

# **Capacity Building for Teaching and Learning in Environmental Education: The Role of Public/Private Partnerships in the Mpumalanga Province of South Africa**

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## **Abstract**

A recently mandated focus on environmental education (EE) in the basic education curriculum of South Africa requires that all children in grades 1 to 9 be introduced to environmental concepts and related content. Not many schools and teachers have the necessary knowledge and experience to make this major shift workable. Similarly, the capacity of the provincial education departments to support schools in the expected integration of EE is limited. How then do schools and teachers cope with this dilemma and demand for change? In this paper, we use the concept of opportunities to learn (OTL) to understand the capacity building processes in two schools within the South African province of Mpumalanga. Specifically, we discuss the interactions between governmental and non-governmental organisations (NGOs) in building the capacity of schools (and specifically teachers) to provide quality learning in EE. Data for the study was collected through document analysis and interviews with teachers and officials in the province. Our findings suggest that, on their own, local education departments have limited intellectual and material resources to build the schools' instructional capacity for EE. In conclusion to this paper we posit a possible approach to developing such capacity through interactions between public and private resources and programmes for EE.

## **Introduction**

Since the introduction of popular democracy in 1994, the education landscape in South Africa has not been the same (Jita & Vandeyar 2006). Among the many curricular changes introduced in recent years has been the implementation of a new focus on environmental education as a set of integrated themes to be offered within all subjects across the entire grade 1 to 9 curriculum (Department of Education 1997). However, not many teachers and officials have the necessary experience to make such a major focus on EE workable within the country's current provincial systems. Several scholars have argued that opportunities for EE are often presented within the formal curriculum, but are sometimes so diffused throughout the curriculum documents that they become hard to identify and implement (Le Grange &

Reddy 1997). Teachers therefore often lack a coherent and practical vision of what environmental learning should look like in their own classrooms. It is also arguable, especially in the context of a developing country such as South Africa, whether provincial (or local) governments have the necessary capacity to provide the direction and support for the teaching and learning of EE. Our broader research in this case sought to understand and redefine the notion of “school capacity” for teaching and learning, especially in specialised subjects such as Science and Mathematics<sup>1</sup>. Consequently, we paid particular attention to the capacity building processes necessary to create, maintain and/or replenish such a school capacity in the various schools in Mpumalanga.

In this paper, we use the concept of opportunities to learn (OTL) to explain how the new environmental education framework in South Africa has shaped the capacity of schools, in particular, to achieve the desired learning about the environment. We examine, specifically, the question of what opportunities the National Environmental Education Programme (NEEP) has created for the teachers in Mpumalanga to provide quality instruction in EE. We begin by sketching our framework for examining the case studies of two schools whose capacity we investigated. We then detail the methodology for the study, and outline the findings illustrating the nature and content of the OTL for the teachers in the schools. We discuss our main findings with respect to interactions between governmental and non-governmental organisations (NGOs), or what we have referred to as the public/private partnerships in building school capacity for the provision of quality instruction in EE. Finally, we reflect on the general implications of our findings.

## **Theoretical Framework**

According to Reichardt (2002, p.4), the concept of opportunities to learn (OTL) was first used in the 1960s as a method of measuring relative exposure to content that was assessed in widespread international testing research, namely the First International Mathematics Survey (FIMS). With the idea that **all** children should have an equal chance to quality education, OTL became a useful mechanism for establishing **access** to high-quality education for all students. While OTL became a useful concept among scholars (and recently also among policymakers) for discussing issues of equity and access in schools, the exact meaning and content of such chances or opportunities for high-quality education remain elusive and contentious. For some scholars, schools are expected to provide, and provincial (or local) governments are expected to guarantee, not only course offerings and certified teachers in the various subject areas but also high-quality curricula and teachers who are well prepared to teach the material contained in the curriculum documents (Elmore & Fuhrman 1995). For Herman, Klein and Wakai (1996), the concept of OTL is inclusive of a range of variables that are likely to influence student performance – including access to resources, high-quality instructional content and processes, extra-school opportunities and direct preparation.

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<sup>1</sup> Our study included a focus on Environmental Education (EE) as part of the science subjects.

