R: But remember you have to make an appointment when you have to meet her because like your teacher she is doing other things. And when you speak to your teachers, please do so with respect. They are adults and they are your parents isn't it?
L: Yes [chorus]
L3: We actually do talk to them respectfully, it's only that they don't seem to want listen to us at times.
R: This is related to the issue of teacher support that you raised the other time. So I would suggest that you try to follow up with your meeting with the head and raise such issues with her as you outlined in that activity and issue sheet that you gave her. I also spoke to her when I gave her the sheet and I have been speaking to Ma Seleti as well about it and they are both willing to support you and assist you in whatever way they can (AFLI2.3).

This tension and lack of continued consultation seemed to be located in the schools' cultural practices (see Chapter 7). This raises the need for sustaining dialogue in the school's waste management activity systems (see Section 8.2.4). While it was important that children were the main unit of analysis and active agents to bring about change in the way waste was being managed in the school,

> genuine participation of students does not imply that teachers play a passive role. Teachers need to take responsibility and assume an active role in projects; passive teachers who wait for pupils to consult them wreck the process and demotivate students. The core element is genuine dialogue between teachers and students, with the teachers playing the crucially important role of supervisor and facilitator—asking provocative questions, coming up with suggestions and ideas for action strategies, putting barriers in perspective, pointing out possible collaboration-partners, etc. The challenge is to find a balance between involving students as active partners who are taken seriously and the partnership of the teachers as they play an important role in the dialogue and the process. Without feedback, the students cannot develop their own attitudes and understandings (Jensen, 2004a, p.423).

Jensen's argument is that it would have been more plausible and beneficial to learners for teachers to have continued the dialogue which children had initiated in order to stretch their potential development within their construction zones of participation or ZPD (see Chapter 8). This is a crucial step towards their action competence development. In this case learners were heard but not consulted; neither were they encouraged to participate genuinely (see Section 3.3.2) in ongoing decision making and to put their initiatives into action. Carlsson and Jensen (2006) would argue that

> it is important to create non-formal, constructive, and issue-oriented forums for children's participation such as try-it-yourself projects—where children administer a pool of money for their own projects...along with the formal framework for participation...(p. 243).

The dialogue needed to be adjusted to the cultural context and situations, as well as needs of the learners as suggested by Chisholm and Leyendecker (2008) and Tabulawa (2009) in their analysis of learner-centred education (see Sections 1.5, 8.2.2 & 8.4). In order for this form of dialogue to be sustained, teachers have to understand the importance of the ZPD concept in learner participation. They also need to understand how their (teachers') knowledge, experiences and practices which are all influenced by the prevailing networks of dominant discourses as observed by Chisholm and Leyendecker (2008), Tabulawa (2009) and Ketlhoilwe (2007b), influences their pedagogical practices and how they support learners (see Section 8.4).

However, on a positive note, through children's pressure, the school authorities were able to equally apply some pressure on the Council authorities to act with regard to litter collection and disposal which they started doing more regularly. In addition the Council supplied the school with a big three tonne litter container, an action that eased pressure on the litter state of the school (see plate 9.9 below).

Plate 9.9: A big litter container supplied by Council resulting in a cleaner school

9.7.3.3 Expanding learners' ZPD through gradual support

Learners in School B were initially reserved and had low levels of motivation (see Section 6.2.2.1). But their teacher coordinator worked with them patiently and closely on their action plan (see Appendix A17.11). They were able eventually to gain confidence and most importantly, together with their teacher, mobilised a number of activities which were included in the action plan (see plates 9.3, 9.4 & 9.5). The teacher held frequent meetings with learners and came up with new ways of tackling the litter challenges, especially the issue of the council not seeming to take responsibility for collecting litter: they got three more litter bins and influenced Council to collect litter more frequently (see Plate 9.10 & Plate B6.1).

Plate 9.10 Mobilisation of litter management

This is a key factor in expanding the learners' ZPD (see Chapter 8). Even though initially it appeared as though the teacher was driving the activities more than learners were, what was important was what Simovska (2000) sees as the teacher's emphasis of 'interpersonal relationships in facilitating relevant student participation in school learning' (p. 34), a factor that was lacking in school A (see Section 9.7.3.2 above). She emphasises the particular importance of the roles that teachers play in such relationships

> as facilitators of learning in the zone of proximal development (ZPD) (Vygotsky, 1978). Such relationships form a kind of "developmental infrastructure" on which school experiences build (Pianta, 1999). As a result, teachers need to be aware of educationally critical aspects of students' experiences and build participatory situations around them. In other words, relationships constitute part of a specific quality of the zone of proximal development, which could be more or less conducive to enhancing students' competencies (ibid.).

After a few weeks of this sustained guided support (Rogoff, 1990; Wertsch, 1984, Rogoff & Wertsch, 1984) there was a marked improvement in the state of litter and toilet management: the school grounds and toilets were clean (see Plate 9.11) and food was properly prepared. This was all because learners were working closely with their teacher to monitor and ensure that the litter picking rota was adhered to by different classes and toilets were regularly cleaned and monitored (see example Appendix A17.12). The number of school bins were increased and Council began to regularly collect litter (see plate 9.10). Council also supplied the girls' toilets with sanitary bins, the contents of which were also collected every Wednesday for incineration (see plate 9.4).

Plate 9.11: Toilets cleaned more regularly

9.8 Evaluation

> It is crucial that students have the opportunity to evaluate, reflect on, and restructure their actions - within a certain environmental education project and together with their teachers - in order to develop their action competence (Carlsson & Jensen, 2006, p. 242).

The evaluation phase of the children's activities which involved participant learners, SEC coordinators, teachers, school heads, cleaners and other school children addressed the various changes that resulted from and were facilitated by the children's activities. It further assessed whether some of the tensions that emerged (Chapter 7) and identified problems (see Section 9.4) were attended to, whether learner visions were realised or not. It did this by placing the barriers and constraints as well as enabling factors into perspective, all of which are contributory factors to action competence development and children's empowerment (Jensen, 2004a, p. 421).

Furthermore, development of social skills and communication between and among children and their teachers and other members in the community, were evaluated as another crucial aspect of action competence development which also served to evaluate changes in rules, roles and how learner participation was mediated (see Chapter 4). Finally, the role of dialogue and guided participation (see Chapter 8) was examined in the process. The evaluation findings are very mixed but mainly positive about the children's experiences, and largely in favour of the approach used in expanding learning, as facilitated in phase 2 of the research. While generally both learners and teachers spoke warmly of the authentic and action-oriented aspects of the project (Jensen, 2004, p. 419), they did however highlight a number of barriers that confronted them in its development.

9.8.1 Children's empowerment and action competence development

Generally, children and teachers in all three schools were happy about the children's activities and acknowledged their genuine opportunity in influencing changes (outlined in sections above) that took place in the schools. Children's empowerment was increased in most of these activities, even though School A still faced major barriers of teacher support, an issue learners lamented. The SEC, other teachers and the cleaner in School C were very happy with the project approach in which children were allowed to initiate and take control of their activities. They felt that the empowerment of children had made their job easier because, where previously they had to issue rules, allocate

roles and supervise and monitor learners in the waste management activities, a large part of that responsibility had been transferred to the children who were doing so with considerable enthusiasm and zeal. The children also observed that because their teachers could see the positive outcomes from their initiatives and activities, this had instilled some trust and confidence in them from their teachers.

Extract 9.17: Teacher evaluation of children (School C)

T: But I like the way you used your approach. To empower them first instead of coming through us first, you see. Because you gave them the power and confidence that they can do these things themselves and that from us they will get the support of resources and help here and there when they need it. But I just liked the approach, of empowering them before anything else. I am really amazed at what they can do on their own. They are also very happy about the empowerment that they have been given (CTI2).

The cleaner in School C felt that her job had become much easier with the children being more cooperative and having taken up certain responsibilities in the cleaning of the school and using toilets more responsibly.

Extract 9.18: Cleaner evaluation of children

C: We are also very thankful for the way you worked with us and with the children because they have listened to you more than to us all. Look at how teachers have always been talking to them without them listening. Teachers are always talking and talking but they never listened to them. But when you came they just listened to you and their teachers and us and never changed the path they followed. They followed your lessons straight all the way (CCI2).

In School B the teacher felt that there was an improvement in the way that children understood waste management. They could now rationalise and make sense of it by being directly involved and by being given an opportunity to talk about it. They now conceptualised waste in a broader and more meaningful sense and understood it in context.

Extract 9.19: Teacher evaluation of learners

T: Your project has helped a lot in that you can see that these children are now able to rationalise and understand that when we talk about waste management what we are actually talking about, not only papers, but food, toilets the neighbourhood etc. (BTI2)

The children also observed that because their teachers could see the positive outcomes from the children's initiatives, this had instilled some trust in them.

Extract 9.20: Children's evaluation

L: I think they now enjoy doing what they used to do more because they feel that teachers are not forcing them because they are now being told by their peers whom they are free to talk to and freely voice their concerns, unlike when they are forced to work because they are afraid of teachers whom they cannot question (CFL2.4).

9.8.2 Guided participation and support

In all schools there was general appreciation and acknowledgement that children's activities had had a direct or indirect influence on the changes that were taking place in waste management. But there were some factors that were constraints to the children's realisation of their visions, hence their action competence development. Among many others was lack of cooperation from other children who perceived the role played by participants as one of authority, rather than collaboration and partnership. They saw the participants as perpetuating the culture of authority, a position that has always been occupied by their teachers (see Section 9.6.3.2(a)). This was particularly noted in School C where, in the initial stages of the project, participants were issuing rules and allocating roles to their peers in a more instructive way without prior consultation. In School A where the impact of the participants' project was particularly low, learners attributed this to the lack of guided support from and genuine dialogue (see Chapter 8) with their teachers, which constrained the children's capacity and capability to participate.

Extract 9.20: Learners on teacher support in School A

The problem is that our teachers don't take interest in what we tell them. Even where there is a decision taken on something that we suggested, instead of coming back to us to tell us that they have decided to do this, they don't tell us anything. I personally now just feel helpless... (AFL2.4)

In Schools B and C however, the children were happy about the support they got from their teachers. The SEC coordinators, school heads and deputies in these two schools were equally content with the support that children were getting from all the other teachers. Both learners and teachers felt that the project had effectively spurred and encouraged teachers to support children and take them seriously in their endeavours for the first time in the history of the schools. The children's views were taken seriously and teachers were now working with them more as partners than as subordinates to whom rules, roles and instructions were issued. This was the case previously in the

normalised practices. Teachers now offered advice and support where necessary and participated in some of the children's activities as well (see Section 9.7.2.1). In School C the children's activities had also inspired the rest of the teachers to cooperate with learners, allowing them time for meetings and other activities.

Extract 9.21: Deputy head comments on children's activities (School C)

DH: I actually really enjoy working with them in this project. To be honest with you, I feel it's good that they can now talk openly with us and even approach us if they feel there is a problem. We work like equals nowadays. It makes our job easier as we don't always have to think on their behalf, because we can never know all their problems if they don't tell us. But now they just come on their own and consult with us about any issue they feel they are concerned about and we help them where we can. Because now they are so keen and enthusiastic (CDHI2).

Extract 9.22: Head (School A)

H: They had addressed it. Because they listed all the things that they felt should be attended to, locks have been replaced, window panes also replaced and toilets fixed and they were grateful because the saw that our elders can listen to us. We also appreciate their reminders (bringing such issues) to our attention (AHI2).

9.8.3 Dialogue as main mediating tool in learner activities

Because of the more open line of communication and more genuine forms of dialogue that now existed between teachers and learners and learners and their peers, a positive rapport was developing within the school community. In School C children made alliances with those teachers in the school with whom they felt comfortable working rather than with the SEC coordinator. The deputy head and one other teacher took particular interest in what the children were doing, more than the SEC coordinator who was almost always busy with other official duties. It is worth noting that both these teachers were from the social sciences discipline, an aspect that brings to question the use of Science as a mediator of environmental education as revealed in Section 7.4.3.1. Children approached these teachers for support and help more than they did the SEC coordinator who they felt was not readily available. It was also particularly encouraging to note that the line of communication between teachers and children was more open, even though the teachers still occupied a more authoritative role by making final decisions at times.

Children felt that part of the success of their activities, especially the response and enthusiasm of the rest of the learners in general, was due to the fact that they could freely communicate with and question their peers who were their equals, more than with their teachers. Teachers were viewed as an authority that could not be questioned, a factor which could sometimes close opportunities for open dialogue. This is reflected in the next quote.

Extract 9.23: School C learner on his peers' response

> *L3: I think because they* [other learners] *see us as their equals they can freely talk to us about anything and tell anything that they would not be free to tell teachers because they are not afraid of us as they are of teachers (CFL2.4).*

They did however recognise that this equality with peers could also militate against their efforts: some of their peers refused to cooperate as they did not take them seriously since they saw them as their equals who had no authority over them as revealed in extract 9.14. This created a constraint within what the children could achieve in these activities on their own and what they could do with the guided support of, and continued dialogue with, teachers.

