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A Case Study of The Integration of Environmental Education in the Primary School Curriculum

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1. Introduction

Prior to 1994, the school curriculum in South Africa was designed primarily to perpetuate systematic inequalities among the various population groups in the country. The structure of the education system for black people was directed by the Bantu Education Act of 1953 [DoE, 2000]. Bantu Education provided black people with a lower quality education in terms of resources, qualified teachers, schools, *etc.*, while other racial groups were by comparison provided with relatively better education [DoE, 2000]. Christie [1991] highlights the fact that black education was generally ignored, thereby resulting in inadequate provision of educational opportunities for black learners.

After 1994, significant initiatives were undertaken to create a fair and equitable society in an attempt to correct the past inequalities of the apartheid regime. A new education system, aimed at developing an equitable system that offers good quality education and training for all learners, was put in place. The main aim was to provide equal educational opportunities for all school-going children in the country [Pretorius & Lemmer, 1998]. However, in spite of these laudable initiatives, Yamauchi [2004] observes that opportunities for education in public schools in South Africa are still unequal among different racial groups, even after apartheid. This observation notwithstanding, there have been significant initiatives within the system, amongst which has been the introduction of environmental education in primary schools. Environmental education was introduced as a theme to be learned by all learners, through the implementation of the National Environmental Education Project for General Education and Training (herein referred to as NEEP-GET). The NEEP-GET focused on the development of teachers, teacher educators, and curriculum implementers to fully implement environmental education in South African schools. The primary aim was to encourage the implementation of environmental education programmes in the school and classroom context [DoE, 2004].

In line with international developments, the Department of Education in South Africa recognises environmental education as a key vehicle to respond to the national and global environmental crisis [DoE, 2001: 3]. For this reason, post-1994 education provision sought to infuse environmental education into the new curriculum (Curriculum 2005 – or C2005). The White Paper on Education and Training [RSA, 1995] perceived environmental education as a means to a better quality of life for all people and argued that it should be integrated at all levels of the South African education and training system. The White Paper further stated that "environmental education, involving an inter-disciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all SA, present and future, enjoy a decent quality of life through the sustainable use of resources" [RSA, 1995].

Furthermore, the Constitution of the Republic of South Africa 1996 protects the right of every citizen to "an environment that is not detrimental to his or her health" (South African Constitution, 1996, p. 11). The newly-developed Curriculum 2005 thus recognised the importance of the environment in the curriculum through the phase organiser on 'environment', and through a number of other environmentally focused specific outcomes (DoE, 2001, p. 3). According to the Revised National Curriculum Statement Grades R-9 (Schools) (DoE, 2001) phase organisers, which originated with Curriculum 2005, have been scrapped, and the issue of the environment is dealt with and provided for in the curriculum as per learning area statements. The Revised National Curriculum Statement has tried to ensure that all the Learning Area Statements reflect the principles and practices of social justice, respect for the environment and human rights as defined in the Constitution (p. 10). For instance:

- Natural Sciences learning area statement is based on the appreciation of the relationships and responsibilities between science, society and the environment,
- Social Sciences learning area statement is concerned with what learners learn and how learners learn, and how learners construct knowledge. The Learning Area Statement encourages learners to ask and find answers to questions about society and the environment in which they live.
- Life Orientation learning area statement focused on its five areas which address the human and environmental rights outlined in the Constitution,
- Economic and Management Science learning area statements are concerned with entrepreneurial skills and knowledge needed to manage human lives and environments,
- Technology learning area statements are based on economic and environmental factors and wide range of attitudes and values need to be taken into account when developing technological solutions. It is in this context that technology is defined as "the use of knowledge, skills and resources to meet people's needs and wants by developing practical solutions to the problems while considering social and environmental factors". (DoE, 2001, p. 22-28).

2. Conceptual Framework

Research has shown that schools differ in the way they provide students with Opportunities to Learn. Some schools are oriented around a few learners with highly qualified teachers, while others are oriented around large numbers of learners with less qualified teachers. Eventually, it would seem that those students who are taught by less qualified teachers have fewer opportunities to learn than those who are taught by highly qualified teachers [Stein, 2000]. Other opportunities to learn studies have demonstrated that black students are more likely to be taught by less qualified teachers and have less access to resources and high-quality instructional practices. As a result their opportunities to learn become fewer [Oakes, Ormseth & Camp, 1990; Oakes & Lipton, 1990].