Interestingly, while both conceptions of OTL cited above are comprehensive and include a number of variables that are likely to affect performance, it is noteworthy that both conceptions also highlight teacher factors. In the Elmore and Fuhrman conception, the issue of “teachers who are well prepared to teach the material” in the curriculum documents is brought to the fore (Elmore & Fuhrman 1995, p.438).

Similarly, Herman et al. discuss the “high-quality instructional content and processes” as one of the important factors that influence student performance. Both conceptions therefore place the teacher (and more specifically teaching) firmly at the centre of OTL. In general, OTL has been defined to include issues relating to the curriculum offering (Baratz-Snowden 1993), content exposure variables (Stevens 1993) or “time on task” (Rousseau & Powell 2005), quality instructional delivery (Stevens 1993), and teachers’ effectiveness in the presentation of the lesson (Wang 1998), inter alia. The concept of OTL has not really been used widely or conceptualised differently for contexts in developing countries. In fact there are very few studies that use the concept of OTL in developing country contexts. In all cases for **developing countries**, the concept of OTL that is used is linked to the idea of learners having a chance to be exposed to the content or material reflected in the tests and assessments. In other words, to date there has been no independent conception of OTL that is specific for developing countries.

The content of our paper is premised largely on the Elmore and Fuhrman conception of OTL. It is against the background of the centrality of teachers in constructing the OTL that our study sought to understand how the new EE policy in South Africa enabled teachers by building their capacity to provide such high-quality instruction. In other words, we use the framework of OTL to examine the teachers’ **access to**, and the **quality of, professional development** (learning) and support around EE. As described earlier, the OTL framework includes examining learners’ access to curriculum material and competent teachers (and/or teaching) of the curriculum. Similarly, when applying the OTL framework to the teachers, as our paper seeks to do, we need to examine their access to EE content and the professional development opportunities available. We focus on teachers’ opportunities to learn environmental education (OTL EE), in part because of our assumption that teachers can only create better opportunities for their students if they themselves are confident about the content.

In the section that follows, we trace the OTL for teachers in two case study schools within the province of Mpumalanga. We examine the similarities and differences in their OTL provided through the new National Environmental Education Programme. We examine the possible influence of their OTL on the schools’ capacity to offer high-quality instruction in EE. And we conclude by discussing specifically the role of the governmental and non-governmental organisations (NGOs) in the provision of these OTL EE in Mpumalanga.

## **Methodology**

### Research approach

Our research was qualitative in its approach. It involved the examination of data collected through qualitative data collection methods (Neuman 2000). Qualitative research methods are more suited to help in the understanding of human behaviour and experience (Macmillan & Schumacher 2001, p.16). In examining most of the previous studies and research on OTL, it is glaringly apparent that most of them have been carried out from a quantitative research perspective. The dominant approach has therefore been that of attempting to understand OTL in mathematical terms, and providing counts and numbers. Even though quantitative approaches have tended to dominate, increasingly other researchers have begun to seek different understandings of the concept and issues involved in OTL through qualitative approaches (see Stein 2000; Winfield & Woodard 1994 for an expansive list of such studies). The present study sought to align itself with this new trend of studies of OTL from a qualitative perspective.

### Data collection

To collect the required data for this study, during the year we spent two five-day data collection periods in the province of Mpumalanga visiting and interviewing the various stakeholders for an in-depth understanding of school capacity and how the province in general has interpreted national frameworks. In other words, we explored this province to understand what capacities existed for the teaching and learning of EE, and the consequences for the learners. We sampled purposely within the province, selecting two out of the three regions of Mpumalanga. We selected regions that have showed the most progress within the province, as suggested by the provincial EE coordinator. It is important to note though that the Mpumalanga case was part of a larger study where we collected data from two provinces (Gauteng and Mpumalanga), and identified two regions and two schools per region within each province. Again, the schools were nominated for us, by the subject advisors responsible for environmental education in the regions, as being the schools with the most visible progress in the teaching of EE. The provincial arrangements and the schools were studied in-depth as cases to understand the provision of OTL EE for the teachers of the province. A major theme for understanding these OTL, as highlighted earlier, became the notion of the interaction between governmental and non-governmental organisations in building the capacity of schools to provide the OTL.

