

Integrated environmental teaching in South Africa: An impossible dream?

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To its credit, the new National Curriculum Statement (NCS) for GET (General Education and Training) recently revised into a new Curriculum and Assessment Policy Statement (CAPS)¹ in RSA has put a premium on the inclusion of environmental learning as an integrated component of all subject areas in the primary school phase of learning. This is in line with international recommendations and provisions, particularly those originating from the Johannesburg World Summit for Sustainable Development (WSSD) held in 2002. While the NCS is mandatory for all government schools in the country, many schools have all but ignored the environmental learning mandate in the curriculum. In this paper, I shall examine two case studies of schools in South Africa that have taken the curriculum mandate of integration seriously by specifically designing programmes for environmental learning. Using a qualitative research approach, I shall explore what was involved in the two programmes for integrating environmental learning, and how these programmes were implemented in each of the two schools. I shall then discuss my key finding, this being: while their efforts were admirable, both schools worked differently to achieve the target of an integrated environmental teaching/learning programme in the various school subjects. The paper concludes with a discussion on what integrated environmental teaching in South African schools actually involves and why implementing such a programme is near impossible, given the conditions currently prevailing in South African schools.

Keywords: environmental learning, integrated environmental teaching.

Introduction

Just over a decade ago, South Africa introduced a new curriculum, Curriculum 2005 (C-2005) to replace the apartheid education curriculum. That 'new' curriculum has since been revised to become the National Curriculum Statement (NCS). NCS was also recently revised into new Curriculum and Assessment Policy Statement (CAPS). NCS advocated some major changes in the teaching and learning of most subjects in the school curriculum. Among its mandated changes, the new curriculum introduced environmental education as a theme to be offered across the entire basic education or General Education and Training (GET) level curriculum. One implication of this new focus on environmental education was that all the children at basic education level were to be introduced to environmental education concepts and content. While the new version of C-2005, in the form of the NCS, arguably places less focus on environmental education as a theme, it retains the focus on environmental learning (e.g. through the principles listed in the NCS: social justice, a healthy environment, human rights and inclusivity).

The focus on environmental learning, whether as a principle or a theme, is an unprecedented change in South Africa's school curriculum (Le Grange & Reddy, 1997). However, few teachers, policymakers, learners and other education stakeholders have the experience needed to make such a focus on environmental learning workable within South Africa's current education system. As Le Grange and Reddy (1997) cautioned, when the new environmental education focus was being piloted through the new outcomes-based curriculum, to include environmental education in the critical learning outcomes does not mean that environmental education will actually be taught in many of South Africa's schools and classrooms. The question therefore remains: how, then, do teachers in South Africa negotiate local conditions to implement this new focus on environmental education? To understand how teachers actually resolve this challenge in their classrooms is important, especially when we take note of what Mokhele and Jita (2008) argue about teachers' capacity in this regard. They argue that many teachers often lack a coherent and practical vision

of what such environmental learning should be in their classrooms, simply because many of them have never experienced this form of teaching in their own schooling and teacher training programmes. It is also arguable, especially in the context of a developing country such as South Africa, whether provincial (local) governments or education departments have the necessary capacity to provide the direction and support teachers require if they are to teach environmental education.

Conceptual framework

This study employs the concept of “opportunities to learn” (OTL) in order to examine how the two teachers in the case studies were prepared to undertake the task of integrating environmental learning into their subject curricula. This framework, according to McDonnell (1995), was first popularised by Jeanie Oakes and her colleagues in the USA, in the late 1980s and early 1990s, when they sought to understand why schools with the same set of resources were performing differently in various assessment tests and instruments. OTL is one of the most important factors influencing student achievement. Numerous research studies have indicated that students learn when they are provided an opportunity (PROM/SE research report, 2009). Some researchers point out that the study of students’ opportunities to learn provides us with great insights into variations in student achievement (Floden, 2002; Smith, 2002). OTL is defined as the multiplicity of factors that create the conditions for teaching and learning, such as curricula, learning materials, facilities, teachers and instructional experiences (Scherff & Piazza, 2005). In support of Scherff and Piazza (2005), Schwartz (2005) also defines OTL as the provision of curricula, learning materials, facilities, teachers and instructional experiences that enable students to achieve high standards. In his review of studies of opportunity to learn, Floden (2002) cites several interpretations which differ distinctively in their approach to measuring opportunity to learn. He further notes that some interpretations measure opportunity to learn as how much emphasis a topic receives in a curriculum or textbook; other interpretations consider OTL as time devoted to a topic during instruction or the time a teacher actually is using to teach the topic.