The concept of Opportunity to Learn has long been established in the research literature. It was first introduced by the International Association for the Evaluation of Educational Achievement (IEA) as an instrument to validate the differences in students' mathematics achievement across different nations. It was then revised in the Second International Mathematics Study (SIMS), where opportunity to learn was conceptualised in terms of the curriculum [McDonnell, 1995]. Since then, the concept has been used as a mechanism to determine whether students' mathematics achievement differences are caused by differences in what they are exposed to in class, rather than their ability to master the subject content [McDonnell, 1995]. The concept was further developed to establish whether schools provide students with equal opportunities to learn, irrespective of their abilities [McDonnell, 1995].

Moreover, the definition of opportunity to learn has been extended to include the quality of resources, school conditions, curriculum, as well as the teaching that learners experience [Education Policy Brief, 2000]. In this regard, it becomes clear that the types of resources students receive – including the state and situation of the school with respect to the syllabus and instruction determine opportunity to learn.

Traditionally, opportunity to learn were identified as standards that symbolised what schools and teachers must do if the given curriculum and achievement standards are to be met. Opportunity to learn includes the provision of curricula, learning materials, teachers, and instructional experiences that enable learners to achieve high standards [Porter, 1993].

In the context of teaching and learning, opportunity to learn refers to what teachers do in their classrooms when they are teaching students and whether or not they offer students adequate access to information and resources to allow them to study the curriculum appropriate to their age and grade level [Stevens, 1997]. According to Stevens [1997: 4], opportunity to learn involves four variables that have a powerful influence on teachers as well as student learning: 1) content coverage; 2) content exposure; 3) content emphasis; and 4) quality of instructional delivery.

These four variables are defined as follows:

- **Content Coverage** involves whether or not students cover the core curriculum and whether or not there is a match between the content of the curriculum taught and the content of the test or the assessment that the students have to take;
- **Content Exposure** entails the time that is prearranged for students to learn (time on task) and the depth of the teaching of the subject;

- **Content Emphasis** refers to which topics within the curriculum teachers emphasise and which students are selected to receive instruction in low or high order skills; and
- **Quality of Instructional Delivery** concerns how teaching practices have an impact on students' academic achievement [Stevens, 1997: 4].

Using the concept of Opportunity to Learn, it should be possible to explore the quality of the provision of environmental education in the South African primary school. The reason for using the framework of opportunity to learn is that we were interested in understanding what environmental education topics are taught in the classroom, how learners are exposed to environmental education lessons, what topics are given more emphasis and what teaching strategies are used to teach environmental education. The results of such an investigation would contribute to a broader understanding of how to design better policies for implementing environmental education in the primary schools.

One of the main weaknesses of the opportunity to learn literature, however, is that there are few studies, if any, that are conducted in developing countries, and almost none reported, particularly in the South African context. Most of the existing opportunity to learn studies are based on American and European schools and focus mostly on Science and Mathematics. Yet, little is known about what actually happens in many classrooms, causing some students to achieve and others not to achieve [McDonnell, 1995; Porter, 1989; Stevens, 1993; Wang, 1998]. This is the problem we sought to investigate with respect to the teaching and learning of environmental education in the South African context.

3. Statement of the Problem

Most of the policy changes discussed earlier do not address themselves specifically to the issue of how environmental education should be provided to learners of different backgrounds. This has been left, in most cases, to the schools and teachers in the classrooms themselves. In this study, we investigated the integration of environmental education in the primary school curriculum using the case of one primary school as a focus. We were interested in detailing how one primary school in South Africa structured opportunities for teaching and learning about the environment, in order to understand better how teachers implement new curriculum provisions in their classrooms, especially in a subject area like environmental education, which has no specifically defined curriculum and learning content.

4. Aim of the Study

The focus of this study was on the integration of environmental education in the school curriculum at one primary school. The study sought to explore, among other issues, the availability of teachers who are qualified to teach environmental education; the availability of teaching and learning resources; the amount of time available to learn; the organisation of the classroom; and the use of outdoor learning activities to support learning of environmental education [McPartland & Schneider, 1996; Oakes, *et al.*, 1990; Oakes & Lipton, 1990; Stevens, 1993]. With this broad frame in mind, our aim was to investigate how primary school teachers implement environmental education in the school curriculum.