The data sources used in the present case study were qualitative individual interviews with the only provincial environmental education coordinator in the province, two curriculum implementers (CIs or subject advisors) – who represent the most active CIs in EE according to the provincial coordinator – and two subject teachers plus their principals at each of the schools within the one region of the province of Mpumalanga. Our approach in sampling these informants was to maximise the opportunities to generate a comprehensive story of implementation within the selected cases of the province. We did not seek to find

representative cases of any kind, given that our purpose is to develop an understanding of the micro-implementation issues in their complexity within the schools. The interviews generated information on the educational background and experiences of the participants in the teaching and learning of EE. In addition, we asked all the participants to provide us with (a) policy documents, (b) work programmes, (c) syllabi, (d) workshop handouts, and (e) other such documents they considered relevant to their practice of EE in the schools.

### Data analysis

We followed a qualitative research approach whereby data analysis commenced during the data collection stage. In practical terms, this means that the analysis was done continuously during the data collection processes. This reduced the problem of data overload by selecting out significant features for future focus while the study was ongoing (Cohen et al. 2007). We tape-recorded all the conversations with the curriculum specialists, subject advisors and the teachers, and transcribed each of the taped conversations to provide written texts of the interviews. During the analysis of the data, we listened to the entire tapes several times and read the transcripts a number of times in order to provide a context for the emergence of specific units of meaning and themes. We also began coding, clustering and categorising the identified themes from the whole data as suggested by several scholars in the qualitative vein of research. Le Compte (2000), among others, asserts that qualitative analysis is an inductive process of organising data into categories and identifying patterns among these categories. We did this by looking at the themes that were common to most or all the interviews. In the present case, some of the chosen categories included, among others, professional development support, local (school) initiatives and opportunities to learn environmental education, as well as interactions between governmental and non-governmental organisations.

Finally, in our analysis we wrote summaries of each individual interview incorporating the themes that had been elicited from the data. We followed up with documentary data analysis where we sought to demonstrate the meaning of written or visual sources by systematically allocating their content to predetermined, detailed categories, and quantifying and interpreting the outcomes (Payne & Payne 2004). We also reviewed such documents as the environmental education policy statements, EE instructional materials, school policies, and workshop invitation letters and programmes. Data was validated through triangulation (Cohen et al. 2007) using both unstructured and semi-structured interviews, document analyses to generate strong data sets, and follow-up telephone conversations with the respondents to seek more clarity on parts of the interview transcripts that were not clear to the research team.

## **Findings**

To understand the nature and quality of the OTL created through the new national EE framework, we begin by analysing the provincial capacity with a particular focus on the key

role players and their respective functions and roles within the provincial structures. We then tell the story of capacity building in schools and the teachers' OTL from the perspectives of the school practitioners who are, for the most part, the key players at the school level. Case studies of two primary school teachers who teach environmental education at different schools within the province are used to illustrate how the capacity for teaching and learning of environmental education is structured within the schools and what the capacity building initiatives look like for these teachers of EE.

### **Provincial capacity and capacity building initiatives**

Mpumalanga, like the other eight provinces in South Africa, works within a framework that seeks to integrate environmental education in the teaching of all the other subjects as suggested in the national EE policy. In the discussion that follows, we characterise the provincial capacity for environmental education by focusing on some of the key players and organisations, and their role in supporting teachers of EE in the province. The provincial capacity story is rather easy to tell given the fact that it involves very few key individual participants under the leadership of the one provincial coordinator. In telling these stories, however, we do not suggest that ours is the only story that can be told about the province and the schools regarding the implementation of EE. It represents one framing of the issues in order to contribute to the possible multiple stories that are yet to be told about capacity building in the province.