In School B the children were very happy about the way the cooking of food had drastically improved - this contributed to a cleaner and healthier environment with less food being thrown away. They alluded to the open dialogue that existed between them, their teachers and the cooks. Some teachers especially in Schools B and C acknowledged the children's effort and interest in the activities. Prior to the commencement of the project, children had already been participating in various activities but now they showed more concern and seemed to be involved with more commitment and zeal. They were oblivious to the fact that dialogue was the missing tool. With dialogue they may have realised that learners were concerned all along about the waste management state of the school but there had never been any opportunity for children to voice their concerns. Learners were also happy that their teachers were taking an interest in what they were doing. The teachers were happy that learners were extending their activities to the entire school community, an aspect they felt eased their job. This is reflected in the following extracts from the teachers and learners.

Extract 9.24: Teacher (School B)

> *T: Cleaning... is where they are now regularly picking litter, because these are things they were not doing before. But these days they are committed. They move around their*

classes checking that there is no litter. Even with their toilets where they never used care about, these days they are realising that they have suddenly realised that they are dirty and they are now showing concern about them. They even pick up litter as far as there (BTI2).

School B: Learner on teacher support

R: What did you particularly like about how you were doing it?
L1: We were all planting together, the whole school, all teachers and even our school had joined us ... there was neither adult nor child, we were just all doing it together, it felt good (BFL2.4).

L4: Our teacher is always helping us and listens to us when we have problems. We can ask anytime even during class. She also always asks us if we are having any problems and we tell her yes or no (BFL2.3).

Teacher (School A)

T: So it has influenced others and they can see that they can do certain things by themselves without necessarily having teachers initiating everything. It's only that change cannot come immediately but I can see that they can talk, and I was also telling them that not only at assembly even break time, you can still continue to talk to others about the clean environment ...
Actually they were telling me the other day that "We want to do this, something that even when we are at the university we will look back and say we have done this for School A" (ATI2).

Teacher (School C)

T2: It has assisted us because we feel they are taking up part of our workload and making our job easier because they have become responsible now. Like at times with picking up of litter, they just go and do it with other kids. Not that all the time we should be following them. They are able to reprimand other children when they throw litter carelessly. They also advise/remind us with some good ideas which we would not have thought of on our own, that is why I say they have become responsible (CTI2.T2).

DH in School C

R: What were they doing with the Std 1s and 2s?
DH: It means they will normally conduct sessions with them and teach them and arrange for the activity that they will do with them … It helps us a lot because they are now doing what we were doing. They keep on meeting them and teaching them those songs they say you taught them … like yesterday they were singing, they were saying… something, something about waste, I didn't hear the words properly, but they enjoy it, they enjoy it a lot.
R: They do it on their own, by themselves?
DH: Yes. They just approach us and ask for permission that tomorrow will be meeting such and such a group. They are driving themselves. I always see them busy with this and that. Like the other day I just saw them digging a pit. They are really trying to be innovative (DHI2).

Learner (School C)

> *L3: Ma Lepedi and Makwane sometimes call us and advise us where we could not be doing some things properly. They really help us a lot. They listen to us and treat us well (CFL2.3).*

9.8.4 Development of social skills as action competence

Another critical aspect of action competence development that learners acknowledged had developed through these activities, were social skills. They noticed an emerging ability and capacity to resolve conflicts among themselves. As activities progressed, sometimes developing conflicts, power struggles and questioning of roles among the participants began to surface. They had to confront these emerging conflicts, which in certain instances threatened to split the groups with some participants threatening to quit. This occasionally called for robust dialogue and guiding intervention from myself and teachers. The next sections describe these conflicts and how they were managed.

9.8.4.1 Conflict management-evaluating roles

In School A the learners felt that the participant they had, in the initial phase of the study, elected as chairperson (see Section 5.5.4) was too vocal and domineering. The power struggle among participants that began to emerge created two 'camps' within the three classes from which the participants were drawn. This created tensions resulting in them collectively deciding and agreeing that roles should be rotated., This move was intended to neutralize the power of the chairperson who was seen to be concentrating control around herself. Participation of learners here implies the controversial process of challenging the traditional power imbalances in school activities (Simovska, 2004) even among the learners themselves. This equips them with skills to confront imbalances and reach a consensus collaboratively. I arbitrated the conflicts to assist learners to reach a common solution.

Extract 9.25: Conflict resolution among learners

> *R: I would encourage you to continue engaging with them* [other learners], *not only once. But continue doing it even in your classes or even following them in their classes.*
> *L6: But next time it has to be others who are going to address the children. Because its now like the same person doing the job all the time…*
> *L: Yes!* [chorus]

R: True, you should support each other, whichever way you decide to do it, it should be a responsibility borne by one person only, you all have to be in it together and share the responsibility equally among you.

L5: It shouldn't be the chair doing everything all the time, or the secretary, we have to do it together.

R: Exactly, that's true.

L6: Others have to have a chance of doing it as well

L4: Again Erile was saying it's not right that him as the secretary and Bataki as the chair which are both leading positions should come from the same class. We should get one of the positions from another class…, our class so that it should be more representative.

R: That is good, it's a good suggestion. You can discuss this and see how you reallocate roles. These are some of the things you should discuss in your meetings.

R: What if he doesn't want to do it?

L6: It's because he is complaining that one of them should come from another class

R: Actually it's OK and it's quite good because it shows that you are really developing good skills of debating, negotiating and evaluating your actions. That's good. There is absolutely nothing wrong with it. And you should not take offence to it

L3: Again we have to rotate these responsibilities

R: Good! These are the things you should discuss, without taking any offence or being personal about them. It shows that you are working [reflexively] *and it shows your commitment to what you are doing (AFL2.3).*

In School C, initially these conflicts threatened to split the group where some learners felt that some learners were too domineering and imposing their ideas on fellow participants, other children and elders in the school and they resolved the conflicts (see extract 9.15).

9.8.4.2 Evaluating rules and roles in learner activities

In School C learners began to evaluate each other's performances in these new activities in terms of their abilities and performance in the different portfolios they had been elected into at the beginning of the study (see Section 5.8.1.3). For example, some felt that the secretary was not doing a good job of keeping records of the activities and they suggested that she be replaced by another who they felt would be more skilled for the job.

Extract 9.26: Role allocation among learners

L1: Teacher, I am suggesting that we change Bago from being secretary because she is slow and she doesn't write all the things we would have agreed on. I was suggesting Lea does it because she's fast.

[Silence]

R: There you are, what do others think?

L4: I agree with Heda, like the other day when we were having a meeting, we started arguing about the things we had said it the previous meeting because they were not written.
R: Bago?
L6:[Smiling] *I am usually slow in writing, even in class, but the other time I did ask Lea to help me take notes as well in the meeting.*
R: Do you know what, why don't you discuss this among yourself in the next meeting. These are some of the issues you have to deal with, without taking any offence towards what each one of you says. You just assess the issue objectively and agree on a decision. If you have a problem resolving it, let's discuss it next time or see Mrs Lepedi. Have you ever heard of something called a "constitution"?
L: [looking at each other and smiling]
R: A constitution is where you come up with certain rules on how you are going to run your project and what each one's responsibilities are and what to do if anyone is not able to meet their responsibilities. You can consider that as well. What do you think?
L3: Since we have another meeting on Thursday we can discuss that then.
R: Are we all agreed on that.
L: Yes [chorus]
R: Just try to be free with each other even with your teachers and the lady who cleans and other children…(CFL2.2).

The positive aspect of this move was that those affected did not seem to take offence at the suggestion. This showed a level of maturity and expansion of the learners' ZPD arising from the dialogue among participants and democratic skills that they had developed in the process. This is a crucial aspect of participation for action competence development because participation according to Simovska (2004)

> presupposes improving students' self-awareness decision-making and collaboration skills, connecting students among themselves and with the school, and empowering both students and school communities to deal with health issues. In this way the health-promoting school approach addresses the issues of democracy, empowerment and action competence (p. 202).

These conflicts also aided me to highlight further the importance of the sustainability of their projects.

Extract 9.27 Learners on distributing roles for sustainability of their projects

R: Tell me in all these activities that you are doing, don't you do them with other children? Because I thought you are involving other children from the different classes so that they work with you or at least with time, as you are still planning a lot of your activities?
L1: Yes. We are going to get somebody to be in charge of their class because we cannot manage to be overseeing all classes to see that they are kept clean alone. We will choose monitors in each class.
R: Are you going to select them yourselves or they will select monitors for themselves?

L3: We will ask them to choose somebody who will be overseeing that the class and surroundings are clean and we will be going around to check without announcing ourselves to see whether they are keeping their classes clean and if the class is dirty (CFL2.2).

R: So what are you going to do? To ensure that the activities that you have come up with go on even after you leave, like who will monitor them?
L: We adopted Mrs Lepedi's idea that we should use the monitor to be responsible for EE in each class. It is better because you avoid many leaders in class and you know there is one responsible for EE issues (CFL2.3).

They extended the new rule to all classes where they arranged for each class to elect a monitor in addition to the existing one whom they called an "EE monitor". This monitor's role would be to coordinate and monitor the group's activities at classroom level (see Section 9.7.3.1 and plate 9.8) and ensure that their activities are sustained, an aspect encouraged in all the schools (see extract 9.16). These efforts are consistent with ESD's call (Chapter 2) and learner-centred education (see Section 1.5) for a reorientation of the education system towards sustainable development in which schools should provide children with a kind of participation that encourages children to develop observation, communication, negotiation and management skills. These are all social skills important for the action competence development of the children to transform schools into institutions that can promote environmental change and social transformation in their communities (McIvor, 1999).

9.9 Summary of findings

The findings on evidence of action competence development from the analysis of learner participation are summarised in Table 9.5. In relating the children's problem themes and visions, carrying out their actions within the schools' socio-cultural contexts, one begins to see a shift occurring in the forms of learner participation from being teacher-directed to learner-teacher directed and learner-directed through dialogue (compare with matrix Table 7.1). This emerging shift tended towards more socio-cultural contextualised participation that revealed some action competence development in the learners; the shaded parts of the matrix extended towards the bottom of the matrix revealing more varied forms of learner participation. The shifts reveal considerations of various outcomes from different contexts within the schools' communities that include the emergence of the learner voices and actions in all three cases.

Table 9.5: Matrix of forms of participation and action competence *(Adapted from Jensen, 2004b)*

Forms of participation \ Action competence	Who identifies the waste management problem?	Who comes up with visions for WMAs?	Who sets the rules in the WMAs?	Who allocates roles in the WMAs?	Who decides what actions to be undertaken in WMAs?	Who evaluates?
a — Teachers' decisions Told clearly to learners	SEC identifies WMA issues that need attention	Teachers still coming with visions	Teachers/ SEC set rules in response to policy objectives	Teachers/SEC Ministerial directive barring learners from some roles	Teachers/SEC	
Teachers inform All learners accept			Learners follow teacher rules	Learners assume allocated roles	In some cases still not negotiated with learners	
Teachers inform Some learners accept Some learners reject	Some learners do not pick up litter or clean unless supervised			At a micro level learners allocate themselves roles		
Teachers inform All learners reject						
b — Teachers' suggestions Common decisions			Learners in Schools B and C cooperated with their teachers in deciding on rules, roles and actions in some activities			Teachers and learners both evaluate learners' actions
Learners' decisions Told clearly to teachers	Learners identified and selected all problems		In most activities learners articulated their decisions clearly to their teachers and some teachers supported children's decisions while others offered little support			
Learners inform Teachers accept	Teachers were clearly informed about learners' themes	Learners' visions told clearly to teachers	Some teachers accepted learners' rules by offering support	Some teachers accepted but offered little support e.g. School A	Some teachers accepted but did not give learners the required support	
Learners inform Teachers reject		Some learners' visions rejected	Some teachers rejected learners' rules	Some teachers rejected		
c — Learners' decisions Told clearly to other learners	Learners' decisions were clearly told to fellow learners	Learners' visions told clearly to other learners	Rules and roles were articulated to fellow learners but initially there was resistance from other learners		Collective mobilisation of activities Some activities were undertaken but others were not	Evaluation done by learners, teachers, cleaners and other children
Learners inform Some learners accept	Learners clearly informed others at assembly and class. In school C orders and instructions were issued	Initially some few learners accept	Generally younger learners accepted rules and roles especially in school C			
Learners inform Some learners reject		Most learners reject initially in School C	Some learners especially older ones refused to cooperate due to the authority approach of participants			
Learners inform All learners accept	This form of participation did not show up in all the schools					
Learners inform All learners reject						
Learners' suggestions Common decisions	Meetings and consultations with other learners led to common decisions	Learners come up with common visions after meeting peers	Some actions were undertaken e.g. fencing of plants supply of girls' sanitary bins, extra bins in the school and landscaping. Some actions were not undertaken because of lack of guided participation and dialogue			

a – Teacher directed   **b** – Teacher-learner dialogue   **c** – Learner directed

The shaded bottom part of the matrix clearly reveals that the limited participation of learners in the initial phase of the study (see matrix Table 7.1), where learners did not seem to influence any decisions and suggestions taken regarding the rules governing activities and their roles in them in the process, had shifted to more forms of

participation. In the current participation, ideas, views and preferences regarding the roles that they could play in these decisions (Jensen, 1997; Simovska, 2008) had been expanded, revealing evidence of action competence development. However, the shaded top part of the matrix shows that some elements of limited learner participation still existed. This could have been due to the schools' entrenched pedagogical practices embedded in the schools' historical culture of the teachers' conception of participation, which was based on narrow views. In some instances this compromised the learners' commitment and drive in their participation. This had implications on the coherent knowledge of how decisions that affected them were reached, often with a lack of sustained guided participation and scaffolding and genuine dialogue (see Sections 9.5.2 and 9.8). This limited scaffolding, dialogue and knowledge cannot be transformed into action competence if commitment and courage are not present (Jensen, 1997, p. 422). It also has an implication on the teachers' competencies, capacities and contexts as revealed by Tabulawa (1997, 2003), Ketlhoilwe (2007b) and Chisholm & Leyendecker (2008).