5. Research Questions

Using the context of one province in South Africa, the researchers sought to answer the following specific research questions:
- What kinds of resources (human and non-human) do primary schools rely on for teaching and learning of environmental education?
- How are these resources identified and organised to maximise opportunity to learn environmental education in primary schools?

6. Research Methodology

We conducted our study in Mamelodi area, in the Tshwane South Region of Gauteng Province. Mamelodi is located to the east of Pretoria, 20 kilometers from Pretoria city center. Gauteng Province is one of the nine provinces of South Africa. It is surrounded by the Magaliesberg Mountains to the north and east, the Pretoria-Witbank highway to the south and Eersterus Township to the west. The major part of Mamelodi is urban and inhabited by a variety of cultural groups that include Ndebele, Zulu, Tsonga, Venda and Sepedi speaking communities. This area is also bordered by informal settlements known as Phomolong, Mandela Village, Alaska, and Extension 10. *Sechaba* Primary School, therefore, caters for children from the squatter camps and children from the formal settlement. We chose *Sechaba* Primary School as a case study because it is participating in the environmental education programmes offered by the South African National Biodiversity Institute (SANBI) and it is also known as one of the best schools in Mamelodi that does well in terms of teaching learners about environmental education.

We used a qualitative research approach, because qualitative research approaches lend themselves to exploratory and inductive research (Trochim, 2001). This approach helped the researchers to understand the occurrence of events in their natural settings and how people at the primary school in question defined these events from their own perspectives. Through this approach, the researchers explored how one primary school has implemented environmental education in its curriculum. More specifically, the researchers were able to examine the manner in which teachers provided environmental education as an integrated theme within other learning areas in their classrooms. The qualitative approach also facilitated the researchers' understanding of the structure of teaching and learning of environmental education at the participating school from the viewpoints of the individuals involved. Semi-structured interviews with teachers and learners were used. This involved direct observations of classroom lessons and also an analysis of documents, such as handouts from environmental education workshops, school environmental education policy, and other relevant environmental education documents used by the school.

The analysis involved the interpretation of participants' explanations of the way they had integrated environmental education in the school curriculum, as well as the kinds of resources the school had for the teaching and learning of environmental education, with particular reference to the manner in which they were mobilised and employed. Furthermore, we sought explanations regarding the way the arrangement and application of these resources were seen as helpful to the integration of environmental education in the school curriculum.

7. Findings

The findings are grouped into three sections: (a) human and non-human resources with respect to teaching and learning of environmental education; (b) institutional systems and frameworks for the implementation of environmental education at the school; and (c) partnerships between the school and other stakeholders working in the area of environmental education.

Pseudonyms are used to refer to the school, teachers and learners in order to avoid referring to them frequently as 'the primary school under investigation', 'teachers' and 'learners'.

7.1. Human resources, capacity and teacher professional development

Often the issue of teacher shortage is given as a reason for poor opportunity to learn, especially in scarce and/or new subjects or focus areas such as environmental education. This was an important issue to investigate in the case of *Sechaba* Primary, in terms of the resources available for environmental education. The results of the study revealed that *Sechaba* Primary School, in fact, seems to have enough teachers to fulfil its broad mandate in primary education. The average teacher/pupil ratio in the four classes that we observed was 1:35 (620 learners to a total of 17 teachers). In spite of these numbers, the quality of learning experiences, that is, the academic performance of learners in environmental education was at best average at *Sechaba*. The limiting factor at *Sechaba* Primary was the absence of properly qualified teachers in the field of environmental education. In fact, there is only one teacher out of a total of 17 who strictly qualifies to teach learners environmental education. *Mr Lehlabile*, who has a certificate in environmental education, also coordinates the environmental education programmes of the school, with the assistance of the Deputy Principal (*Mr Paul*). *Mr Paul* also recognised the limitation of properly qualified teachers in environmental education when he observed that:

We don't have enough teachers who are qualified to teach environmental education. I have interest in environmental education but I am not qualified to teach it. Only "Mr Lehlabile" has a qualification in environmental education. We should get environmental education teachers. I am saying this because if you look at our environment where we live, especially our community, people don't look after the trees, they chop them. For example, we have 100 pitches around the school premises, and people don't know anything about trees. They take them away, and fruit trees are taken away. If there were enough environmental education teachers they were going to teach learners about the importance of trees and plants in general. (Mr Paul, 2007).