In the province of Mpumalanga, Mr Jones is the overall coordinator, who is in charge of environmental education at the head office of the Mpumalanga Department of Education (MDE). He has a PhD in Environmental Education and has been the EE coordinator in the province since the year 2000. Although Mr Jones is the highest qualified official in EE within the MDE, a major part of his job involves coordinating and providing assistance to the curriculum implementers (commonly known as subject advisors or CIs) of another subject area, that of Agricultural Sciences. Asked about his duties as an environmental education coordinator in the Mpumalanga province, he drew our attention to the fact that his role was defined more broadly in terms of structuring and coordinating assistance and support to the CIs and teachers in the fields of agricultural sciences, nature conservation and EE. He expressed these roles as follows during our discussion:

I basically assist with co-ordinating all activities related to agriculture and the environment in the Mpumalanga province, with regard to curriculum at times. I also participate in projects, which are there to assist in the integration of environment in the curriculum because there is also a lot of support for implementation of the curriculum in South Africa, which is coming even from outside countries. Besides that I do lot of training through workshops. I do capacity building of both curriculum implementers and teachers. At times I help nationally in some processes of the curriculum development, because I have been part of writing the new curriculum.

Mr Jones' role, as he describes it, seems to be very broad and generally focuses on support and capacity building of both the CIs and the teachers. At the General Education and Training (GET) levels, or grades R to 9 levels, he is responsible for integrating environmental education into all the subject areas, while also driving Agricultural Sciences at both GET and Further Education and Training (FET) levels, or grades 10 to 12 levels.<sup>2</sup> In addition to his coordination and capacity building roles, Mr Jones explains his role in the national curriculum development processes as one of the provincial representative on the national curriculum drafting committee for Agricultural Sciences.

While he is a key official, Mr Jones is not alone in driving the provincial capacity building initiatives in Mpumalanga. He is assisted by a group of CIs employed in each of the three regional offices of Mpumalanga. About two CIs are responsible for driving EE in each region. Although, officially, this is the number of people who have something to do with EE in each of the regions of the province, for all practical purposes our research uncovered that on average only one curriculum implementer per region becomes fully involved with EE in his/her day-to-day roles. To date, however, it would seem that there has been no shortage of awareness with respect to EE programmes and processes, as the province has been fortunate to be targeted for support and experimentation in EE. According to the provincial coordinator, such experimentation began around 1997 when he was invited to participate in a project funded by the Danish Cooperation for Environment and Development (DANCED), namely the Learning for Sustainability project. This Danish-funded project was a pilot project aimed at supporting the implementation of environmental learning in the formal education system in South Africa. Teachers from a number of regions in Mpumalanga were selected by the provincial office to participate in the project through workshops and training. It was on the basis of this pilot project, among others, that the new National Environmental Education Programme (NEEP) was subsequently adopted for the whole country.

For the years 2000 to 2005, the National Environmental Education Programme for General Education and Training (NEEP-GET) was initiated to promote improved environmental learning in schools through the incorporation of school-based environmental activities into the curriculum. Several schools were given the opportunity to participate in the project's professional development clusters where participating teachers were encouraged to initiate activities and projects that support environmental learning, including the development of school environmental policies and management plans, and the incorporation of enviro-days into the curriculum. It is through this NEEP-GET project that the coordinator of EE in Mpumalanga was able to structure and coordinate the assistance and empowerment of CIs and teachers to integrate environmental learning into the teaching of other subject areas.

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<sup>2</sup> It is important to note that EE, according to the present curriculum framework, is offered as a focus at the GET levels only. There is, at present, no curriculum policy provision for how to teach EE at the FET levels of schooling.

### **Public/private partnerships for capacity building in EE**

The provincial EE officials in Mpumalanga do not work alone. Instead they work with a number of other organisations, both public and private entities.

We have always been dealing with partners. We have dealt with, for instance, the local Department of Agriculture and Environmental Affairs, which has been running competitions, and that is why I said they are raising awareness. For instance, we have many other non-governmental organisations (NGOs) which help teachers, such as SAAPI (business), although they have other special focus areas such as forestry and fires.

EE coordinator

Mr Maja, a CI in the province, corroborated the provincial coordinator's claims on partnerships as follows:

There are a lot of programmes that we are working with. The Department of Water Affairs and Forestry is the one that is producing the placards, charts and pamphlets. We communicate regularly with them.