Contrary to the various models of children's participation that have been put forward including an expanded version of Jensen's matrix used here, I would concur with Graham et al. (2006) that the learners' participation was "somewhat contingent on the nature of the activity and its context and origins, as well as respect for the capacity of [learners] for the task, taking into account their personality differences, social and emotional skills...and motivation" (p. 239). It is therefore worth noting that there cannot be any 'all encompassing' model for participation as a number of models infer. It is clearly evident that children in this study tended to move 'to and fro' in their desired participation depending on a range of factors and conditions (ibid.), which were influenced by the prevailing culture in the school (e.g. use of sticks to control younger learners). This matrix does, however, provide a much richer pedagogical environment compared to the matrix in Chapter 7, Table 7.1.

9.10 Synthesis and discussion: Evidence of action competence development

This section seeks to synthesise and discuss the main themes that emerged as evidence of action competence development in learners through their participation in various activities. The section attempts to respond to their selected themes and visions in relation to tensions that emerged in Chapter 7.

9.10.1 Development of a sense of collective competence

A key aspect of action competence that emerged from these activities was the sense of collective competence between children, teachers and their fellow learners. Within this they were able to exchange and share experiences, action strategies, and constraints and success stories, as well as build relationships, which served as inspirational and motivating experiences for commitment to actions in the learner activities. Learners saw opportunities to develop their own alternative solutions to the waste management issues that had always prevailed in their schools. This created a sense of collective accomplishment which was an intrinsic reward for their genuine participation (see Chapter 3), along with the satisfaction of seeing that they could make a difference (Chawla & Cushing, 2007). Chawla and Cushing further contend that this form of collective competence developing from "mutual support and friendship need(s) to be recognized as not just means to effective group functioning, but from a young person's perspective, valued ends in themselves" (p. 447). This is a key aspect of and a precursor to the development of democratic values that are consistent with the action competence approach.

These steps for building individual and collective competence, as well as practising democratic skills and values, were illustrated by a network of social skills that developed during the activities (see Section 9.8). These included conflict resolution, evaluation and questioning of rules and roles. These were mediated through open dialogue among children and between them and their teachers, all of which were starting points of action competence development in learners.

Notwithstanding a number of barriers and constraints that were encountered in the activities, the guided support and scaffolding of learners that I provided, together with teachers enhanced "social abilities and skills of communication, listening, working collaboratively and cooperating" (Mogensen, 1997, p. 431), turned the previous pessimistic perspective of learners and teachers into a more positive one (ibid.). This new approach was especially important for learners as McIvor (1999) noted correctly that

> for them, understanding and being involved in the design, implementation and monitoring of environmental projects is not just an exercise in learning how to interact positively with the world around them. It is training in decision-making and responsibility that has numerous spin-offs in other parts of their lives (p. 9).

In this case these social skills were perhaps the most rewarding spin-offs of the learners' action competence development whose impact extended to the whole school community.

9.10.2 Contextualising normalised learner participation

Tensions identified in the schools activity systems (Chapter 7) consistently seemed to reveal that school curricula had largely incorporated participation in waste management activities mainly as the narrowly defined and de-contextualised practice of picking up of litter (particularly so in School C). This was normalized into the structural functioning of the school system and cultures (Ketlhoilwe, 2007a, 2007b). Learners in this study responded by re-contextualising their participation within these normalised de-contextualised cultures. This elaboration of the cultural structure of the schools' pedagogical practices was this time enacted according to the learners' own rules instead of their teachers. These rules did however needed to be co-developed with teachers as the case of School A so clearly shows.

It becomes evident that the re-contextualised actions that learners undertook within these activities were neither context-free nor de-contextualised, reflecting the cultural impact that the normalised activities have had on the learners' actions to address waste management challenges. Crucial to their action competence development, learners were using the very same approaches that had historically pervaded the schools' pedagogical discourses to influence their own participation, but this time with re-contextualised rules and roles in the activities. Rather than examining the mediating context as an influence on the learners' behaviour, it becomes clear that context is not separable from the learners' actions in these activities in cognitive terms (Rogoff, 1990). These were challenged and disrupted through guided and scaffolded participation that relied on asking learners critical questions and sustained dialogue (see extracts 9.14 and 9.15).

Rather than viewing learners, teachers and the socio-cultural context of the school as independent factors in the development of action competence in the learners, they should be seen as representing differing angles of analysis in an integrated process within their location in these activities.

9.10.3 Repositioning an epistemological perspective and action competence

Using the action competence model it became clear that for the children, participation in waste management activities goes beyond merely managing waste, to other social, cultural and environmental health issues that affected them in the school. Where pedagogical discourses have historically normalized learner participation in environmental education (Ketlhoilwe, 2007a, 2007b), through narrow approaches on waste management, learner participation in this study revealed their broader view of the concept of participation.

Through this study, and guided questions and opportunities for dialogue provided through the research process, learners were able to represent their agency and demonstrated a broader knowledge of participation through normalised and alternative activities. This agency or action competence became particularly perceptible when learners started to engage and collaborate with other members in the school community and initiated actions that had direct and indirect influence on waste management activities in the schools. Core to the participatory approach was the importance of intersubjectivity and participation-in-meaning (Rogoff, 1990). Simovska (2004) emphasises that

> [i]t is essential that through participation students try to create meaning for the actions in which they participate. The process of the creation of meaning is taking place while they actively search for common ground with other participants in culturally organized activity. Thus, participation in dialogue, and reflecting on and constructing shared meanings about [waste management and] (*my insert*) health problems, their causes and strategies for solutions are equally important in the development of action competence as is undertaking specific actions (p. 203).

While it was crucial that children took action to address some of the issues that concerned them relating to waste management, of key importance was what they learned from this intersubjectivity (Rogoff, 1990) and participation-in-action (Jensen, 2004a; Jensen & Schnack, 2006), its benefits and purpose and their choices of roles and rules. The aim of this participation-in-action was to gain practical and theoretical knowledge about how they could influence their lives and the lives of the community around them through waste management processes that they undertook. Another benefit was the development of a deeper understanding of what the activities meant for them in terms of limitations and possibilities, and an ability to reach a greater insight and clarity about the foundations of their own and others' understanding of waste

management. It emerged that, for learners, the concept of waste management entailed sanitary and health issues. This was shown clearly when learners were provided with opportunities to identify problems, and design rules and roles in these activities.

Because learners at least partially designed the themes and goals of the project themselves, they demonstrated a level of action competence and agency. Their participation and increased involvement in waste management fostered motivation, which fostered competence, which in turn fostered motivation for further activity in more projects (Hart, 1992, p. 5). Page (1990, cited by Marlowe and Page, 1998, p. 16) sums up the importance of the approach taken through this expansive learning framework by stating that;

- Students can learn more when they are actively engaged in their own learning.
- By investigating and discovering for themselves, by creating and re-creating, and by interacting with the environment, students build their own knowledge structures.
- Learning actively leads to an ability to think critically and to solve problems.
- Through an active learning approach, students learn content and process at the same time

This study shows, however, that such learning processes are often culturally bound, and are dependent on dialogue with teachers and more experienced others (such as myself, the researcher) to facilitate learning in the ZPD. Within this learning approach, according to Marlowe and Page (1998), learners were able to construct, create, invent, and develop knowledge as well as to construct meaning about issues and problems that they encountered in the learning process (p. 16). As shown in Chapter 7, teachers did not have the same experiences, understandings and interpretations or knowledge constructs of the waste management issues as the children. Chapters 7 and 9 show that when children participated in these activities, they had their own perspectives, attitudes, and methods of solving their problems (see Section 10.5.4).This was demonstrated by their use of the surrounding bushes for their sanitary needs when they felt that toilets were not usable. In this case, the participation of children in waste management activities should go beyond the immediacy of mere physical involvement in the waste management activities through picking up litter, classroom cleaning, environmental subject fairs, but should expand their thinking in a critical and reflective sense.

9.10.4 Guided Participation and dialogue in action competence development

This study also showed the importance of continued sustained dialogue in the participatory approach, highlighting the importance of intersubjectivity and participation-in-meaning (Rogoff, 1990) (see Section 9.10.3 above). Simovska, (2004) argues that

> Dialogue and action are, of course, inextricably intertwined. Nevertheless, it is necessary to emphasize the importance of student participation in dialogue, particularly since the dialogue remains inherent in teaching and school processes in general as well as in action-oriented teaching (p. 203).

It goes without saying that, while there could have been no huge tangible practical direct activity that was realised, the children's indirect actions influenced some response by the school authorities to attend to some major outstanding waste management issues in the school. Jensen (2004a) argues that

> For such indirect actions to result in increased action competence, demands must be made on teachers to put these barriers into perspective. If teachers lack the skills to deal with how to overcome or tackle barriers—such as non-response—teaching leads to incompetence and indifference among students (p. 414).

Through this consultative and interactive process, ideally according to Karlsson (2001),

> each party in the dialogue is enlightened, thus able to make insightful and informed decisions and more willing to redress injustice. At the same time each becomes fully aware of the limits of their own perspective, and of the possibilities and limitations of reaching a complete understanding of how things really are (p. 214).

All these scholars point to the constitutive aspects of dialogue as the primary means for helping learners develop an awareness of their agency in effecting change even in authoritarian and oppressive circumstances (see Section 1.8). This change could be effected even within the prevailing governing networks of power inscribed by the infusion policy interpretation and implementation by teachers (see Sections 1.6 and 2.6.4). For learners to be transformed into action competent agents, courage and commitment are necessary (Jensen, 2004a), as well as a supportive or scaffolded environment.

9.11 Chapter summary

In this chapter, I presented findings from an expansive learning process that sought to respond to the tensions identified in Chapter 7. Learners were provided with opportunities to take action to influence real life issues and problems that they were confronted with daily, as part of their participation in waste management activities. This was achieved by facilitating dialogue between teachers and learners and amongst the learners themselves through this expansive learning process.

Through this engagement, a broader range of possibilities became available and ideas around participation were radically changed. One positive outcome of this open dialogue was better relationships within the school community. With improved communication came better ideas to solve waste management issues that the community still faced on a daily basis, such as management of litter and sanitation facilities. Newly devised solutions were practical and had a broader impact than the initial normalised ones that teachers had always focussed on. They included mobilising the maintenance of toilets, landscaping the school premises and even re-organising the litter management that had always caused such tension between learners and teachers. Now children seemed to be developing not only a better understanding of the environment, but also developing the ability to resolve conflict amongst themselves and with their elders. By engaging in dialogue with children, they became co-catalysts for change in the school community, even though this process remained culturally constituted and constrained to some extent.

CHAPTER 10: SYNTHESIS, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

10.1 Introduction

This chapter provides an overview and synopsis of the study by reflecting on the study process and summarising the key findings. It highlights some key aspects that emerge from the research, and their implications for the mediation of learner participation in environmental education processes. It also assesses what the study has been able to achieve and makes recommendations. The purpose of this study was to establish a picture of the waste management activities, existing learner waste management activity systems in schools, and how learners participated in these activities. The aim was to explore the potential of expansive learning opportunities to develop action competence for civic agency in waste management through learner participation (see Section 1.9.1). To meet this purpose, the study sought to respond to the following research questions;

1. What is the current picture and nature of waste management activities in Botswana Primary Schools (i.e. what are the existing learner waste management activity systems, and how are they constituted)?
2. How are learners participating in these waste management activities?
3. What contradictions and tensions exist in learner participation in these waste management activity systems?
4. What expansive learning opportunities can be mobilised to develop action competence for civic agency through learner participation in waste management activities and how can they be supported?

10.2 The study synopsis

The purpose of the study was to probe learner participation in waste management activities through in-depth case studies in which I was focused on *how* learners participated in these activities. Furthermore, through emphasising participation, the study sought to offer children opportunities to be more aware of the issues that concerned them daily. It also aimed to make them aware through social transformation they could make changes in the way they participated in these activities in their context (see Chapter 9). The focus was mainly on scaffolding or supporting children through

collaborative dialogue (Chapters 8 & 9) to participate in understanding and addressing waste management issues through developing their action competence both independently and collectively.