The latter approach to OTL, which focuses more on what happens inside the classroom, provided the lens for the present study. Mine is a response to what has hitherto been a gap in the South African discourse about “equal educational opportunities”. The South African discourse tended to privilege a conception that analyses the provision of materials and facilities and other inputs necessary for quality education without examining what happens inside the classroom as part of the OTL discussion (see, for example, the discussion of equal educational opportunities by Fiske & Ladd (2006) and Motala (2006).

In their article, Cooper and Liou (2007) examined whether all students have equal access to the type of information that can make the difference between dropping out of and staying in the educational system. They view OTL as a powerful analytic tool that has the potential to enact the kinds of progressive social policymaking that would transform the culture of schooling for children. They also note that the OTL framework should be utilised within the context of reform efforts such as “No Child Left Behind” (NCLB), so that policymakers and practitioners can better assess how learning opportunities are inequitably distributed between and across schools. In the United States of America (USA), the NCLB Act requires states to develop assessments of basic skills to be given to all students in certain grades. Such an approach to reform would require the emphasis to be placed on exploring the ways unequal schooling conditions, including the distribution of high stakes information, serve as powerful indicators of the distribution of possibilities. In addition, Reeves and Muller (2005) view the opportunity to learn as the degree of overlap between the content of instruction and what is tested. Underlying this OTL construct is the notion that curriculum frameworks and curriculum guides potentially act as inclusionary mechanisms for ensuring that high-status mathematical knowledge and skills are made equally available to all learners.

Focusing on OTL in the current South African context, Reeves and Muller (2005) contend that, given the recent revisions to the curriculum framework, it is plausible to anticipate that policymakers and others involved in schooling in the country will have a revitalised interest in the opportunities to learn that are being made available to low socio-economic-status populations of learners. A more careful examination of OTL in schools, therefore, should also attempt to examine exactly how these factors work together.

My review of opportunities to learn environmental education in one of the provinces of South Africa will therefore examine some of these identified curriculum variables within the South African context. More specifically the framework on the OTL that I used was to define the kind of opportunities in terms of what is taught and how it is taught in respect of environmental education in South African schools.

Methodology

This study used a qualitative research approach in order to help me understand meanings, examine and describe the experiences, ideas, beliefs and values of the participant teachers. By using this approach, I attempted to understand, specifically, how different teachers and schools implement the integration of environmental teaching in their classrooms. I also gained a more thorough and contextual understanding of how my sample teachers interpreted and understood these new environmental education policies.

To collect the data, I spent one-week blocks in each of the schools. During these weeks, I visited and interviewed the various stakeholders to gain an in-depth understanding of how the environmental learning policy has been interpreted and was being implemented within the primary-school curricula. The larger study, from which I drew my data, was designed as a case study on the implementation of environmental learning policy in two provinces of South Africa. In this paper, however, I draw on data from only one of the provinces, the Mpumalanga province. Two schools were selected for my school-based implementation study focus. I used a purposive sampling approach because I was interested in finding out how teachers in the different schools implement the new policy of integrated environmental education. I took guidance from Macmillan and Schumacher (2010:138) who assert that in purposive sampling the researcher selects particular elements from the population that will be representative of or informative about the topic of interest. I therefore conducted both unstructured and semi-structured interviews with the curriculum implementers (subject advancers), principals and all the senior-phase teachers at the two schools. I also collected all the relevant documents and curricula for detailed analysis. Both the interviews and the document analysis were designed to give information on how the teachers understand and interpret the new environmental learning policies in their own teaching. The provincial environmental education coordinator and curriculum implementers (subject advisors) were also interviewed. As far as documentation was concerned, I asked all the teachers to provide me with the policy documents they were using, including work programmes, syllabi, workshop handouts and other documents they considered relevant to their teaching of environmental education in their schools.