From our discussions with the various provincial officials, there were several such partnership initiatives on EE in the province, including the My Acre of Africa project, which takes learners and teachers into the Kruger National Park for instruction about wildlife and plants; the environmental awareness programmes such as "clean schoolyard" run by the Department of Agriculture, and the Department of Water Affairs and Forestry; and the school-based gardens and professional development for teachers dealt with by the South African National Biodiversity Institute (SANBI).

Asked about how the province works with these organisations in pursuit of the provincial EE goals, Mr Maja noted that they meet with the representatives from the organisations and work together in designing resource materials such as pamphlets and booklets.

Some representatives from the department have a meeting on, for example, the designing of the material. Some of my colleagues spent some time developing materials with them. We always pick people from sub-regions and they go and develop the materials together.

An important point here is that the MDE does not work on its own in assisting teachers to integrate EE in the curriculum. It receives support and assistance from other departments and the non-governmental organisations (NGOs). These support organisations and departments enter into some form of collaboration agreement with the MDE to formalise their support.

In fact, to coordinate these partnerships, the MDE has established what is called the

Environmental Education Forum that brings together both the governmental and non-governmental organisations (NGOs) to plan and discuss progress in their assistance and collaboration with regard to the integration of EE within the schools.

We in Mpumalanga also have the forum called Mpumalanga Environmental Education. This forum brings together some departmental officials who are involved with environmental issues. Let us say from Health, from Local Government, from Agriculture and from other departments. I have been coordinating that forum and we meet once a quarter, four times a year. All these NGOs and other companies sit in the forum and discuss the planning of activities with the Department of Education.

EE coordinator

It is clear therefore that the capacity of the MDE to create significant OTL EE is greatly enhanced by the collaboration with other governmental and non-governmental organisations and structures as the teachers' stories below will further illustrate. In recognition of this fact, the MDE has begun to develop a structured approach to coordinating these partnerships through the Mpumalanga EE Forum. Many of the NGOs also offer professional development workshops for teachers to complement the NEEP-GET workshops organised by the national Department of Education (DoE). A rather unexpected finding for us was the observation that many more professional development workshops were offered to the teachers by the NGOs relative to the government sector. The teachers' stories below further illustrate this point.

## **The School Level Case Studies**

To confirm the provincial story of OTL resulting from the new EE framework, we investigated the situation at the school level by identifying and interviewing a number of lead teachers in each of the schools, and then constructing each school story around the reflections and conversations with these teachers and their principals.

### ***Hillside Primary School***

Our first school is Hillside Primary School. At first glance, Hillside operates like any normal public school in the sense that the official government policy on the integration of environmental learning seems to be in place and well communicated to all the teachers at the school. While officially every teacher has to operate within this integration framework of EE, the school has identified and assigned Mrs Mafolofolo, a veteran teacher with 15 years of experience, to take on the responsibility for leading the development and implementation of EE programmes and policies at the school.

Indeed teachers at Hillside Primary School, and Mrs Mafolofolo specifically, do seem to be way ahead of many of their colleagues nationally in their ability to bring environmental learning into the teaching of their subject areas. In the course of the study, we wondered

therefore how it is that the teachers at the school have been able to advance so much professionally in their approach to this new subject area of environmental learning. In reflection on this, we chose to examine the construction of Mrs Mafolofolo's (and her colleagues at Hillside's) own OTL resulting from the new framework on EE.

As a way of developing themselves professionally, many of the teachers at Hillside seem to have taken up opportunities and attended numerous workshops on EE. Asked about the number of such opportunities and/or workshops that Mrs Mafolofolo and her colleagues have been able to attend to develop themselves in the period between 2000 and 2005, she answered as follows:

At least up to ten. We actually did something about pollution. We were looking at Mpumalanga as a whole, and how polluted it was. I was in Delmas recently, involved with water awareness, with Rand Water (a company). We did activities regarding awareness about water. And then because I was working with them for so long they gave me an Afrikaans version to change to English. I have been busy with it since January, and just recently finished it.