To respond to the study purpose, the Cultural Historical Activity Theory (CHAT) activity system, as the basic unit of analysis of an activity, enabled me to focus on how learners and other subjects (teachers in particular) in the school community who shared a common object (purpose) participated in these waste management practices. As a theory which considers how cultural and historical tools both constrain and enable action competence development, it became evident in this study that CHAT played an important role in providing material and conceptual tools that were used to engage in participatory research with learners, as well as provide for various interpretations of the object of their participation and to question the rules and histories that shaped it (see Chapters 4 & 7). The CHAT analysis revealed that teachers paradoxically attempted to meet the policy imperative through prescription of rules, and ascribing roles to children, giving rise to tensions which revealed lack of dialogue between teachers and children (Chapter 7). This led to teachers and learners operating at cross-purposes in their attempt to achieve a common object. This constrained action competence development in learners, a process which also influenced the children's participation and learning experiences. A solution to this tension was to open up dialogue between teachers and learners and amongst the learners themselves through an expansive learning process. In this process children's participation was supported and scaffolded by myself as a researcher, but also by participating teachers and peer group interactions of learners themselves, resulting in the development of their action competence (Chapter 9). Through this engagement, a broader range of possibilities became available and ideas around participation were radically changed (see Chapter 9). Combining activity theory and the concept of action competence, I created a framework to explore how mediating tools in learner participation could enable and constrain their participation. I also explored and how learners could, through participation, negotiate the various tensions they encountered within the activity systems. When they could engage dialogically with other subjects in the community this opened up starting points for action competence development. I used activity theory to conceptualize learner participation as a learning activity that balances the children's agency in meaning making with the social, historical and cultural forces that shaped how learners made meaning of their participation. Perceiving the school context as community of practice (Lave & Wenger, 1991) that provided opportunities for pursuing shared objects and engaging in collective

participation, I showed how the learners' simultaneous participation in these constraining contexts challenged and refined the school communities' understanding of what effective participation meant.

10.3 A summary of key research findings

In this section I highlight the main key findings that emerged from the study.

10.3.1 Dialogue as a missing tool in the activity system

By studying the waste management practice activity systems in the schools exploring how these practices were socio-historically and culturally formed, I identified tensions in the schools' activity systems which showed that participation was mainly teacher-directed with lack of dialogue (Chapter 7). This lack of dialogue resulted in a related problem, namely a mis-match between teachers' views of what activities are necessary and important, and learners' views of what activities are necessary and important in and for environmental education, specifically waste management. Due to culturally and historically formed views of environmental education, I discovered, for example, that teachers wanted children to pick up litter, and this was their primary environmental education concern (see Chapters 6 & 7). Learners on the other hand, identified sanitation management in the school toilets as their primary waste management concern. Teachers had not considered this an environmental education concern.

10.3.2 Participation is rhetorical without dialogue

I identified a further, related problem: that teachers tended to view waste management in a very limited and narrow way. Most waste management activities were simply clean-up tasks such as picking up litter and cleaning the classroom. There is little connection made between how these tasks improve the waste problems at these schools, or why they are being undertaken in the first place. In some cases children consequently saw these tasks as hard labour, and not as a learning activity. This use of children in this way has its foundations in a culture where children must be submissive to their elders and where it is deemed unnecessary to explain one's motives to children (see Chapters 1, 6 & 7). This is part of a broader problem too, where environmental education processes are reduced to involving children in technical activities such as clean-ups, planting trees, last minute projects for environmental fair competitions etc. without the

necessary learning support to understand *why* such activities are worth undertaking (see Chapters 6 and 7). In this way, children may have been instrumentalised in these activities and used to promote an agenda which they do not fully understand or support. Even though the curriculum has promoted the importance and relevance of participation of learners by the infusion of environmental education to respond to the country's needs (see Chapter 2), teachers have come to see it as part of the education's provision of theoretical skills which do not necessarily have any relation to the reality around them (McIvor, 1999).

By prescribing rules and ascribing roles to learners in these activities, it is clear that the focus and resultant outcome is learner behaviour modification and clean schools here and now. This is opposed to developing critical, reflective participation through which learners could develop into adults that will cope with current socio-ecological issues like poverty, HIV/AIDS, climate change related problems etc. and future environmental problems (Breiting & Mogensen, 1999; Jensen, 2004a; Mogensen & Schnack, 2010; Simovska, 2004, 2008). This approach must be seen in connection with whether it is developing learners' will and ability to be involved in waste management issues in a democratic way, by forming their own criteria for decision making and action choices. This is because action must in this sense be seen in a future perspective, where direction is not given beforehand (Breiting & Mogensen, 1999, p. 351). This accords with Sen's (2009) view of capabilities, in which people participate in activities that they have reason to value (see Sections 2.3.1 & 2.3.2)

For example, in this study, engaging learners in dialogue enabled fuller and broader participation by learners in waste management activities which brought to the surface issues that concerned them in school discourses and waste management practices.

10.3.3 Teachers' concept of participation lacks the understanding of dialogue as necessary for ZPD expansion in learners

The significance of activity theory was its ability to reveal the teachers' narrow concept of participation. This in turn gave rise to a failure to realise the importance of distributed learning (Russell, 2002 which lies in the learners' ability to analyze the dynamic interpretation of waste management as both an environmental and a health issue, a gap that teachers should have mediated by understanding, constructing and extending the learners' construction zones of learning or ZPD (see Chapter 8). The ZPD understood

this way considers starting with the learners' understanding of their reality of the waste issues as they encounter these issues and stretching learners to a higher level of discourse. This stretching should incorporate the scaffolding of the learners' deeper meaning making and levels of participation in ways that broaden their understanding of waste issues as both environmental and health related. This takes place mainly through dialogue, which was a missing aspect in the environmental education teaching processes in the case of the schools in these case studies. A good strategy would have been to place instruction and learner participation in a meaningful and broader context through which knowledge is continually (re)negotiated (Russell, 2002) between teachers and learners to bring to the fore this interrelationship. Learning within this form of scaffolded participation, then, is not a neat transfer of information which limits waste to environmental issues only but also includes health issues, development of social skills such as critical thinking, leadership etc.

Activity systems and the action competence framework aided in developing conceptual tools to understand the need for dialogue and the interrelated nature of these concepts in waste management and participation of learners in these activities in the schools. This research revealed the gap created by a lack of dialogue in the mediation process. For example, children's concern and linkage of health related issues to waste through their emphasis on unhealthy toilets, insistence on the use of gloves for picking litter and issues around the food handling and disposal is a link that the action competence approach emphasises (Jensen, 2004a; Simovska, 2004, 2008; Mogensen & Schnack, 2010). This raises the need to realise and treat environmental issues and health issues as not only interrelated, but also fundamentally connected to social, cultural and political aspects of environmental education as propounded by the SADC-REEP ESD initiative and the infusion policy imperative. This is in full harmony with the action competence approach, and aligns well with its broader insistence of understanding environmental problems as societal issues constituted by conflicting interests (Mogensen & Schnack, 2010). A participatory and action-oriented approach highlighted this relationship between health and environmental education by providing basic knowledge and insight around this relationship in the expansive learning processes. This obviously creates important demands and challenges for teachers. They should be both in a position to fulfil the consultant and supportive role through dialogue and other strategies (see Chapter 8) and furthermore, be able to perceive today's health and environmental conditions from an inter-subjective and action-oriented point of view (Jensen, 2004b).

This in turn, requires giving attention to such issues in teacher education, as pointed out by Ketlhoilwe (2007a, 2007b).

10.3.4 Neglect of dialogue and lack of understanding of participation compromises development of action competence

It emerged from this study that in all the activity systems across the schools, teachers have historically used self-governing normalizing strategies inscribed by policy implementation documents, to create new technologies of power in schools and in their response to the policy imperative to mediate learner participation (see Sections 1.6 & 2.6.4). Furthermore it emerged that teachers, using their authority, emanating from the Tswana cultural influence (see Section 1.8), attempted to meet the policy imperative through prescription of rules, and ascribing roles to children in waste management activities without any form of dialogue with learners. This gave rise to an elusive object of children's participation (Chapter 7), as the purpose for their participation in these activities was not clear. In fact it failed to achieve the very object the policy imperative sought to achieve i.e. participation of children as competent stakeholders in these activities (Barratt Hacking et al., 2007; Barratt & Barratt Hacking, 2008). This, coupled with their narrow concept of participation as revealed in the previous section, constrained action competence development in learners. Upon opening up dialogue between learners and teachers and other learners, one achievement was better relationships within the school community. And with improved communication came better ideas to solve waste management issues that the community still faced on a daily basis. Newly devised solutions were practical and had a broader impact than the initial ones that teachers had always focussed on in the normalised activities (see Chapter 9). Learners seemed to be developing not only a better understanding of the environment, but also the ability to resolve conflict amongst themselves and with their teachers. They felt more confident and more equipped to consider changes in their environment outside of the school community. Because learners were given the chance to share their ideas with their teachers and other learners, and saw that they were taken seriously, they also learnt that others, had a right to be heard and taken seriously and that they must also be respected (Lansdown, 2001, p. 7). This resulted in enhanced social cohesion which strengthened their action competence development. By engaging in dialogue with teachers and other children, learners became co-catalysts for change in the school community.

10.4 Research implications on methodologies used in the study

In this section I highlight the strength of the theoretical frameworks that were used for the study methodologies. Methodologies used in this study, which are consistent with situated cognition, helped in understanding how learners are cultural and historical agents embedded within and constituted by socially structured relationships and tool-mediated **activity**. I also highlight their weaknesses.

10.4.1 Cultural historical activity theory (CHAT) as a methodological approach

This theory provided me with the appropriate lens for capturing learner participation in the schools' waste management activities because it allowed me to capture and examine the complexities involved in the mediation of participation in these activities as well as the dynamics at play regarding how children participate.

Cultural historical activity theory (CHAT) allows for processes of engaging learners and working with the 'expertise' (Edwards, 2005) they bring into these interactions It also provides opportunities to observe how they adapt as they engage in these practices to bring about new changes in the way they participate. Hence activity theory provides material and conceptual tools that can be used to engage in participatory research with learners, as well as provide for various interpretations of the object of their participation and to question the rules and histories that shape it (Engeström, 2000, 2001; Edwards, 2005).

Because CHAT has a focus on social contexts, interests and practices, it offers an ideal socio-cultural and historical framework for building and analyzing a picture of the status of environmental education practices in schools. It allows for the setting up of mediation processes and engagements through which expanded learning opportunities for collaboration and interaction with learners can emerge. This enables learners to participate in environmental education practices oriented towards action competence development. It therefore creates a contextual and emergent research framework for exploring broader views of learner participation in waste management activities, and the dynamics that influence their participation in these activities.

10.4.1.1 CHAT critique

Although CHAT appears to be a strong methodology that takes into account the

complex nature of historically developed cultural mediating tools, it is still not very sensitive to complex power relationships between subjects and their influence on social interaction in the activity (see Section 4.4.1). The general problem with it is that it has had wide applicability in developmental research on cognition. Particularly third generation CHAT's main thrust and value is the idea of boundary crossing in which actors from the different activity systems "must cross into *unfamiliar territory* to develop new solutions with people who have different perspectives and backgrounds" (Mukute, 2010, p. 95, my emphasis). In a study like mine where authority structures were clearly embedded in the activity systems, the boundary crossing would compromise the desired anticipated outcome which it seeks to achieve.

For the nature and cultural context of this study, CHAT's developmental approach would therefore not have been entirely suitable. It was on this basis that I opted to extend work with CHAT, by drawing on the action competence approach of expansive learning, as it offers a flexible and open participatory approach, and tools to reflect on emergent participatory learning processes (see Chapters 4, 7 & 9).

10.4.2 Action competence as a methodological framework

The action competence approach is an expansive learning process that provides resources and possibilities for learners to develop, promote, exercise and exert their capacities and competencies to be qualified participants in democratic environments by participating genuinely in relevant aspects of decision-making processes. Within this perspective, participation presupposes improving learners' self-awareness, decision-making and collaboration and conflict resolution skills. It also connects learners and learners with the rest of the school community, empowering them to deal with environmental issues that affect or concern them (see Chapters 3 & 4). In this way the approach addresses the issues of democracy, empowerment and action competence development (see Chapter 3).

Within this approach, children benefit from working with authentic problems from the base of their participation and actions. The fundamental key aspect of their participation is

> *ownership* as a pre-condition for any actions and changes. In order to stimulate the development of ownership, students' genuine participation in selecting the topics to be

addressed, in the development of visions, and of the actions to be carried out is crucial (Jensen, 2004a, p. 423).

Learners seem to acquire action-competence by taking action and trying to influence 'real life' issues that they are confronted with daily as part of their participation in environmental education processes.

10.4.2.1 Forms of participation

Jensen's (2004b) matrix of forms of participation provides a way of systematising and reflecting on learner participation by providing a broader notion of participation which can modified to suit the context because of its flexibility as was the case in this study (see Chapters 7 & 9). I adapted this framework to provide a more explicit way of considering Teacher-directed, Teacher-learner Dialogical and Learner-directed forms of participation, as dialogue emerged as being so significant in action competence development (see Tables 7.1 & 9.5).

However, where the action competence approach has been used for learner centred educational reforms in the SADC (Lesotho and Namibia) contexts, some scholars have argued that it is not sensitive to culture. This has led to its failure to succeed in programmes in which attempts were made to adopt it (Mokuku et al., 2005). By firstly giving attention to the cultural historical contextual aspects through activity system analysis, I was able to locate action competence processes in an understanding of the cultural historical contexts of learning, as a basis for expansive learning by focussing on action competence development. In this way, action competence is situated, yet allows an open framework within which adaptations can be made to suit the cultural context of the programme or project, It enables, for example, consideration of authority structures, the prevailing contexts within which teachers are mediating learner participation, flexibility with time and who children choose to work and align with, as was the case in this study (see Chapter 9).