However, the emphasis here is not on the presence or absence of a qualification, but rather the observation that qualified teachers are more likely to have the required expertise in their subject areas. This observation is based on the understanding that qualifications and expertise in the subject areas that teachers offer play a significant role in providing students with opportunities to learn about those particular subject areas. With only one teacher at *Sechaba* Primary who possesses a qualification in environmental education, it can hardly be said that the school has enough capacity in terms of teachers who can teach environmental education.

In view of this limitation, it was not surprising to find that teacher professional development constituted the most significant strategy in developing teachers' capacity to teach about the environment. *Sechaba* Primary has taken the issue of teacher professional development seriously. Teachers at the school have been able to advance their teaching of environmental

education through these professional development workshops, as pointed out by *Mr Lehlabile*:

We normally attend environmental education workshops organised by the South African Biodiversity Institute (SANBI), Rhodes University and the Walter Sisulu Environmental Center. I attended three National Workshops organised by Rhodes University, one tutorial organised by the South African National Biodiversity Institute and two workshops organised by the Walter Sisulu Environmental Centre. These three organisations are helping us to integrate environmental education into the school curriculum. From the workshops we attended, we have learned quite a number of aspects like the compost issue. In eliminating greenhouse gases, which are wasting our oxygen in the atmosphere. The South African National Biodiversity Institute encouraged us to plant indigenous trees because these trees conserve water and we were also motivated to plant them so that they should produce oxygen during the night. We started our school garden with the help from SANBI. At WSEC, they also taught us about the issue of composting, how to prepare soil for planting, and they also taught learners about different types of animals and how animals should be conserved (Interview with Mr Lehlabile, 2007).

The only distinct weakness of the professional development opportunities at *Sechaba* came from the fact that they tended to limit the content of environmental lessons at the school to only those topics that the teachers covered at workshops and implement them inside and outside classrooms, such as compost making, gardening, animals and pollution, *etc*. An excerpt from one of the observed lessons went as follows:

Mr. Lehlabile: Good, loam soil is good for planting. Now tell me, what will happen to the soil, after throwing a peel of a banana or orange on it?

Tiisetso: Nothing will happen to the soil because the peel of banana will be rotten.

Mr. Lehlabile: Is it true?

Martha: No, the peels will get rotten and thereafter will make the soil to be fertile.

Mr. Lehlabile: Good, Martha, the soil will be fertile. Now to fertilise the soil we must make compost. Compost is manure that is used to fertilise the soil. To make compost is simple and cheap because you can only make use of rotten vegetables, and fruits. For example, a carrot that grows using nutrients from the soil is eaten by people. When people throw away the leaves and peels, these wastes can go back to the soil to decompose and provide nutrients for new cycle growth. So, now when we make compost we make use of vegetable wastes, we mix them with soil, we sprinkle water to make it moist, and then we leave it for some days for compost to form (Observation: 23 April 2007).

The study also found that "resources" refers not only to the physical resources that teachers use during the lesson but also implies the knowledge that teachers impart to learners (that is, intellectual resources). On the other hand, while knowledge, in and of itself, is useful in creating potentially rich opportunity to learn, it is the manner in which the teacher presents such knowledge to learners that will ultimately generate real opportunity to learn environmental education. During visits to *Mr Moleka's* Grade 7 Natural Science class, he described how he intended to cover the theme on environment, in the context of a study of birds, specifically owls. His major goal was for the learners to recognise owls as birds that are endangered and need to be conserved. He planned to draw on learners' experiences about owls and build on that prior knowledge to engage learners in a discussion about common ideas and beliefs about owls. In the presentation of the lesson, a number of resources were used, such as a poster of an owl, a poster of a food chain, a chart displaying a rat and grass, two artificial (man-made) owls, an artificial wing, and a radio. Part of the lesson went as follows:

Mr Moleka: Today I am going to teach you about an owl. What type of an animal is an owl?' (Learners raise their hands).

Zoleka: 'A bird'.

Mr Moleka: 'An owl is a bird, do you all agree?