Findings and discussion²

In my findings, I focus on case studies of two primary school teachers who teach environmental education at different schools in the Mpumalanga province. I allowed these two teachers to tell their own stories of how the teaching and learning of environmental education is structured in their schools. I then follow my discussion with an account of the differences and similarities in how environmental learning is implemented in these two schools. I conclude by focusing on the drafting and development of the provincial policy, with a particular focus on the tools and instruments of the provincial policy, and the prescriptions and expectations of this policy. I did this to illustrate just how little the province had to offer these two primary school teachers when they first started out trying to implement the new policy. I then go on to argue that implementing the new environmental learning policy is a little short of impossible, given the existing lack of capacity and the inadequate resource base from which the teachers were working.

The case of Hillside Primary

This school 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 has been properly communicated to all the teachers in this school. This school has identified one teacher, Mrs Mafolofolo, to champion and take over the responsibility for leading the development and implementation of environmental education programmes and policies in Hillside Primary. She is a veteran teacher with 15 years' teaching experience.

Content topics for environmental learning

A critical issue to explore when we examine OTL relates to the content presented to the children in the classroom (Rousseau & Powell, 2005). This content ultimately determines what the children will learn. Given that neither the national nor the provincial framework provides any direct guidance about what should be taught as part of integrated environmental learning in the different subjects, teachers are often at liberty to pick and choose topics and appropriate content. While such an approach is a potentially empowering opportunity for the teachers, it is also fraught with danger as far as learners' OTL is concerned. For some teachers, it means real uncertainty about what to include and what not to include in their lessons. In extreme cases, it could also mean a complete marginalisation of any environmental education content in some subject areas. To understand and explain the OTL environmental education at Hillside Primary, I asked how Mrs Mafolofolo (and her colleagues at Hillside) approached the issue of curriculum and content determination.

Mrs Mafolofolo seems to rely more on identifying topics that are relevant to her learners and their local environment. Firstly, she identified the topic of pollution as one of the main content topics she tackles with her learners, since they usually look first at their school (and surrounding) premises to try and solve the problem of littering. Littering, therefore, becomes a key subtopic she deals with under the broader theme of pollution. To further illustrate this approach (i.e. creating opportunities to learn environmental education by identifying certain relevant content topics at her school) Mrs Mafolofolo gave an example of how she had approached the teaching of energy and forces (physics). While other teachers are usually satisfied with discussing energy in the abstract sense, her approach to the topic went a step further; in her classes, she focused, for example, on the burning of actual things (heat energy); she then required her learners to consider the effects of this type of burning on the environment. This allowed her to incorporate the issue of air pollution and all other types of pollution (e.g. water, land and noise pollution) into the lesson on energy. To conclude the lesson on pollution, she would then take the learners around the school (and surroundings) on a clean-up campaign, as a way of solving the problem of pollution within the school surroundings. For Mrs Mafolofolo, therefore, the whole idea, as far as environmental education content is concerned, is to "identify and solve a real-life problem".

My discussion on the selection of content topics for inclusion in the school environmental education curriculum thus suggests that Mrs Mafolofolo is guided by practical problems, problems which she would like to help her learners solve. Furthermore, the discussions with Mrs Mafolofolo and other teachers at Hillside Primary suggest that Mrs Mafolofolo is always the person who is instrumental in distributing these content topics to her colleagues (for inclusion in their own lessons).

Environmental education policy guidance: school level

At Hillside Primary, the teaching and learning of environmental education is guided by a number of the recent policy documents that help teachers establish their teaching goals, as explained by Mrs Mafolofolo:

You know, when you don't have the policies you don't know where are you coming from and where are you going. You won't have your goals. You won't know why you are teaching this. You should have a purpose when you are doing something, you should have a purpose. You know, you cannot just go into the class and say 'Children, today let us look at the littering'. What prompts you to talk about littering? You know, the policy is guiding.