In a nutshell, other theories of learning and participation have placed their emphasis on knowledge and skills that already existed in the learners. The strength of the methodological frameworks used in this study lies in their ability to focus on something that did not exist at the beginning of the participation or learning process in an activity. This was achieved by looking deeper within the broader context of activities and this

allowed for mediating tools to focus and place activities in a socio-cultural and historical context, hence pedagogically scaffolding participation in context.

10.4.3 The importance of scaffolding and guiding learner participation

Employment of guided participation and scaffolding learner participation through multi-method approaches of supporting learners within multiple zones of proximal development, predominantly by the use of collaborative dialogue, increased participation and building social cohesion, and the practices of socially mediated participation that I used. With the support of teachers, learners' action competence was developed, albeit with some constraints. It became clear from this study that genuine participation for development of action competence in learners does not imply that teachers play a passive role. Teachers need to take responsibility and play a supportive and active role in the learners' activities. Findings of this study show that passive teachers who did not support learners or waited for learners to consult (against the cultural history of their authority on learners) seemed to debilitate the process and demotivate learners (Jensen, 2004a, see Chapter 9). The core element in these activities is genuine dialogue between teachers and learners, with the teachers playing the crucially important role of supervisor, facilitator, guiding, scaffolding and supporting learners' ideas, action strategies (see Chapter 8), and putting barriers in perspective as collaborative partners with children (Jensen, 2000, 2002, 2004a, 2004b). Scaffolding and guiding learner participation within the learners' ZPD is key to the expansive learning process which seeks to develop action competence in learners. This has implications for teacher education and also for developing a deeper understanding of teachers' activity systems and cultural histories of their practices.

10.5 Research implications of key aspects on learner participation

This section seeks to highlight some key aspects that emerge from the findings that have implications for further research and consideration in further mediating learner participation in environmental education processes in schools.

10.5.1 Participation as the learners' democratic right

Botswana has ratified the UNCRC, and in practice, through all its institutions including schools, it has to uphold children's rights to participation. According to the convention,

children have the right to express their opinions and influence decisions that affect them, be treated as active and valid members of society, and be given the opportunity to learn skills of participation and communication. Children have to be provided with full democratic participatory rights (Botswana Government, 1977, 2007) as stakeholders and action competent members of the school community (see Chapters 1 & 2).

In Chapters 1, 2 and 6 it emerged that children in Botswana face socio-ecological risks associated with poor sanitation management, especially in urban and peri-urban areas from where the case studies in this study were drawn. To address these issues in order to achieve social, economic and ecological sustainability, there is a need to build social-ecological resilience and capability to face issues that affect them daily (see Sections 2.3.1 & 2.3.2). This can take place when teaching processes link children's everyday knowledge and experiences with scientific knowledge as well as social learning, which jointly addresses new and emerging problems associated with children's socio-ecological issues. This need became evident in this study where in all three case studies, children were concerned with the poor toilet sanitation in their schools (see Chapters 6 & 7). It was also evident in some cases where children were able to link the arising tensions in activity systems to issues of poverty and socio-ecological issues in their communities as revealed by learners in extracts 7.7, 9.6 and 9.8. These issues provide socially situated opportunities or zones of construction for scaffolding learner participation in their social and ecological environments.

A starting point to meeting this demand and necessity would be an open dialogue between teachers and learners. Schools, as institutions which form part of society, would naturally be expected to uphold the democratic principle as enshrined in the education philosophy of *Kagisano,* to meet this demand (see Chapter 1). It would be paradoxical for Botswana, which has consistently been rated one of the most successful democracies in Africa and it is currently regarded as a model of African democracy (Preece & Mosweunyane, 2004), to fall short of living up to this image in one of the core structures of society, the school. The commission that developed the national education philosophy emphasised that schools themselves were small communities within the broader national society. The life of schools should give expression to Botswana's basic principle of democracy so that children can learn to understand and cherish it (Botswana Government, 1977). Unless this is pursued and achieved, and if schools continue to show quite opposite tendencies, it would be meaningless to speak of democracy (Monyatsi, 2005, p. 356).

In spite of international and national laws and policies (UNICEF, 1989; Botswana Government, 2007) that have accorded children the right to express themselves and participate in decisions that affect them, the study findings reveal that due to the historically embedded contexts such as the authoritarian culture in schools, children's participation has largely been subdued. It seems that good policies may not naturally translate into practical social transformation in response to issues and challenges that seek to be addressed in the society that the children in this study are part of. Additional emphasis is needed on pedagogy and learning how to translate such policies into practice in order to respond to their needs (Chisholm & Leyendecker, 2008).

It would be an unfortunate paradox for historically developed cultural structures to be allowed to impede the realisation of this democratic ideal as enshrined in the CRC, the SADC-REEP ESD initiatives and the infusion policy imperative which seeks to respond to the national education philosophy. It is only through upholding these initiatives, through appropriate mediation processes, that the contemporary social ecological realities of children in this study can be transformed from a state of action paralysis to action possibilities and that there is hope for a sustainable future for them (Breiting & Mogensen, 1999). This is because, while indeed certain aspects of culture have to be upheld for the social cohesion of institutions, such as the family, schools, community and general society, it has to be recognised that democracy is primarily about participation.

> The members of a democracy are not spectators, but participants; perhaps not all equally active at the same time, of course, but all potential participants, who decide themselves what to be involved in, when and why. In this sense then, education for democracy means being educated, qualified, to be a participator. This is the context within which action competence has to be seen (Schnack 2000, p. 110).

This presupposes that within the existing culture or through any other mediating tools or structures that exist and seem to constrain children's participation, we have to understand that children, as part of society, are not inert beings. They need to be recognised as innate social, active, emotional and knowing beings (ibid., p.111). It therefore becomes important to create enabling tools, opportunities and conditions that will equip learners with the necessary skills to contribute as full participants in forms that will develop their action competence and capabilities to respond to social-ecological risks that confront them and their societies. To break the existing barriers as revealed particularly in School A, the challenge is to create conditions and contexts for children

"to realise themselves - to unfold those characteristics traits of human nature that are specifically and uniquely human" (ibid.). This is a responsibility which we, as educators, cannot shy away from, especially in the light of continued adherence to the status quo of respecting culture more than children's rights. However in upholding children's rights, this does not mean we should be doomed to their control or always have to do exactly what they tell us; instead we need to engage in dialogue with them and map out pathways, being open to the possibility of revision, both of thought and action and be willing to negotiate (Cook-Sather, 2002). As revealed in these schools, this is a demanding and long process in which children must learn to take responsibility before they can be granted rights (Lansdown 2001, p. 8). Lansdown succinctly articulates this responsibility by noting that

> Children need opportunities to learn what their rights and duties are, how their freedom is limited by the rights and freedoms of others and how their actions can affect the rights of others. They need opportunities to participate in democratic decision-making processes within school and within local communities, and learn to abide by subsequent decisions. Only by experiencing respect for their own views and discovering the importance of their respect for the views of others, will they acquire the capacity and willingness to listen to others and so begin to understand the processes and value of democracy. It is through learning to question, to express views and having their opinions taken seriously, that children will acquire the skills and competence to develop their thinking and to exercise judgement in the myriad of issues that will confront them as they approach adulthood (p. 6).

In all three case studies in this research, it became clear that to achieve democratic principles within the learning and action competence development processes of children, the process required a well managed process of support and guidance through sustained dialogue and collaboration with the researcher, their teachers, peers and other members of the school community. The support was particularly required from teachers who were the learners' main mediating tool for children's democratic participation. As shown in the three cases in this study, this provides an interesting and productive research arena that can be extended to other contexts and schools.

10.5.2 Significance of dialogue and guided participation

The study revealed the significance of verbal dialogue as being key to guided participation in the learners' ZPD (see Chapter 9). My role as a researcher together with teachers who were the main mediating tools in learner participation was crucial in this process as it seemed to show that those teachers who collaborated with their learners

were more successful (as was the case in Schools B and C) than those who worked with less dialogical interaction and consultation (as shown in School A). As Cheyne and Tarulli (1999, p. 16) suggest, the important aspect about dialogue and guided participation is that it has to be sustained and informed by the teachers' "constant appraisal of, and sensitivity to the learner's level of functioning" (see Chapter 8).

This aspect of the study proved to be quite challenging, particularly mediating between children and their teachers. Children were sometimes upset by their teachers' non-response or when teachers exercised total and exclusive authority. I had to play a delicate role throughout this expansive learning phase of the study, taking cognisance of the culture where children were not expected to challenge adults. I had to consistently and carefully ensure that this was done without compromising the power relations that were already in existence in the school and due to Tswana tradition which demands that children had to address adults in a certain manner to avoid destabilising the equilibrium in the school system. I was uncertain as to whether I had played that role well enough (see Section 9.7.3.2, extract 9.16). For teachers, this aspect of the study has further implications for teacher education. This was particularly evident with School B whose teacher was playing this role with some measure of success. This could be linked to the fact that she had been exposed to some in-service training through workshops and had interactions with the wider environmental education community through attending EEASA conferences. How to support dialogue in schools is a potential area for further research (see Section 10.8).

10.5.3 Challenging the emphasis on normalised approaches to participation

One feature that emerged from the findings is the persistent and heightened contemporary concern with technical and physical aspects of participation; in this case this could be seen in the teachers' emphasis on clean schools and the mis-conceptions of learner participation in environmental education (see Chapters 6 and 7), a view that even children held to some extent.

By mediating learner participation through prescribing rules and ascribing roles to learners in these activities, it was clear that the focus and resultant outcome was a new governmentality. This emerged through the normalisation of the modification of learner behaviour and clean schools in the present as opposed to developing critical, reflective participation through which learners could develop into adults that will cope with future

environmental problems (Breiting & Mogensen, 1999, p. 351). This became an approach that led to action-paralysis around environmental issues as it derived from the status that scientific viewpoints had been given in the school cultures and ways of thought (Jensen, 2004a, p. 406, see Chapters 7 & 9).

Assessment of this approach was seen in connection with whether it had developed learners' will and ability to be involved in waste management issues in a democratic way,

> by forming their own criteria for decision making and choice action. Action must in this sense be seen in a future perspective, where direction is not given beforehand (Breiting & Mogensen, 1999, p. 351).

This study revealed that educational approaches which go beyond the effect-level to include causes and actions, as Jensen suggests, need to be used. While physical involvement was a necessary condition for learning amongst children, and was highly desirable for them in the management of waste practices in the schools, it is not sufficient. I believe that the more important aspect is the idea that learner activities should engage and develop learners' minds, social aspects, as well as their lived concerns and problems that they encounter in their schools and community at large. Not all practical experiences are necessarily educative and beneficial (Jensen, 1997; Stevenson, 2007; Breiting & Mogensen, 1999; Schnack, 1995, 2000, 2008; Mogensen & Schnack; Barratt & Barratt Hacking, 2008; Barratt Hacking et al., 2007). For these experiences to be beneficial, learners as participants need to be allowed to think as they act and this can be realised if they are given the opportunity, space and capacity to do so, as shown in this study. Critical questions, resources for action and knowledge are important along with dialogue. While hands-on activities are important for children to develop life skills, they must also be provided with something to think about parallel to their physical experiences. The children should have a chance to incorporate what they are doing into a larger social picture instead of placing the focus on completing the task. This appears to them to be just one more of the requirements of school in which they don't seem to see the purpose of their participation in the activity as revealed in this study (Chapters 7 & 9). Much as these hands-on and practical activities might enhance their practical skills, this is not likely to be beneficial if there is no opportunity for them to alter the task to fit the meaning-making and purpose to their needs (Jensen, & Schnack, 2006; Breiting & Mogensen, 1999; Mogensen, 1997). Research that sheds light on

children's participation in such processes is needed, particularly in the southern African context where situations are engaging within developing democracies.

10.5.4 The need to authorise learners' perspectives in environmental education through dialogue

The other crucial issue that emerges from this study is the emphasis on the authority that seemingly resides in the teachers' perspectives of the epistemological aspects of environmental education over the learners' (Chapters 6, 7 & 9). The inefficacy of this emphasis is revealed by the schools' responses to policies and curricula imperatives for the participatory approaches in the environmental education learning processes, with the teachers exercising their authority by prescribing rules and ascribing roles to learners in these processes. This approach is premised on the assumption that teachers know more than learners about how they should learn or what they need to learn in preparation for their future lives. This assumption probably emerges from the governmentality in which teachers have been inscribed by policy implementation documents as agents of power in the mediation of environmental learning processes in the schools in the study (see Section 2.6.5). *Our Common Future* defines sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED 1987). This definition was also adopted during the UN Earth Summit of 1992 that set Agenda 21 as a global action plan for implementing sustainable development (UNCED 1992). It was re-emphasised in the WSSD summit in Johannesburg in South Africa and the Ahmedabad Declaration (see Chapter 2). In Agenda 21, the UN agreement for global sustainable development from Rio 1992 (see Chapter 2), children are recognized as important participants in the shaping of a sustainable future.

> Children not only will inherit the responsibility of looking after the Earth, but in many developing countries they comprise nearly half the population. The specific interests of children need to be taken fully into account in the participatory process on environment and development in order to safeguard the future sustainability of any actions taken to improve the environment (Agenda 21, 1992, chapter 25, p. 12).