For Mrs Mafolofolo, intense professional development seems to have come not only from participating actively in such workshops but also from gradually assuming leadership roles, such as when she took on the role of translating the materials from one language into another. Such translations would require more than just routine knowledge of the subject matter to accurately represent the substance of the content in the materials. Her sense of agency tends to distinguish her from many of her counterparts, and hence the kinds of opportunities her school was likely to create around the teaching and learning of EE. She states further:

Also, I am involved in a competition run by DWAF (Department of Water Affairs and Forestry) which says 'baswa le metsi' (loosely translated to mean "youth and water"). There, they are just trying to bring the youth to be aware about wasting water. How do we save water? What are the plans that we can come up with to save water? So they are busy with activities on water, such as the drama production about that, songs and poetry. Usually these DWAF people come to me and ask me to attend their workshops. And thereafter most of the time I become one of their adjudicators in the schools' competitions.

Hillside appears to be one of the strongest schools in terms of its ability to grasp every opportunity to learn that comes along. Mrs Mafolofolo appears not to be content with only attending the workshops as a delegate, but is also ready to immerse herself fully in organising such opportunities, which in many ways brings her school to the forefront with regard to taking these OTL. As a result of Mafolofolo's agency, the teachers at Hillside are not limited to only attending workshops organised by the (provincial and/or national) DoE, but to also

take up other opportunities provided by other governmental departments and NGOs:

And also with the Department of Education, Martha (the subject advisor) is working with SAAPI (paper industry) people. So whenever SAAPI people have a workshop she calls us. We did something on fire, we did something on paper-making because SAAPI are very busy with forestry. They trained us in paper-making. And then in return we come back and teach our learners. But mostly you find that it's not from the Department of Education, from our department per se, it is from the NGOs or other (government) departments that we get such OTL. But I always attend because I love it and when I come back I do implement. This is why the principal loves me so much because when I come back with something I make sure that I talk to the other teachers. I have got this opportunity so we meet in the afternoon. There are one, two, three things that I have got and I think we need it here at school.

Throughout our conversations Mrs Mafolofolo continued to illustrate the point of how several of the NGOs, including the business organisations, had provided many of the learning opportunities for her and her colleagues at Hillside. It is not surprising that given the potential for better OTL for teachers at Hillside, the learners at the school have won several prizes in some of the EE competitions, such as the first prize awarded to the school in a competition sponsored by the Department of Water Affairs and Forestry (DWAF), for which learners had to plan activities on water conservation that would be appropriate for primary school learners. DWAF also supported the schools in celebrating environmental calendar days, such as Water Week and Arbor Week. Similarly, SAAPI trained the teachers in paper-making and pollution control as discussed earlier. Given the rather low levels of engagement by the MDE and/or the DoE in creating and shaping OTL for the teachers in Mpumalanga and elsewhere, how could learners be expected to have rich and complex opportunities to learn the subject if the teachers themselves are not provided with such opportunities to develop the competence and confidence to engage with the subject?

Asked about the support of the curriculum implementers (CIs), Mrs Mafolofolo pointed out that the CIs were more comfortable and supportive only with respect to their subject areas of appointment (e.g. Natural Sciences or Agriculture), and that EE did not seem to be a primary subject (or responsibility) for any of the CIs. Indeed, in our discussion with the provincial coordinator and CIs, it became clear that they were all assigned to other subject areas, with environmental education only being added on to this primary portfolio as an integrated focus.

Our conversations with Mrs Mafolofolo and her colleagues about these issues of teachers' OTL seem to point to a diverse number of EE topics that were covered in the workshops. Most of these workshops also varied in duration from one day to seven days at a time and provided for multiple opportunities for teachers to learn, and thus for schools to develop the necessary expertise to structure better and more valuable opportunities for their learners in environmental education.

### ***Hilton Primary School***

Our second school was Hilton Primary School, which like Hillside also worked within the official government framework of integration of EE. Hilton has also identified and assigned one teacher, Ms Tieho, to take responsibility for leading the implementation of EE programmes and policies at the school. Ms Tieho, one of 37 teachers at Hillton, has been a teacher for 29 years and currently teaches Natural Science to grade 6 and 7 learners at the school.