Learners: 'Yes'

Mr Moleka: 'Then, if I ask you, what features make a bird, what are you going to say? (Learners were quiet for about 2 minutes suggesting that many of them did not quite understand the question). Let me give you an example, a lion has two legs, a hairy neck, a tail, and a tough skin (this example stimulated learners to develop a sense of what some of the characteristic features of an owl might be; they began raising their hands). Yes, let's hear *Thandi'*.

Thandi: 'A bird is something that lives on a tree and it can fly'.

Mr Moleka: 'Yes, good, a bird has wings so it can fly'.

Lungile: 'A bird has two legs'.

Ratile: 'A bird has a beak'.

Mr Moleka: 'An owl is a *nocturnal* bird; a *nocturnal* is an animal that is active during the night and passive during the day. The opposite of nocturnal is *diurnal*. A *diurnal* animal is the kind of an animal that is active during the day like a human being and passive during the night (Observation: 16 May 2007).

During the post-observation interview, *Mr Moleka* was excited that the lesson had gone according to plan, and in fact exceeded his expectations when the learners began to engage him more with their own puzzles and questions. He ascribed the improved participation levels to the fact that the lesson was relatively easy after their previous lessons and discussion on vertebrate and invertebrate animals and how animals adapt to the environment. On the question of how he selected the activities, explanations, examples, and what concepts to focus on during the lesson, he made it clear that "*[He] used the materials [he] got from the Zoological Garden during [their] educational excursion last year in 2006*" (*Mr Moleka*, 2007).

Evidence from the present study suggests that teachers at the participating primary school used different methods of teaching, which in turn afforded learners varied OTL environmental education at the school. Some teachers used a traditional teacher-centred approach, while others used learner-centred approaches which may have offered some learners, within the same school, better opportunities to learn environmental education. Opportunities to learn, therefore, varied within the same school, once more depending on the specific teachers and the particulars of the classroom interactions.

7.2 Physical Resources

The evidence in this study suggests that the participating primary school had managed to build its capacity extensively by seeking out a variety of resources for the teaching and learning of environmental education. The data reflect that environmental leaders at the school had taken strong initiatives to identify and mobilise material resources for the school. In terms of preparing the school garden, such tools as hosepipes, cheeters, gardening forks, spades, trees, flowers and compost had been donated. A JoJo tank for water harvesting, to enable the school to save water, was supplied Pick' n Pay. Similarly, solar panels, retrofitting bulbs, and reflective paint used in the classrooms for the provision of alternative

energy and energy-saving purposes were also donated. This was aptly stated by *Mr. Lehlabile* in the following words:

We have in the past requested donations such as garden tools, seeds and funding for the development of our school environment. We have Pick' n Pay Company. In trying to save tap water, we thought of capturing rain water, and the only way of doing that was to link with stakeholders like Pick' n Pay, and we requested for a donation of a JoJo water tank. Pick' n Pay managed to provide us with a JoJo water tank and we have put it behind the classrooms so that we can capture rain water during the rainy season. By so doing we are going to save municipal water; we will be irrigating our plants using the very same rain water. Nestle Company donated indigenous trees, compost as well as fertiliser tablets for the school to remove the alien trees and plant water-wise trees. Our school is an Eco-school, it has registered with Share-Net, and so Share-Net also provided us with booklets that we can use for the teaching of Environmental Education. The Gauteng Department of Education as well donated Environmental Education booklets that guide us on lesson planning for environmental lessons and it has also donated posters about the environment. We also use garden as a teaching and learning resource (Mr *Lehlabile,* 2007).

Our research data reflect that the school had identified a number of priority areas about the environment around which to mobilise resources for teaching and learning, such as plants, water and electricity. The school was using gardening to stimulate learners and educators and the community to take charge of their environment and its conservation. In addition, the school's environmental education leaders had taken strong initiatives to search for material resources.

Institutional systems and frameworks for the implementation of environmental education at *Sechaba* Primary School

Sechaba Primary School has managed, through its own networks and initiatives, to create some latent capacity to provide for its learners significant opportunities to learn environmental education. This study addressed the key concept of leadership as a resource in building environmental education opportunities. Data reveal that *Sechaba* has designated environmental education coordinators to facilitate and support all other teachers in the school in the integration of environmental education into other subject areas. It is through the initiatives of such designated coordinators that the school was able to create extensive and meaningful opportunity to learn environmental education.