This study shows that it is possible to count learners among those with the authority to participate both in environmental activities and how they should participate by making their perspectives count through democratic dialogue (Cook-Sather, 2002). This study revealed that the process of authorizing learners' perspectives involves counting them

among those who have the knowledge and the position to shape their participation in what is important to them. There should also be a a reconfiguration of the dynamics of authority in schools' pedagogical practices in environmental education within existing realms of culture, to create new approaches within which learners can embrace their political potential of speaking out on their own behalf (ibid.) and influence their participation and learning.

Authorizing and providing learners with such opportunities is for improving educational practice in environmental education, as shown in this study, because when teachers listen to and learn from learners, they can also see environmental issues and concerns from those learners' perspectives (Cook-Sather, 2002) as was revealed in this study. It can also help teachers make what they teach more accessible to learners. Furthermore, it can contribute to the re-conceptualization of participation, teaching and learning in environmental activities and the ways that both teachers and learners view as more collaborative processes than a unidirectional process which is teacher-directed (see Chapter 7). This study revealed that when learners are taken seriously and attended to as knowledgeable participants in this democratic dialogue, they feel empowered (Cook-Sather, 2001) with the resultant development of their action competence (see Chapters 8 & 9).

Engaging learners through this dialogical approach, as was seen in the three cases, introduces into critical conversations the missing perspectives of learners who experience daily the effects of existing policies-in-practice (Chisholm & Leyendecker, 2008). They bring in a unique perspective on what happens in school and on the dynamics between their experiences, concerns and issues in their schools and what happens in the context of their schools and their communities. Excluding learners' perspectives from conversations about their participation relating to the socio-ecological issues that affect them and from environmental education processes provides an incomplete picture of educational curricula reform in schools (see Section 1.5). It excludes how the children's lives could be improved through the reform initiative (Cook-Sather, 2002, p. 3-4) for empowerment and agency for active citizenship, human rights and societal change, all of which are components of ESD as espoused in the declaration of UNESCO UN Decade of Education for Sustainable Development and the recommendations of the Ahmedabad Conference (see Chapter 2). This study revealed that "if we want to make the best decisions, then we need the best information available" (Lansdown, 2001, p. 6). Such information can be obtained from those for

whom the decisions are made, the learners themselves as revealed in the three cases in this study (ibid.).

Learners in this study, as the future citizens of Botswana, should be equipped with the requisite participatory and civic skills that will enable them to take full responsibility of their lives over socio-ecological issues that daily confront them as individuals within the cultural context of their school and in their local communities and indeed as part of the global citizenry. This study has shown that this also involves critical cultural and historical critique, not only cultural reproduction (see Chapter 7). The processes of including learners' perspectives more fully in environmental education discourses and practices is also a rich terrain for further research (see Section 10.8).

10.6 Recommendations

All implications and key findings from this study discussed in the previous sections point towards some key issues that may inform policy formulation and intervention in environmental education processes that seek to respond to the need of developing children's action competence through participatory approaches that will have "perceived benefit for the learner" (Botswana Government, 2007, p. 9), aspects which I discuss as part of the recommendations. In presenting these recommendations, I do not aim to generalise from the three case study contexts analysed in some depth in this study, but rather provide "fuzzy" generalisations. Bassey (1999) notes these are possible from case study research though case studies are studies of singularities or bounded systems (see Section 5.4). Such "fuzzy" generalisations allow and invite others to consider the recommendations in similar or different contexts, and adapt or make new contextualised links between the recommendations arising from the contextual realities embedded in this study, in a new context where they may or may not hold relevance. "Fuzzy" generalisations therefore contain an inherent element of uncertainty as they may or may not be useful in other contexts.

10.6.1 Collaboration among key stakeholders in environmental education policy implementation and interpretation

With the infusion of environmental education into the formal school curriculum through the 1994 RNPE in Botswana, the policy implementation both at micro/school level seems to have been premised on the teachers' notions of how participation in

environmental education should be conceptualized and practised (see Section 1.6, 2.6.5 & Chapter 7) without consulting at any point those that the policy is ostensibly designed to serve, learners. In view of this and as shown in the cases considered in this study, there may be a need for all stakeholders; policy makers, curriculum developers, teacher educators, researchers to create space for collaboration with teachers and subsequently learners themselves to ensure participation of learners in environmental education processes. This should subsequently translate into the inclusion of learners in schools in any major decisions that affect them within contexts of their participation, by engaging in processes that position them as active agents of inquiry and as experts regarding their own lives. As the findings from the cases in this study reveal, providing learners with the opportunity to conceptualise their participation through dialogue with them about their concerns and needs, enables them to present their perspectives. It may be possible for policies to be more effectively framed and implemented and teaching pedagogies around their understanding and experiences of participation clarified, by collaborating with them in designing plans of action to address their concerns and problems. This point is supported by Lansdown (2001): "Consulting children and drawing on their perceptions, knowledge and ideas are essential to the development of effective public policy" (p. 6).

10.6.2 Creation of action plans and models of participation

Related to the above recommendation, existing national committees and panels, such as the National Environmental Education Committee and the Environmental Education Panel, which are usually tasked with responsibility of translating the policy intent into actions, could be given a mandate and resources to create opportunities for regular forums. There needs to be continued review and intense reflexive engagements with all stakeholders to ensure progress in the implementation of environmental education policy objectives so that these are implemented as intended. Through these committees and panels Botswana probably needs to develop its own strategy and action plan on children and young people's participation, along the same framework as the Danish and Scandinavian one, which was referred to in Chapters 1, 2, 3 and 4. As shown in this study, flexible educational models and materials which are context relevant, like the IVAC approach and the dialogical model of forms of participation used in this study, could potentially provide a focus for teachers in their work with learners in environmental education activities.

10.6.3 Review of teacher education programmes

As identified in this study, the mediating role of teachers is particularly significant in enabling learner participation and action competence development. The study also pointed to a number of areas that have implications for teacher education, one of which is to support teachers to better understand the processes of learning, mediation and dialogue in learning. Based on the evidence from the three cases, it would appear that such issues are not being fully addressed in the teacher education system, and there may therefore be a need to build an effective coalition among all stakeholders involved in environmental education programmes for primary education such as the Department of Primary Education, Teacher Training and Development and Councils, under whose administration primary schools fall. This appeared to be one of the main mediating tools that was unable to meet it mandate to work closely together with primary school teachers. This collaboration has implications for teacher education programmes in which the epistemological and pedagogic practices in schools, with specific focus on participation of learners, has to be fully re-conceptualised. As indicated, of particular importance is the finding from this study that revealed a need to strengthen teacher education programmes, both pre-service and in-service, to develop the understanding of ZPD and dialogue and the teacher's role in learning as shown in the three cases.

10.6.4 The need to highlight the importance of scaffolded instruction in environmental education activities

As shown in the three cases in this study, if schools truly wish to involve learners in decision making, beyond having them doing token projects, they should seek to involve learners in all phases of the design processes of the projects. This can be achieved when teachers look at the opportunities available for involving learners through scaffolded instruction in environmental education teaching processes. Teachers can recast their basic strategic skills in instruction in a sequenced manner that engages learners literally **through dialogue** with supported processes and materials, including new knowledge, and develop their competencies and capabilities in addressing or dealing with learner issues. This research provides case examples, opportunities and models that could be used to introduce or enhance the concept of scaffolded instruction to teachers involved with learners in environmental education.

10.6.5 Move from rhetoric to reality

Findings from this study also reveal that there is considerable emphasis on the analysis of participation in terms of outcomes by focussing on the measurable outcomes such as the cleanliness of schools. While this is significant and an important contribution towards the participation agenda of learners, teachers could be made more aware, through both their in-service and pre-service programmes, that it is equally crucial that the complexities inherent within the participation processes, with or without the desired outcomes, are brought to the fore so that the rhetoric of participation can be translated into reality. This can be achieved by emphasising indicators that should identify and emphasise effective and meaningful participation as the provision of personal or social benefit to learners. The matrix provided in Table 9.5 provides an example of a tool than can be used for reflective practice and monitoring of learner participation in schools, and teacher education. Further research to see how this tool can be used in teacher education could be of interest.

10.6.6 Reorienting cultural authority structures for meaningful participation of children in schools

With democracy as one of the principles of the nation's education philosophy and one of the pillars of Vision 2016 as a background, the three case studies have shown that there is need for genuine commitment, political will, leadership and a positive approach on the part of the education community, working with teachers to reorient and review traditional authority structures in schools to enable children's participation in learning and action competence development. This study clearly reveals that democratic structures need to be enhanced in schools in order for genuine meaningful learner participation, a point noted by Lansdown (2001).

> What is needed is the development of participatory processes in all institutional settings with children to promote their understanding that these settings are what democracy is actually about...
> If they are to experience some ownership of the school, and develop a sense of commitment and responsibility towards it, then they need opportunities to be involved in the decisions, policies and structures of the school that affect them on a daily basis.... (p. 6).

The following Setswana proverb *'Botlhale jwa phala bo tswa phalaneng'* reflects this. It literally means an adult buck learns tricks from its kid. Metaphorically, adults can draw wisdom from children. The study shows that children as much as their teachers who are

354

adults, are also resourceful members of the school community who can contribute something if granted the opportunity to participate, as shown in all cases.

10.6.7 Strengthening learner participation through inter-disciplinarity in environmental education in schools

As shown in this study, there is a need to re-think pedagogical practices in the curriculum and schools' micro environmental management policies, that are still largely premised within an assumption that Science as a subject has the ability to solve environmental problems (see Section 2.6.5, Chapters 6 & 7). These approaches assume context-free learners to whom roles and rules are prescribed to achieve the policy imperative by following environmental education guidelines in a technicist form. This is in tension with the children's objects and contextual needs (see Chapters 6 &7). This study showed that there is need for inter-disciplinarity between subjects and strengthening of civic education which will highlight environmental issues across disciplines in a relational way. This was revealed in this study especially in School C where children's activities were supported more by teachers from the social science subjects than from their Science teacher SEC coordinator who was not readily available (see Sections 7.4.3.1 & 9.8.3). What may be needed is the development of democratic participatory processes in all structural settings of the school with children to promote their understanding of environmental education in these settings. It may be important for teachers, then, to develop specific, situated, and localized strategies in order to retain the critical character of their teaching approach, while adjusting their teaching strategies to accommodate needs of learners by taking an inter-disciplinary and integrated approach to the teaching and learning of environmental education as recommended in the Ahmedabad Declaration (see Section 2.3). This study revealed that the issues that confronted children were cross cutting through disciplines. Therefore teachers need high-quality skills and pedagogical competencies to support, stimulate and to manage this process (Jensen, 2004a), which has implications for teacher education.

10.7 Limitations of the study

This was a multi-site case study whose purpose was to provide varied contexts of **significant socio-cultural factors that influenced and shaped learner participation in waste management activities across three sites** (Yin, 1994; Bassey, 1999)**.** Some might argue that because case studies are studies of singularities, they do not give a

true representation of a general picture of the situation under study. As noted above, Bassey (1999) refers to the generalisation derived from case studies as 'fuzzy generalisations' on the basis that, although case studies are studies of singularities, it is possible that findings from case studies can be tentatively offered as a useful way forward in a broader context. Through the findings from this study, especially the CHAT analysis and analysis of forms of participation in action competence development, recommendations have been made above that may be of use to other researchers interested in similar issues. Sayer (2000) corroborates with Bassey by arguing that intensive a case study "… seeks out substantial relations of connection and situates practices within wider contexts, thereby illuminating part-whole relationships" (p. 22). So the findings from this study, which was the first of its kind in Botswana, can, in my view, be used as a starting point to open up possibilities for embracing participatory approaches that foreground the importance of participation in situated practices for meaningful reflexive learning and action competence development in schools.

A limitation of the study was the small sample used for a study whose methodology is an interactive participatory approach mainly through dialogue. The case study involved small numbers of learners. Facilitating critical dialogue is not an easy task, even with a relatively small number of learners, as was the case in this study. One can anticipate it to be a more complicated process in a larger group of learners where there would usually be one facilitator; the teacher and many learners, an aspect I recommend for future research in the next section.

10.8 Recommendations for future research

The following are areas recommended for future research.

- It would be crucial for research to assess how teachers, then, can develop specific, situated, and localized strategies in order to facilitate dialogue with their learners to accommodate learners' perspectives on issues that daily confront them in environmental education discourses and practices in schools. The tool provided in the matrix shown in Table 9.5 could provide an opening and starting point on how this dialogic participation can be used by teachers. This recommended research has to consider and accommodate large number of learners that teachers have to deal with as this study showed that in Schools A and B teacher pupil ratios are relatively high (see Sections 6.2.1.2 & 6.2.2.2).

- For reasons of power relations outlined in Section 4.4.1, teachers were not involved in the workshops with children which leaves a question on how to theorize the relationship between dialoguing and the forms of joint activity in which it occurs in expansive learning processes with teachers and learners. Future research could explore the use of boundary crossing laboratory workshops between learners and teachers, or focus in more detail the dialogical processes and interactions than I was able to do in this study.
- For the sustainability of the learners' newly created activities the study time period was limited. Future research should seek to look into similar interventions over longer periods of time with one project that children would have selected in order for it to result in changes in the community that would be permanent and be sustained beyond the initiating of learners' activities (see Chapter 9).
- Most importantly, what became clear was the influence of the teacher activity system on the learner activity system. But because of the focus and scope of this study whose object was learners, I did not look at the teachers' activity system in depth. This opens up a very crucial area for future research, as this could help develop better understandings of how teachers come to construct their objects and activities and what socio-cultural and historical factors (e.g. their own teacher education) influence their practices.