To have a provincial or school policy is one thing, but to understand the place of such a policy in providing some guidance for daily practice is the more critical issue. From the remarks quoted above, Mrs Mafolofolo seems to understand the place of such a policy in helping to organise the teaching of environmental education at the school – from selecting content topics to setting goals for teaching and learning. One of the key policy documents used at the school is the policy interpretation guidebook for the Revised National Curriculum Statement, entitled *Enabling an environmental focus in Social Sciences/Technology/Arts and Culture, etc.* This guidebook is designed to help teachers develop lesson plans for all

the learning areas, using environment-related learning outcomes and assessment standards from the Revised National Curriculum Statement. Teachers are provided with examples of actual lessons showing how to integrate environmental learning into their different learning areas. Mrs Mafolofolo and her colleagues considered the guidebook to be one of the key documents in guiding their teaching of environmental education at Hillside Primary.

Another major policy document that is used to guide the teaching of Environmental Education at Hillside Primary is the school's Environmental Education Policy document, which was developed by the Science and Technology teachers at the school. This document reflects, among other things, the school's vision, mission and goals in terms of environmental education.

While I found the environmental education policy at Hillside Primary to be unique in that the existence of such a policy document at a primary school would be rare, its development is not a total surprise. During our discussions, the subject advisors (curriculum implementers) mentioned the fact that every school was expected to develop such a policy on the basis of its needs and circumstances. An interesting question resulting from such an expectation is whether the different school environmental education policies are a reflection of their various understandings and interpretations of provincial and/or national policy.

Time allocation

One of the challenges is the limited time available for teaching environmental content within the context of the present school timetable. Mrs Mafolofolo believes that part of the problem of this lack of time is because environmental education is not a subject in its own right and therefore has to be fitted into the content and time frames of other subject areas. Learners' projects in environmental education thus nearly always have to be scheduled for the afternoons and weekends – a situation that is not ideal, either for teachers or learners.

The case of Sea Point Primary

My second school is Sea Point Primary which, like Hillside Primary, also functions according to the official government policy on environmental education. This school also identified and assigned one of the teachers, Ms Tieho, to take responsibility in leading the development and implementation of environmental education programmes and policies at the school.

Content topics for environmental learning

Asked about the topics that should be taught in the teaching and learning of environmental education, Ms Tieho mentioned that there are no specific topics because environmental education is not a subject in its own right. She explained that all they have to do as teachers is to integrate it into the other learning areas (e.g. natural science) or topics that they teach in class:

We don't teach this environmental education as an independent learning area, we incorporate what we do on our environment to our teaching and learning work because we don't have a special timetable for the environmental education.

It seems that Ms Tieho and her colleagues at Sea Point do not identify specific environmental education topics; instead, they teach environmental education in the context of their specific learning areas. I therefore asked Ms Tieho how she was able to establish when she focused her teaching on environmental education. Ms Tieho stated that she and her colleagues at Sea Point are guided by the environmental education calendar provided by the Department of Environmental Affairs and Tourism.

In summary, Ms Tieho and her colleagues seem to draw their environmental education topics mostly from the environmental calendar and follow the special weeks or days throughout the year. The following is an example of how such a calendar is used to guide curriculum development for the teaching and learning of environmental education at Sea Point Primary:

Okay, let us say, for instance this month, we are approaching water week, with this; we incorporate it in our learning areas. I usually bring in the topic with the entire staff. The maths teachers will be involved too: they do auditing and measuring of the water; the science teachers as well: they do water purification, and the lower groups, that is, the junior phase, learn about how to conserve water and the English teachers also ask the learners to write creative writing on how can they save water at school or at home.