Tieho confirmed that to help prepare themselves adequately to integrate environmental learning, many of the teachers at Hilton had attended many workshops to empower themselves. Asked about the number of such workshops she had attended in the five-year period between 2000 and 2005, Tieho responded as follows:

The CIs and NGOs all conduct workshops on environmental education. The Department of Agriculture sends its officers to our schools to workshop us on environmental issues, and sometimes these are held at their own place in town. Last week we attended one organised by the Botanical Gardens at Tika Primary school. The BMW (car manufacturing company) seed programme also organised environmental education workshops and there is also the “adopt a school yard” organised by the NGOs. In fact, they are mostly organised by the NGOs. I can’t even remember all of them. I attend these workshops every month.

Once again, the interviews with the staff at Hilton illustrated the intensity of the professional development engagements the teachers received from some of the NGOs. As with Hillside, relatively more of the OTL for the teachers seem to have come from the NGOs relative to the governmental sector. Beyond the coordinators and their own histories, however, the stories of Hillside and those of Hilton have become almost identical.

## **Discussion and Conclusion**

In summary, this paper has provided a glimpse into how some schools (and teachers) in Mpumalanga have managed to cope with the limitations imposed by the lack of provincial capacity to create valuable opportunities to learn about the environment.

First and foremost, our research has uncovered an important issue with respect to the latent capacity of the Mpumalanga province to implement the national provisions on EE. We observed that the provincial capacity for quality support in EE remains very underutilised. With only the provincial coordinator, who is concurrently also a coordinator of another academic subject, to embody such capacity it is not surprising to observe that there was little substantive provincial coordination of EE in Mpumalanga. In good faith, the provincial coordinator made all attempts to put together a provincial EE framework and has been working with groups of subject advisors and teachers to take the lead in implementing environmental learning in schools. However, efforts to make significant improvements to the quality of EE

offered in all the provincial schools fell short of the mark.

As the main impetus behind the new integrated focus, the provincial coordinator and the few Natural Science curriculum implementers constitute a weak force for driving the EE programmes in the province. With a handful of officials who are themselves not devoting full-time focus to the subject area, it is difficult to see how the province could claim to be adequately capacitated for the challenge. This is a similar case to that argued by Elmore and Fuhrman (1995) when they drew attention to the fact that there is often little correspondence between what people think states (or in our case, provinces) “ought to do, what they actually do, and what they know how to do” (1995, p.435). While provinces are expected to be the key drivers in the implementation of the new EE frameworks, they have historically been unable to fulfil such a role mostly because of the “lack of capacity at each level of the enterprise” (Elmore & Fuhrman 1995).

The problem of lack of capacity is not unique to provincial levels of government. In fact, in the case of environmental education in South Africa, even the national government itself introduced the new environmental education policy framework without any permanent capacity of its own. Capacity for driving the new policy guidelines was ushered in through the NEEP-GET project, which was funded by the Danish government for a fixed period only. For that reason, when the NEEP-GET initiative folded in 2005, there was a dramatic reduction in activities and national initiatives around the project. From a political point of view, the national Department of Education will claim to have handed the environmental education initiative to the provinces for implementation, which as the present research has revealed have no capacity to drive this important initiative. An important implication of this finding is that there is currently no strong driving force behind the new EE framework in South Africa, both nationally and in the Mpumalanga province.

Furthermore, our discussion of the Mpumalanga case suggests that although there was an expectation that the schools would begin integrating environmental learning into their teaching of other subject areas, there were no substantial plans and guidelines for how this would happen in the schools. In other words, the province and/or regions (districts) have not provided any locally adapted curriculum frameworks, teaching and learning guidelines, assessment standards, time-frames and guides for schools to use in setting up opportunities to learn environmental education. In other words, to date there is generally no instructional guidance system in place for environmental education in Mpumalanga. Decisions about what to teach, when and how to teach it, and what to monitor and assess, are for the most part reserved for each classroom or subject teacher, or at best in a few instances for school level decision makers. The implication of this finding with respect to the lack of a coherent instructional policy system in the province is that there are bound to be extreme variations in environmental learning offerings in the provincial schools.