10.9 My role as a researcher

In Section 5.8.3.2, I outlined my role as a researcher in guiding and scaffolding learner participation. I indicated that my obvious role was technical in that I had to assist in the research process itself. But, as shown in Chapter 9, the key role I had to play was to support and expand the learners' ZPD through collaboration or dialogue, which was essentially an important component of working with the learners to come up with their visions, model solutions to the identified problems and enacting their activities (see Chapter 9). The other crucial aspect was to facilitate dialogue between learners and their teachers by continuously soliciting support for the learners' activities throughout the research process.

Dialogue, in the form of oral discourse, proved to be an indispensable meditational means, both coordinating the joint activity among learners themselves and between them and their teachers. This enabled them to manage their interpersonal relationships in such a way that learners were participating on personally and collectively satisfying,

entirely equal terms and teachers' authority was not undermined. Examples of how I engaged such dialogue were provided in extract 9.5, 9.7, 9.8, 9.12, 9.14, 9.15 & 9.16. As Palinscar (1986) suggests, there is need to gradually withdraw the scaffold as learners gain competence. In this study, more than the need to withdraw the scaffold because of increased learner competence I had to avoid the learners' dependence on me as my role was limited to the duration of the study (extract 9.16). This had implications on the sustainability of learners' activities beyond the research, and the way I engaged them in dialogue. As shown in the extracts, I tried to place responsibility on them, rather than myself throughout and to encourage them to take ownership of their ideas.

Ferreira and Welsh (1997) and Barrett (2006), researching the use of the action competence model by teachers in schools in Australia and Canada with their learners, found that the challenge was its sustainability beyond the research. I suggested to learners that they co-opt learners from lower standards especially for Schools A and B where participants would be leaving the school the following year (see extract 9.16). In School C learners appointed representatives in every class (see plate 9.8).

The other important role I had to play was to constantly emphasise joint activity especially where some learners tended to want to dominate in activities. This was another important area in order to sustain interaction in the ZPD, failure of which could have led to conflicts (see Section 9.8.4.1). The whole idea was to ensure that, as Wells (2002) suggests, participants through joint activity developed a rich dialogical interaction and understand that dialogue, in one form or another

> whether in speech, gesture, or demonstrative action—or, most frequently, some combination of all these modes—is almost always necessary for the participants to achieve the degree of inter-subjectivity with respect to the action to be performed that is necessary for the coordination of their individual contributions (p. 60).

But in summary and upon reflection, I was not certain that it was a role I played well, and I would recommend closer analysis of dialogical interactions in research of this nature in future, as indicated above. For the purposes of this study however, I felt that the identification of the significance of the dialogical processes was substantive enough to address the research questions.

10.10 New knowledge

This research has opened up possibilities and opportunities to guide ongoing reflective innovations for activity mediated participation in schools. It also seems to reveal that education reforms calling for learner-centred pedagogy have persistently failed due to the existing internal boundaries within school communities between teachers and learners and among learners themselves and indeed between schools and policy makers who are far removed from practice (an area which while apparent, was not fully explored in this case). The study showed that there is need to develop methodological tools that create opportunities for these boundaries to be crossed, a space that this research focussed on. This study is a first step in that direction as it demonstrates how CHAT helps to provide an in-depth, situated cultural historical perspective for action competence development. These research frameworks provide appropriate tools and a model and approach for analysis of learner participation in school environmental education practices. Working with this model of analysis brought forth the significance of *dialogue* among learners and teachers and other relevant subjects in the school community and beyond, for action competence development and the furthering of democracy in schools, while taking account of the situated and historically embedded nature of such participation. This study therefore provides new knowledge of how to strengthen action competence and democratic educational processes in contexts (such as Botswana) where learner-centred education is proposed in policy, but not practised in schools as intended in policy.

Previous research on action competence has not explored the relationship between **the learners' activity system**, arising tensions in these activity systems, and the development of action competence, but has rather focussed more on the kinds of knowledge, skills and processes involved in developing action competence. Thus starting points and socio-cultural contexts of action competence development (and hence learner participation in action oriented environmental activities) have been under-examined. Recently Jensen (2004b) started to turn his attention to a deeper analysis of the socio-cultural context of learning and its relationship to action competence development, but I was not able to find any in-depth analyses of this nature using CHAT methodology, tools and contradictions as starting points for action competence development. It is in this area that this study is likely to contribute to new knowledge in the field of environmental education.

The research also shows that participation in environmental education is more than cognitive changes as proposed in earlier constructivist literature, but it involves in-depth engagement with socio-cultural dynamics and histories in the school context, such as the cultural histories of teachers, schooling and authority structures in the cultural community of the school.

10.11 Conclusion

This chapter has served to highlight and present a summary of the key research findings in response to the research questions, the theoretical frameworks that informed the research methodology and their implications for the study. I went on to discuss key aspects that emerged from the study findings and their implications to participation of learners in environmental education processes. I also discussed the contribution of the study to new knowledge and identified areas for future research.

In summary, the research showed that if the socio-cultural and historical context of children's participation is well understood and if their participation in engaging tensions in context is taken seriously, and if opportunities for dialogue exist between teachers and learners, positive changes for a healthier environment can be created in schools. Learners also appeared to be feeling more confident and more equipped to consider changes in their environment outside of the school community. In reflective conversations with teachers, I found that this requires critical reflections on teaching practices and support for teachers to identify ways of engaging children's' views on issues in the school in open, dialogical ways which should go a long way in developing sustained action competence development.

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APPENDIX A1: LETTER TO MINISTRY OF EDUCATION

<div align="right">

Rhodes University
Environmental Education and Sustainability Unit
Department of Education
P.O. Box 94
Grahamstown
6140

</div>

29 October, 2008
Research and Development Office
Ministry of Education
P. Bag 005
Gaborone
Botswana

Application for permission to conduct research in three primary schools in Botswana

Please find attached my research proposal entitled **Developing Action Competence through Learner Participation in Waste Management Practices in Botswana Primary Schools** in which I seek to conduct a research for my Doctor of Philosophy study.

The research objectives are outlined in the proposal but in a nutshell I wish to explore opportunities for developing action competence for civic agency in primary school learners through their participation in waste management practices. My research focus emerged from my desire to see children's participation yielding some genuine sense of purpose as they participate in daily waste management activities by *purposely and systematically engaging them and providing them with time, space and opportunity to develop their visions and solutions for the waste issue which affect them in their schools*.

It is hoped that findings from this study will make contributions to theory and practice of waste management in schools and as a result develop a positive effect on waste management competencies and agency of the learners. It is also expected that the findings would have important epistemological and pedagogical implications for curriculum development, teacher education, and educational administration regarding participation of learners in waste management. At a wider theoretical level, the study will contribute to an understanding of the socio-cultural historical factors that influence and provide expansive learning opportunities for learners and the development of action competence and civic agency in learners.

Funding has been sourced from the University of Botswana and data collection will start as soon as your office grants me permission to conduct this research.

Sincerely Yours

N. Silo
PhD candidate (Rhodes University)
Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A2: LETTER TO REGIONAL EDUCATION OFFICE

<div align="right">

Rhodes University
Environmental Education and Sustainability Unit
Department of Education
P.O. Box 94
Grahamstown
6140

</div>

09 November, 2008

Regional Education Officer
Department of Primary Education
Gaborone
Botswana

<u>**Application for permission to conduct research in three primary schools in Botswana**</u>

I seek your permission to conduct a research in three Primary schools in the region entitled **Developing Action Competence through Learner Participation in Waste Management Practices in Botswana Primary Schools**, a research for my Doctor of Philosophy study. I kindly request your office to grant me permission to conduct this research.

In a nutshell I wish to explore opportunities for developing action competence for civic agency in primary school learners through their participation in waste management practices. My research focus emerged from my desire to see children's participation yielding some genuine sense of purpose as they participate in daily waste management activities by *purposely and systematically providing them with time, space and opportunity to develop their visions on the waste issue which affect them in their schools*.

It is hoped that findings from this study will make contributions to theory and practice of waste management in schools and as a result develop a positive effect on waste management competences and agency of the learners. It is also expected that the findings would have important epistemological and pedagogical implications for curriculum development, teacher education, and educational administration regarding participation of learners in waste management. At a wider theoretical level, the study will contribute to an understanding of the socio-cultural historical factors that influence and provide expansive learning opportunities for learners and the development of action competence and civic agency in learners.

Funding has been sourced from the University of Botswana and data collection will start as soon as your office grants me permission to conduct this research.

Sincerely Yours

N. Silo
PhD candidate (Rhodes University)
Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A3: LETTER TO SCHOOL HEAD

<div align="right">

Rhodes University
Environmental Education and Sustainability Unit
Department of Education
P.O. Box 94
Grahamstown, 6140

</div>

10 January, 2009

The Head
XXX Primary School
XXXXX
Botswana

<div align="center">

Application for permission to conduct research in your primary school

</div>

I kindly write to seek your permission to conduct a research in your school, entitled **Developing Action Competence through Learner Participation in Waste Management Practices in Botswana Primary Schools** for my Doctor of Philosophy study.

In a nutshell I will be looking at:

- what waste management activities your school is involved in,
- how your learners participate in these waste management activities and
- explore opportunities on how learners can participate in these activities to develop action competence and civic agency through their participation in waste management activities.

My research focus emerged from my desire to see children's participation yielding some genuine sense of purpose as they participate in daily waste management activities by *purposely and systematically providing them with time, space and opportunity to come up with their visions and activities on the waste issues which affect them in the school*.

I will therefore be working with a selected group of willing learners and one teacher from your school if you grant me permission. I will request you to assist in selecting such learners.

It is hoped that findings from this study will make contributions to the practice of waste management in schools and as a result develop a positive effect on waste management competencies and agency in learners. It is also expected that the findings would have important implications for and contribution to curriculum development, teacher education, and educational administration regarding participation of learners in waste management issues.

Funding has been sourced from the University of Botswana and data collection will start as soon as you grant me permission to conduct this research.

If granted permission I will arrange to meet with you to discuss further what the research process will entail.

Sincerely Yours

N. Silo
PhD candidate (Rhodes University)
Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A4: LETTER TO LEARNERS

<div align="right">
Rhodes University
Environmental Education and Sustainability Unit
Department of Education
P.O. Box 94
Grahamstown
6140
</div>

15 January, 2009

Dear_____

Request for permission to involve you in a research project

I wish to invite you participate in a research project in which we will be working together and looking at the waste management activities in your school and how you are participating in them. In this research, I would like you to say what you see as waste management problems that affect you daily in your school and how you feel they should be solved. It is also my wish to see you come up with your own suggestions on how you can participate fully by coming up with activities in which you will be trying to solve these problems. My wish and hope is that you should benefit from participating in these activities by solving waste management problems that you face daily in your school. It is voluntary to participate in this research.

If you are willing to participate please sign below:

Name:_____

Signature:_____

Thank you for your cooperation.

Sincerely Yours

N. Silo

Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A5: LETTER TO PARENTS

<div align="right">

Rhodes University

Environmental Education and Sustainability Unit

Department of Education

P.O. Box 94

Grahamstown

6140

</div>

15 January, 2009

Dear Parent

Request for permission to involve your child in a research project

I humbly seek your permission to involve your daughter/son_____
who is a learner at XXX Primary school in a research project to do with waste management in their school.

In brief I wish to see how they participate in waste management activities and provide them with an opportunity to identify problems on waste management issues that affect them daily and for them to develop their visions and solutions to those problems.

My wish is to have them develop some genuine sense of purpose and responsibility through their participation in this project. I will be working with them mostly in the afternoon after school for not more than two hours. Lunch will be provided for them.

I you wish for your child to participate in this project please sign below:

Parent_____

Thank you for your cooperation.

Sincerely Yours

N. Silo

Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A6: AUTHORISATION LETTER FROM MINISTRY OF EDUCATION

TELEPHONE: 3655408

TELEX: 2944 THUTO BD

FAX: 3655408

REFERENCE E 1/20/2 1 (4)

MINISTRY OF EDUCATION

PRIVATE BAG 005

GABORONE

BOTSWANA

REPUBLIC OF BOTSWANA

3ʳᵉ Dec. 2008

To   Ms. Nthalivi Silo
     University of Botswana
     Private bag 0022
     Gaborone

RE: REQUEST FOR A PERMIT TO CONDUCT A REEARCH STUDY ON: DEVELOPING ACTION COMPETENCE THROUGH LEARNER PARTICIPATION IN WASTE MANAGEMENT PRACTISES IN BOTSWANA PRIMARY SCHOOLS

We acknowledge receipt of your application to conduct a research on the topic mentioned above.

This serves to grant you permission to conduct your study at the selected Primary Schools (South and North) in Botswana to address the following research objectives/questions:

1. *Establish a picture of the current waste management practises, existing learner waste management activity systems in schools, and how learners participate in these practises*
2. *Explore the potential of expansive learning opportunities that may develop action competence for civic agency in waste management through learner participation.*
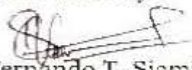
It is of paramount importance to seek Consent from the Chief Education Officers, School Heads, Parents and Students before conducting the study. We hope and trust that you will conduct the study as stated in your Proposal and to strictly adhere to the Research Ethics.