From the above quote, it is worth noting how the teaching of environmental education at Sea Point Primary seems to be decentralised. Teachers responsible for the different learning areas seem to have an idea of what is expected of them in the teaching and learning of environmental education and are left to their own devices in terms of determining what content to teach and how to teach it. However, it was also clear that much of this integration of environmental learning at Sea Point Primary happens through the efforts of the teacher leader at the school.

Environmental education policy guidance: school level

The teaching and learning of environmental education at Sea Point Primary is guided by recent national policy documents. These policies help teachers establish their teaching goals. The similarities between the two case study schools are not surprising, given that both schools belong to the same cluster and have attended many of the same provincial environmental education workshops. Like Hillside Primary, the natural science teachers at Sea Point Primary have developed the School Environmental Education Policy which is also used to guide the teaching of environmental education at this school.

Time allocation

As in the other schools in the province (and, indeed, nationally), at Sea Point Primary there is no time period on the school's timetable specifically allocated for the teaching and learning of environmental education, and as Ms Tieho stated, she always finds it difficult to create additional time for teaching environmental education. This is not surprising, given that both she and her colleagues believe that environmental learning is something that should only occur within the learning areas (a viewpoint that is in line with the national and provincial policy framework).

Discussion of the key findings

In my discussion of the findings from the two case studies, I need to pause to examine the similarities and differences in the implementation patterns of environmental education policy at the two case study schools. First and foremost, both schools have identified specific teachers who are responsible for taking the lead in the implementation of the policy. Mrs Mafolofolo (at Hillside) and Ms Tieho (at Sea Point) are both very knowledgeable and active in the field of environmental education. In both cases, the schools are guided by the environmental education policies provided to them by both the Department of Education and non-governmental organisations (NGOs) that are active in the province. In addition, both schools have also developed and are implementing their own environmental education policies (as required by the provincial education authorities).

The major differences in the two schools are reflected in the way the environmental learning policies are implemented at classroom level. At Hillside Primary, the teacher leader (Mrs Mafolofolo) oversees all the environmental educational activities at the school and is clearly the focal point of the implementation of this policy; at Sea Point Primary, however, the teacher leader plays a largely instrumental and facilitative role (i.e. rather than a directive role). In other words, she (Ms Tieho) brings content and resources to the attention of the other subject teachers. Secondly, at Hillside Primary, the teacher leader also identifies specific environmental education topics to be taught at the school; at Sea Point Primary, Ms Tieho does not identify any curriculum topics at all, but is guided by the contents of the environmental calendar provided by the Department of Education. Lastly, Ms Mafolofolo (Hillside Primary) allocates a specific time slot for the teaching and learning of environmental education to ensure that it receives the necessary attention and

focus. Ms Tieho (Sea Point Primary) does not do this, but expects environmental learning to be integrated into all other subject areas throughout the day.

The environmental learning policy: a dream?

To make sense of my findings, it is important to bear in mind the national environmental education policy framework – in other words, we need to understand what the guidelines and expectations are for teachers regarding the teaching of environmental education in the schools. Mpumalanga, like the other eight provinces, is working from a framework that seeks to integrate environmental education in the teaching of all the other subject areas (as suggested in the national environmental learning policy framework). In the province of Mpumalanga, Mr Jones is the overall coordinator in charge of driving all the activities associated with environmental education. He is officially the provincial policy coordinator for environmental education; he is based at the head office of the Mpumalanga Department of Education (MDE). Mr Jones (who has a PhD in environmental education) has been the environmental education coordinator in this province for the past seven years. Although he is the highest qualified official in environmental education in the MDE, a major part of his job involves coordinating and providing assistance to the curriculum implementers (subject advisers) of agricultural sciences. Asked about his duties as an environmental education coordinator in the Mpumalanga province, he made the point that his role is defined more broadly in terms of structuring and coordinating assistance and support to the curriculum implementers (subject advisers) and teachers in the fields of agricultural sciences, nature conservation and environmental education.