Although the human competence of the school in terms of its workforce who are qualified to teach in the area of environmental education appears to be very thin, the leadership and agency of some of these teachers seem often to have extended the capacity of the school. The environmental education coordinators of the school formed an environmental education committee with the purpose of enhancing environmental education at the school. The school also managed to register with Share-Net to be an Eco-school, so that it could attract the attention of stakeholders who could provide teachers with professional development and training about the teaching of environmental education. Furthermore, the environmental education committee has drafted an environmental education policy for the school, which serves as a guide on how the school should run in terms of environmental teaching and learning. The school's environmental education committee appears to have been a key agent for constructing an agenda and mobilising resources for environmental education at the school. *Mr Lehlabile* described this important role of the environmental education committee when he said that:

Because environmental education in our school is a venture, for the first time as a leader I started a garden which of course the teachers would use as a teaching resource and they will integrate environmental education into other learning areas. I have also established an enviro-club, an environmental education committee which comprises of teachers and learners so that we can be able to enter competitions that will inspire teachers and learners about environmental issues. The main duty of the enviro-club is to engage in the environmental education competitions. Having been registered as an eco-school, the Share-net have sent us materials like posters, small booklets about plants and animals, for us to help teachers to conduct their lessons in the classroom. As an eco-school we have registered with the Share-Net so that teachers at our school can be trained in the form of workshops about environmental education (Mr *Lehlabile*, 2007).

The results of this study suggest that the school has come up with a well-focused agenda for addressing environmental issues within the school context. For example, energy saving, water harvesting, school greening, climate protection and waste management were the key issues that the school proposed to tackle. The existence of institutional systems has enabled the school to mobilise resources and develop effective partnerships that have promoted the learning of environmental education. In fact, the existence of formal structures like committees within the school has enabled *Sechaba* Primary to link with other organisations and develop partnerships that promote the teaching and learning of environmental education at the school.

Partnerships between *Sechaba* Primary School and other stakeholders working in the area of environmental education

Much of the physical and intellectual infrastructure for environmental education at *Sechaba* Primary School is a result of collaboration between the school and non-governmental organisations working in the area of environmental education. Data show the school has connections with business enterprises such as Pick 'n Pay business enterprise and Nestle, the City of Tshwane Metropolitan Municipality, Electrical Supply Commission, Mondi, SunTank, the South African National Biodiversity Institute, and the Walter Sisulu Environmental Centre. All these stakeholders and non-governmental organisations have provided the school with a variety of resources such as trees, compost, financial resources, solar panels, water tanks, retrofitting bulbs and capacity-building initiatives essential for sustaining environmental education at the school. The joint venture with the available stakeholders itself has helped the school to afford better environmental education opportunities to learners. The following statement by one teacher makes the point:

As leaders in environmental education we managed to connect our school with stakeholders such as Nestle Company (Growth Wild (PTY) LTD) which donated fifteen indigenous water-wise trees to replace the alien trees and also supplied the school with compost and fertiliser tablets. With the resources that SANBI provides, it conducts workshops for us, thereafter we have to go back and do the practical part, in this instance gardening. The South African National Biodiversity Institute has provided us with plants such as indigenous trees and flowers; they even demonstrated how to plant them. Most of our plants have been contributed by SANBI, and they demonstrated planting. SANBI also gave us a fork, spade, hosepipe and cheeters. Pick 'n Pay business enterprise through their "Wish Campaign" donated 46 citrus trees, compost bags, a JoJo water tank and R5000 for the implementation of water harvesting project for the indigenous and vegetable garden. (Mr Paul, 2007).

From this quotation, it is evident that the school has become adept at using community resources such as those from the City of Tshwane Metropolitan Municipality, Electrical

Supply Commision, The South African National Biodiversity the Institute, the Pick 'n Pay, to construct a fairly successful programme for environmental education at the school. Our discussion of the findings suggests that, on its own, the Gauteng Department of Education (GDE) seems to have provided minimal intellectual and material resources with which to effectively construct the school's capacity for the integration of environmental education in the school curriculum.