Please note that this permit is valid for a period of one year effective from 3ʳᵈ December 2008 to 3ʳᵈ December 2009.

You are furthermore requested to submit a copy of your final report of the study to the Division of Planning, Statistics and Research, Ministry of Education, Botswana.

Thank you.

Yours faithfully

Fernando T. Siamisang
For / Permanent Secretary

APPENDIX A7: AUTHORISATION LETTER FROM REGIONAL EDUCATION

TELEPHONE: 3972454
FAX: 3972915

REGIONAL EDUCATION OFFICE
PRIVATE BAG 0071
GABORONE

REPUBLIC OF BOTSWANA

REF:

12 November 2008

N. Silo
Rhodes University
Environmental Education and Sustainability Unit
Department of education
P O Box 94
Grahamstown
6140

Dear Silo

PERMISSION TO CONDUCT RESEARCH IN THREE PRIMARY SCHOOLS IN BOTSWANA

Permission for the above activity is granted.

By this copy both Principal Education Officer II and School Head are informed.

Yours faithfully

Keitheng M. Mack
Principal Education Officer I – South Central

cc: Director – DPE
        PEO II – Kweneng South East

APPENDIX A8: THANK YOU LETTER - TO SCHOOL HEADS

<div align="right">

Rhodes University
Environmental Education and Sustainability Unit
Department of Education
P.O. Box 94
Grahamstown
6140

</div>

30 March, 2009
The Head
XXX Primary School
XXXXX
Botswana

RE: ACKNOWLEDGEMENT FOR PERMITTING ME TO CONDUCT RESEARCH AT YOUR SCHOOL

I would like to sincerely register my deepest gratitude for allowing me to conduct a research on Participation of Learners in Waste Management Activities with your pupils in your school. I want to particularly appreciate the enthusiasm and eagerness that the children displayed in taking part in the research. I also want to thank the teachers who were working with me without whose support, the exercise would not have been successful. I would also like to extend my heartfelt thanks to your GDAs who were ever so willing to provide me with all the information I required. I hope to continue working with you and the children in future.

Sincerely Yours

N. Silo
PhD candidate (Rhodes University)
Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A9: THANK YOU LETTER - TO LEARNERS

<div align="right">

Department of Primary Education

Private bag 00702

Gaborone

BOTSWANA
</div>

30 March, 2009

TO:_____

RE: ACKNOWLEDGEMENT FOR TAKING PART IN THE RESEARCH PROJECT ON WASTE MANAGEMENT AT YOUR SCHOOL

I would like to sincerely thank you for taking part in the research project on Participation of Learners in Waste Management Activities in your school. I want to particularly thank you for the interest, eagerness and effort that you showed when taking part in the project. I truly enjoyed working with you.

I also want to thank you for your willingness to provide me with all the information I required.

I hope you will continue working on the activities that you have started for the improvement of waste management in your school and community.

Sincerely Yours

N. Silo

PhD candidate (Rhodes University)

Lecturer (Department of Primary Education, University of Botswana)

APPENDIX A10: MINISTERIAL DIRECTIVE

SAVINGRAM

FROM: Ag. Director, Local Government
Finance & Tech. Services

B. Maphakwane

TEL: 3658601

TO: All Council Secretaries
All City/Town Clerks

REF: DLGFTS 3/8/4 (52)   13th November 2006

RE: CLEARING OF BUSH/GRASS BY PRIMARY SCHOOL PUPILS

Concerns have been raised about the practice whereby primary school pupils are required or made to clear grasses or bushes growing in the school grounds/premises. I have been directed to you to cease this practice of using pupils to clear bushes or grasses with immediate effect.

Councils should instead hire casual workers/labourers or use any other means possible to clear school grounds of bushes and grasses in school compounds.

Thank you.

cc.   Permanent Secretary
Ministry of Local Government
Attention: T.Y. Raphaka

Director,
Department of Primary Education

SAVINGRAM

FROM: Director
Primary Education

S Basiamang

TEL: 3655301

FAX: 3911746

TO: All Principal Education Officers I
Primary Department

December 05, 2006

REF PF 1/8/3 I (41)

CLEARING OF BUSH/GRASS BY PRIMARY SCHOOL PUPILS

You are hereby informed that in the interest of the safety of the pupils at primary schools and for the sake of parity of treatment between primary and secondary school pupils, a decision has been taken at highest level that clearing of bush/grass by primary school pupils should stop with immediate effect, instead Councils will hire casual workers/labourers to do that.

Councils have been communicated to by the relevant authorities through a savingram referenced DLGFTS 3/8/4 (52) dated November 13, 2006 (see copy attached)

The purpose of this savingram is to advise you to inform schools in your respective regions by the quickest means possible so that pupils can be relieved of this task instantly.

The copy attached should serve as everybody's reference. I call upon you to ensure that your schools uphold this development.

cc   Permanent Secretaries
- Ministry of Education
- Ministry of Local Government

au...

APPENDIX A11: LEARNER PROFILES

School A Learner Profile

Learner	Profile
L1	A highly motivated girl. Very vocal and domineering. She was elected leader of the group. She tended to dominate in all discussions. She was elected chairperson of the group.
L2	A highly motivated boy. Very vocal and blamed everything on teachers who were disinterested in them, and who did not show any support to learners, as well as bad models for children. He was elected Secretary of the group.
L3	A girl who was a bit on the reserved side but very articulate in what she had to say. Also feels strongly that there is lack of teacher support
L4	A shy girl but opened up when probed. Motivated
L5	A shy boy, also vocal but sometimes could not articulate himself so well
L6	A mature girl who also was very expressive and showed a lot of concern about issues in the school. She was quite motivated and contributed to the discussion freely
L7	A girl who joined the group later and was very mature and articulate
L8	Another girl who also joined the group later and was the stabilising character when there were conflicts among the group.

School B Learner Profile

Learner	Profile
L1	Talkative and very vocal and contributed substantially in discussions
L2	Subdued articulates herself very clearly. She was elected leader of the group
L3	Also subdued and quiet but very focused in her contributions
L4	The spokesperson of the group. Very lively and seemed to be always eager to talk
L5	This boy never seemed to be serious in our discussions and always distracted the discussions by taking them out of focus. He presented a challenge for me ethically as I had to be on the guard and not show my impatience with him and his peers.
L6	He was a serious boy whose comments were always very constructive and his suggestion taken most of the time (was elected secretary of the group
L7	A boy who was The smallest in the group and never spoke unless drawn to speak.

School C Learner Profile

Learner	Profile
L1	She was the youngest and very vocal, not at all shying away from expressing her views. She lived with her grandparents.
L2	She was another girl who very polite also always wanted to express her points very boldly. She lived with her parents.
L3	He was a reserved boy who was the group stabiliser as he thought through what he was saying and always made very useful contributions especially when there was conflict. He lived with his mother.
L4	This was a 15 year old boy who was very sickly and frail looking far younger than his age. He was always coughing and he said he had asthma. He did not speak a lot but contributed very constructively to the discussions. He lived with his grandparents
L5	He a very cheerful boy. He was one of the boys in the school whose goats were always roaming outside the school because he drove them in that direction every morning when he came to school. He stayed with his grandparents.
L6	She was another very pleasant girl who was always very cheerful. She stayed with her stayed with her single mother they had a *shebeen* (traditional brew business) in their home.
L7	She joined in the second workshop after asking from the colleagues to join the group and L1 invited her and brought her to the next workshop and we agreed that she could join. She lived with her parents

APPENDIX A12: LEARNER FOCUS GROUP INTERVIEW GUIDE

Profile

1. Name of school
2. Name of learners
3. Standard/Grade
4. Age   5. Gender

INTERVIEW QUESTIONS

Broad questions

1. What activities do you do in the school to manage waste?
2. Which ones do you like? Why?
3. Which ones don't you like? Why?
4. Which ones are the easiest? Why?
5. Which are the most difficult? Why?

Specific questions related to individual activities

6. What do you do when you are doing XXX (ACTIVITY A)?
7. Does anyone help you? How?
8. What things / tools / materials do you use to help you? Where do you get them from?
9. Do these things / tools / materials help you? How?
10. Who decides how you should do XXX?

Broad questions

11. Why do you participate in these activities?
12. What do you think about waste management in your school?
13. Do you feel the waste management activities are working?
14. Have you always done it like this in your school?
15. Are there any rules that make you do things in certain ways?
16. Does your school have an environmental policy? Who tells you that you should participate in these activities?
17. Are you allowed to decide how to do things or do you have to ask the teachers permission?
18. Who else helps with these activities? What do they do?
19. What do the teachers do to help you? Do you like what they do?
20. What would happen if you did not do the activities?
21. Do you think they are important? Why? / Why not?

APPENDIX A13: TEACHER/HEAD INTERVIEW GUIDE

Profile
1. Name of school   2. Name of teacher   3. Gender
4. Academic qualifications   5. Years of teaching experience
6. Number of learners in class

INTERVIEW QUESTIONS

Broad questions
1. How do you manage waste in your school, ie, what activities are undertaken in your school to manage waste?
2. Which of these activity is a) practised the most; Why? b) is the easiest? And b) is the most difficult, and why?

Questions for each activity (Activity A, B, C etc) (Discussing each one with the teacher to get detail on the actual activity and how it works (e.g. activity A, activity B)
3. When did you start with this activity in the school? Why was it started?
   What does this activity involve? Who is involved in this activity and how?
4. What do you as teachers do to facilitate this activity? Who else is involved and what do they do?
5. In what way are learners participating in the activity?
6. What needs to be done to carry out the activity successfully?
7. What support do the learners need to carry out this activity?
8. Are there any specific resources that help to carry out this activity? How do the resources help?
9. Are there any resources needed to carry the activity out more effectively? If so, what would they be?
10. Are there any difficulties or challenges with carrying out this activity? If so, what are they and why do you think these difficulties or challenges exist?

Broad questions
11. Is the intention of the activity achieved? (i.e. is waste management improved in the school by carrying it out the way you do?
12. What are your views and beliefs about the waste management activities in general and specifically in achieving your intended objectives of waste management your school
13. What has influenced your choices of undertaking these activities?
14. Are there any rules or policies that influence or govern the activities?

15. Do the learners participate in establishing these rules, and if so how?

APPENDIX A14: CLEANER INTERVIEW GUIDE

INTERVIEW QUESTIONS

Broad questions

1. How do you manage waste in your school, ie, what activities are undertaken in your school to manage waste?
2. Which of these activity is a) practised the most; Why? b) is the easiest? And b) is the most difficult, and why?
3. What is your role in these activities?

Questions for each activity (Activity A, B, C etc) (Discussing each one with the cleaner to get detail on the actual activity and how it works (e.g. activity A, activity B)

4. When did you start working with this activity in the school? Why?
   What does this activity involve? Who is involved in this activity and how?
5. What do you as a cleaner do to facilitate this activity? Who else is involved and what do they do?
6. In what way are learners participating in the activity?
7. What needs to be done to carry out the activity successfully?
8. Are there any specific resources that help to carry out this activity? How do the resources help?
9. Are there any resources needed to carry the activity out more effectively? If so, what would they be?
10. Are there any difficulties or challenges with carrying out this activity? If so, what are they and why do you think these difficulties or challenges exist?

Broad questions

11. Is the intention of the activity achieved? (i.e. is waste management improved in the school by carrying it out the way you do?
12. What are your views and beliefs about the waste management activities in general and specifically in achieving your intended objectives of waste management your school
13. What has influenced your choices of undertaking these activities?
14. Are there any rules or policies that influence or govern the activities?

15. Do the learners participate in establishing these rules, and if so how?

APPENDIX A15: OBSERVATION GUIDE

General observations

Tools used e.g:

- Policies
- Teaching Learning support materials (TLSM)
- Language
- Curriculum
- Clubs etc.

Where the tools come from e.g:

- Policies
- TLSM
- Language
- Curriculum
- Clubs etc.

Are there school rules or other rules or norms that govern waste management activities in the school?

What is the motivation of the school head, teacher and learners to waste management activities in the school?	
General features of the school community context	

Observations related to individual waste management activities

What are the specific waste management activities that learners are involved in?

How are these undertaken?

Who exactly is involved and how?

What issues seem to be emerging in relation to the waste management activity?	
What seems easy to do, and what seems more difficult?	

Observations focussing on learner participation and involvement

What learners and how many

are participating

Brief profile of learners:

Age

Sex

Personal characteristics

Their motivation

Their level of engagement and

interest

What are learners actually doing?

What knowledge and skills are they using to participate? Where is this coming from?	
Are learners involved in making decisions? If so, what decisions are they making and how do they do this?	
Who is defining the tasks that they are undertaking in relation to the specific waste management activities?	
Do learners play different roles in the group? If so, what are they?	
What resources are they using in their participation and how?	

APPENDIX A16: JENSEN'S FORMS OF PARTICIPATION

In the project	Selecting the theme	Investigation	Vision/Goals	Actions	Evaluation/ Follow up
Pupils' suggestions Common decisions					
Pupils' suggestions Pupils' decisions					
Teachers' suggestions Common decisions					
Teachers inform Pupils accept or reject					
Teachers' decisions Told clearly to pupils					