A positive aspect of the provincial implementation story is that our analysis in this study suggested that the MDE, the national Department of Education (DoE) through its NEEP-GET project, and several non-governmental organisations (NGOs) took the issue of teacher development seriously. In fact, as argued earlier, teacher professional development

seems to have been the most dominant strategy the province has for building school capacity for instruction in environmental education.

As illustrated in the previous section, it was obvious that these professional development workshops had enabled the teachers at the schools we visited to advance a lot professionally in their approach to this new focus area of EE. Furthermore, some schools in the province have even managed to create significant OTL through their own local initiatives and inventiveness, coupled with the provincial (and national) EE programmes. As significant as the official professional development workshops are to the teachers, they have always been few and far between, and designed mostly around the NEEP-GET workshops during the life of the project. With the subsequent folding of the NEEP-GET project in the past few years, such professional development workshops have become increasingly scarce at provincial and regional levels.

In conclusion, our findings suggest that the Mpumalanga Education Department (MDE) on its own appears to have limited intellectual and material resources with which to build the schools' capacity for quality instruction in EE. As discussed earlier, the workshops attended by many of the teachers were organised mostly by the non-governmental organisations (NGOs), including large corporations and business organisations relative to those that were facilitated by the government sector. In fact, we also noted that even when government was involved, it was often not the MDE but other agencies of government such as the Department of Water Affairs and Forestry (DWAF) and the Department of Environmental Affairs and Tourism (DEAT) that were involved. The latter finding is a splendid example of how some of the schools have made meaningful links with the NGOs in their local areas to enhance their capacity for instruction in environmental education. As a consequence of these interactions between the governmental and non-governmental agencies, schools such as the ones we studied, that have stronger ties and longer-term relationships are able to provide their teachers and learners with better opportunities to learn environmental education. In other words, more significant opportunities to learn seem to be created where and when the interactions between the governmental and the non-governmental structures are stronger and of a more long-term nature than when the provincial education department tries on its own with its limited capacity. The obvious implication of this finding is that given the selective nature and scope of operation of most NGOs and businesses, opportunities to learn environmental education cannot be provided consistently and equitably throughout the province. When provincial environmental education capacity is largely determined by the strength of such selective interactions, an equitable provision of opportunities cannot be guaranteed.

Our analysis in this paper is by no means a complete story of capacity building in the schools and provinces of South Africa. While we are cautious in our claims, the present research has managed to uncover some important findings with respect to how opportunities to learn environmental education are structured and created in Mpumalanga. It is probably an undeniable fact, not only with respect to education, that provincial and local capacities are very limited in many areas of service delivery in general. For the present study to have

uncovered this inadequate capacity to implement curriculum frameworks in the provinces and regions of Mpumalanga is not in itself breaking news. But it is nonetheless an important finding of the study.

What seems to be important ‘news’ from the present study, however, is the fact that such provincial inadequacies can be overcome – and that this can seemingly be done without necessarily appealing for a greater slice of the National Treasury’s pie. The interesting story to emerge from this paper relates to how the interactions between governmental and non-governmental structures and programmes seemed to be the key determinant of the strength of the opportunities to learn in the different schools and regions. Based on this finding, we therefore recommend that provinces and/or regions figure out ways to harness their programmes, resources and energies with those of other non-governmental players, including other (non-educational) government departments with a stake and interest in environmental education.

Through this research, we have learned a lot about the complexity inherent in educational change. This is even more apparent in South Africa, where national and provincial structures both have some concurrent responsibilities for leading such changes in schools. Our research has highlighted the power and value of collaboration, also between people and structures. No single structure or person can have all the capacity to provide for high-quality opportunities to learn. The Mpumalanga provincial story has been positive in its illustration of how some schools, and teachers specifically, have managed to create better opportunities to learn environmental education despite limitations in their own individual capacities. The interactions and collaborations do seem to multiply individual capacities many times! Our evidence lends considerable support to the argument that a possible approach can be found for developing school capacity for instruction in environmental education through interactions between governmental and non-governmental resources and programmes. We contend that without collaboration between the two sets of organisations, NGOs and non-NGOs, schools and teachers will continue to find themselves to be inadequate in meeting the task of creating quality opportunities for their learners.

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