Environmental education (EE) is not supposed to be taught as a subject on its own. Instead, it is supposed to be integrated into all the other learning areas (as discussed earlier). My discussions with the provincial coordinator also emphasised the need to integrate environmental learning in all the subject areas rather than teach it as a separate subject with its own content. In my two case studies, my data suggest that, of the two case schools, Hillside Primary had done better at identifying specific content to be learned and in ensuring that the learners were provided adequate opportunities to learn this content. The learners at Hillside Primary had to read and respond to an assessment on specific key themes and concepts in environmental education which the learners at Sea Point Primary were expected to grasp rather incidentally (while focusing on subject areas such as mathematics, English, etc.).

The second theme to emerge from my case studies relates to the amount of time allocated to environmental learning. The national framework advocates that no specific time block be allocated to environmental learning, because it is not considered to be a subject on its own, but a theme to be integrated with other learning areas. Again, Mrs Mafolofolo would seem to have missed the point by allocating a specific time block for environmental learning at her school instead of integrating it in all the various subject areas. However, as mentioned earlier, I found that when time was allocated specifically for environmental teaching and learning, it was in fact used for that purpose. By contrast, when time had to be found within a mathematics lesson to focus on some key environmental concept, this simply did not happen. Understandably, the maths teacher focused on what s/he knew best (mathematics) and tended to ignore environmental education. In reviewing all the assessments at Sea Point Primary, for example, I found no evidence of environmental concepts being assessed (except perhaps in the natural sciences, and then only marginally).

The third theme to emerge from my data was that of school-based environmental education policies. I noted earlier in my discussion of the case study schools that they are both guided by some of the national policy documents recently issued by the Department of Education, and by documents originating from non-governmental organisations. Another key document that is also considered to be important in this province is a school environmental education policy, which each school is expected to design for itself.

Conclusion

My study of the two schools in the province of Mpumalanga suggests that, although schools were expected to begin to integrate environmental education in their teaching of other subject areas, there was no proper

guidance on how this would happen. Decisions about what to teach, when and how, and about what to monitor and assess are, for the most part, reserved for each classroom or subject teacher. The implication of this finding is that there are bound to be significant variations in the teaching of environmental education in provincial schools. The provinces are simply not in a position to determine and know for certain which schools and/or learners are getting the kind of exposure to environmental education recommended by national frameworks and policies. While individuals, on their own and in various coalitions, are important in understanding how state policy is interpreted and adapted locally, their work situation is likely to influence what in fact happens in practice. The data in this study also suggest that, at school level, decisions on how to teach environmental education are taken by individuals. Teachers make final decisions regarding topic coverage, depth of topic coverage and emphasis on specific ideas; such decisions are likely to result in very different outcomes for students (PROM/SE research report, 2009). The teachers in this study reflected diverse ways of teaching and learning environmental education in their schools. This is further evidence of the fact that there is no clear guidance on how teachers should approach environmental education in schools. The situation becomes even more complex in cases where there are no clear policy guidelines – as was the case in my study. The differences in the teaching of environmental education in the schools may be the result of differences at policy level, where the policy decision-makers differ in their understanding and interpretation of policies within the same province. However, as noted in the present study, such differences could also result from a lack of coherent guidance from the province itself. As noted by Spillane (1998) in the case of certain states in the United States of America, school-level efforts to guide teacher's instruction contributed to the lack of uniformity in the district's response to the state policy. Spillane further argues that, by responding differently to the state and district-level instructional guidance, school leaders communicated to their staff messages about instruction and state policy that varied from one school to the next; these messages were also frequently different from those issued by central administrators.

The vision is for schools in South Africa to implement environmental education according to that prescribed by national policy. However, data from the two case studies show that the two schools read the same policy, but implemented different practices, and that these practices differ from official government policy. What about the more than 10 000 schools elsewhere in South Africa? When I ponder this diversity of implementing environmental education in our classrooms, the vision behind official policy appears to be impossible.

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Endnotes

- 1 The new Curriculum and Assessment Policy Statement (CAPS) is set to progressively replace the existing National Curriculum Statement, beginning with implementation at foundation phase in 2011.
- 2 All the names of schools and teachers are pseudonyms.