Though *Sechaba* Primary has sufficient teachers to accomplish its broader mandate in primary education, there remains a shortage in terms of quality teachers who are competent to teach environmental education. In exploring the issues regarding the opportunities to learn environmental education, it is important to bear in mind that it is not the quantity of teachers that creates opportunities to learn environmental education but other such issues as their qualifications and quality of their presentations of lessons that provide enhanced opportunities to learn within a school. Porter (1991), among others, views a quality teacher as someone who is first and foremost properly qualified in the subject he/she teaches. Also, in their definition of opportunities to learn, Oakes and Lipton (1990) note that in order to afford all students with equal opportunities to learn, all teachers should have teaching qualifications, should be experts in their subject areas and should be able to engage learners in the learning process. Stein (2000) takes the view that there is a connection between teacher qualification, classroom practice and opportunities to learn. Teachers, who are trained to teach, tend to do better in the classroom in terms of the teaching practice than teachers who are not qualified to teach.

Other opportunities to learn scholars such as Oakes *et al*. (1990) have argued that black students are more likely to be taught by less qualified teachers and eventually their opportunities to learn become less. Sadly, this was the case at *Sechaba*, although it is not clear to what extent this would be the case at other South African primary schools, especially the formerly advantaged schools in the country. The issue of qualified teachers for the subject is a contentious one, even for the Department of Education. At this stage, there are no formal plans to provide enhanced study opportunities for teachers in environmental education, except on a voluntary basis at the initiative of each individual teacher.

Data revealed that *Sechaba* has designed a myriad of activities to improve its capacity to create better opportunities to learn environmental education, which included some of the following: creating human resource clubs such as Enviro-club, registering the school with Share-Net to be an Eco-school, drafting an Enviro-policy, seeking out financial resources, and other intellectual resources such as knowledge and learning about the environment for the teachers at the school. Given the findings regarding the ability of this school environment leaders to mobilise physical resources, intellectual resources as well as financial resources, the major story of the present research is therefore that of a case of mobilising resources for environmental learning and how such resources are used in the teaching and learning about the environment with a view to providing better opportunities to learn environmental education at the school.

Furthermore, the findings suggest that the school formed partnerships with non-governmental organisations, not only for gain in the material resources of the school, but also for the professional development of teachers in the field of environmental studies. Learners also benefited from these partnerships through enrichment of content and practical knowledge about the environment. These professional development sessions, in turn, enabled the provision of structured learning opportunities about the environment at

Sechaba, including the hands-on projects that resulted from the partnerships with the non-governmental organisations. The issue of teacher professional development and how it helps teachers to do better in their teaching practice has also been discussed extensively in the literature. Yoon and Resnick (1998) found that teachers who took part in professional development workshops seemed to have more experience on improvement-oriented classroom activities compared to teachers who did not participate in the program. While in general, most studies find as Herman, Klein, and Wakai (1997) did in observing that teachers from low socio-economic background tend to receive less in-service training as compared to teachers from high socio-economic background. What seems to have made the case of *Sechaba* to be different from this pattern may be the agency of its leadership in seeking out such professional development opportunities for the school. What was remarkable about their efforts was their attention to the notion of "intellectual resources" that include knowledge and learning about the environment for the teachers at school.

8. Conclusion

In examining opportunities to learn environmental education at the school and classroom level, we were interested in ascertaining how teachers in primary schools have made sense of the new policy of integrating environmental education in the various learning areas. The researchers wished to find out how workable the policy was in one school context, and what its consequences were in terms of providing better opportunities for learners. Indeed the case of *Sechaba* Primary has provided some insights into these questions. We now know how some schools have taken the new policy and made it work for them. They have developed their own local environmental policy, which served as a basis for mobilising and organising resources for learning and teaching environmental education at the school. It is this localised policy that seemed important in driving the integration of the environment into the curriculum at *Sechaba* Primary.
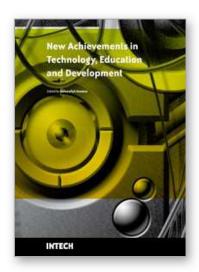
Furthermore, the local policy created a platform for mobilising the intellectual and material resources for the integration of environmental education at the school. For us, the most important lesson coming out of this research therefore is the need for local school actors to take the initiative and be the agents of change. Agency and teacher leadership have proved to be cornerstones of the success story of the integration of environmental education at *Sechaba* Primary. There is, however, still a long way to go in terms of reaching the conceptual depths of the integration and extended participation of learners in environmental education, as the case of *Sechaba* Primary has illustrated. The lessons learned from the *Sechaba* Primary case would be applicable in schools that have taken environmental education as seriously as *Sechaba* Primary has done

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Edited by Safeeullah Soomro

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