



Educator Development in Environmental Learning Project

Project End Report

February 2013

Introduction

The Educator Development in Environmental Learning Project was initiated in mid-February 2012. The focus of the project was to pilot the concept of educator capacity building and skills development for biodiversity education.

During the one year project period three interim reports have been presented. This report will describe the reasons for conducting the project, the activities conducted and the results of a formal monitoring and evaluation of the courses conducted. A budget and expenditure overview will be presented.

The following appendixes attached to this report are:

Appendix 1	Programme for Life Science Course – Session 1
Appendix 2	Programme for Life Science Course – Session 2
Appendix 3	Programme for Life Science Course – Session 3
Appendix 4	Photographs of Life Science Course
Appendix 5	Interim M&E report
Appendix 6	Programme for Geography Course – Session 1
Appendix 7	Programme for Geography Course – Session 2
Appendix 8	Photographs of Geography Course

Project Needs Identification

A national research study shows that over 80% of current teachers were educated in the past segregated system where environmental education did not feature in teacher education, or in the curriculum. Three large scale national studies on the skills development issues associated with South Africa's sustainable development pathway undertaken by the Department of Environmental Affairs (DEA, 2010); the biodiversity sector (HSRC, 2010); and the Department of Science and Technology's Global Change Grand Challenge National Research Plan (DST, 2010) all point to the need to improve South African teachers' knowledge and pedagogical content knowledge (capacity to teach) of environmental and sustainable development content, values and skills. These national skills studies for the environmental sector have all shown that teachers have inadequate environmental

knowledge to lay the foundation for further environmental learning and career path development for youth in South Africa; or for associated forms of citizenship development. Urgent attention needs to be given to strengthening the skills and human capacity needed for achieving these development objectives.

The new Curriculum and Assessment Policy of South Africa (CAPS) integrates environmental content into almost every subject and level of the schooling system, from Grade R to Grade 12. An evaluation of the CAPS content has shown that environmental topics occupy up to 52% of the curriculum in specific subjects and grades. CAPS requires teachers from a wide range of subject areas to teach new environmental content knowledge, values and skills. Teachers have expressed their concern that they are finding it difficult to address the requirements within the curriculum, due to the lack of appropriate training in the past.

Teacher education for environment and sustainable development education has been neglected in teacher education innovations in the past 15 years, as institutions have struggled to adjust to mergers and changed institutional forms. Major national and international studies are indicating that substantive interventions are needed to address a history of neglect of teacher education in the area of environment and sustainable development.

One of the initiatives to address the skills development for educators is the Educator Development in Environmental Education Project conducted at Treverton Schools with funding from the Critical Ecosystems Partnership Fund and Wildlands Conservation Trust.

Description of Activities

During the project period the following activities were conducted. These will be reported on below, under their different components.

1. Two human capacity building and skills development training courses were conducted:
 - Geography, Climate Change for Grade 10 – 12, Course
 - Life Sciences, Biodiversity for Grade 10 – 12, Course. This course included a formal monitoring and evaluation of the Life Sciences course conducted by Rhodes University.
2. Resource material was developed and compiled for the two training courses.
3. Activities which support the Educator Training Project.

Component 1 – Educator Development in Environmental Education Training Courses

Two educator capacity building and skills development training courses were conducted. These courses were conducted as a pilot for future training courses. The Life Sciences course was incorporated into the National Teacher Development Network (NTDN) official Pilot Study of the exemplar developed by Rhodes University and UNISA.

A total of 19 educators received the capacity building and skill development training. The total ‘man-days’ of training these educators received was 59. It was established that on average the teachers taught 98 learners (in different classes) per year. The teachers form the Level 1 – Influence of Training. Level 2 - Influence of Training refers to the learners influenced by the improved teaching capacity of the teachers. Thus the Level 2 Influence of Training for this project is estimated to be 1862 (on average per year). This is depicted in the table below:

Level 1 Influence of Training – Number of Educators	Total number of ‘man-days’ training received	Level 2 Influence of Training – Number of learners per year
19	59	1 862

Life Sciences, Biodiversity course for Grade 10 – 12 teachers

Three sessions of the Life Sciences, Biodiversity course were conducted.

Life Science - Session One

The first session was conducted on 21 and 22 May (Appendix 1, copy of the programme for the session). The two day workshop was held at Treverton Schools, Mooi River, KZN. It was attended by 15 teachers from the KZN Midlands from the following regions; Colenso, Estcourt, Muden, Nottingham Road, Kamberg Valley, Mphophomeni and Greytown. The schools which the teachers represent would be classed as rural and predominately under-resourced schools.

Representatives from SANBI, WESSA and Treverton Schools joined the workshop as part-time participants presenting different components of the programme. One representative of the NTDN conducted the Monitoring and Evaluation of the workshop.

The programme included:

Core-text Environment, Science, Society & Sustainability Core Text	General Introduction
	Know your subject
	Improve your Teaching Practice
	Methods and Processes
	Improve your Assessment Practice
Biodiversity Know your subject Teaching practices	Definitions of key Concepts
	Teaching practices for Biodiversity Concepts
	Taxonomy
	Teaching practices for Taxonomy
	Role of Biodiversity
	Teaching practices for Role Biodiversity
	Human Impacts on Biodiversity
	Teaching practices for Human Impacts
	Emerging Responses to Biodiversity Impacts
Teaching practices for Biodiversity Impacts	
Assignments	Introduction to Assignments
	Assignments and Tasks requirements

Life Science - Session Two

The second workshop was conducted on 19 and 20 July. It was held at Treverton Schools, with all meals and accommodation for participants being given at the campus.

This session was attended by six participants. The reduction in the number was reviewed by the monitoring and evaluation process. Initial indications are that a variety of reasons caused teachers to not be able to participate. These included; teachers at under-performing schools had been instructed to remain in school and catch up their teaching (5 teachers), some teachers reported that their colleagues "did not want to disappoint Janet as they had not completed their assignments". One teacher had to attend a cluster meeting on day one of the second session but still stayed away on day two.

The programme (Appendix 2) included the following Workshop Objectives:

- Recap on Workshop 1
- Assignment 1 – Discussions
- Assignment 2 – Discussions
- Assessment Practices
- Workshop 3 information and requirements

Life Science - Session Three

The third course session was conducted on 12 October 2012. Again it was held at Treverton Schools. This session was again attended by the six participants as per session two.

The programme (Appendix 3) included the following Workshop Objectives:

- Overview of the two previous sessions
- Review of assessment practices
- Review of assignment part 1 & 2
- Discussion of assignment part 3 & 4
- Workshop overview & evaluation

Life Science - Assignments

Participants of the course were requested to prepare assignments. These assignments were developed to contextualisation of knowledge gained during the training sessions. At the end of the first contact session, teachers were given assignment tasks to complete before they come to the next session and the rest of the task were given at the end of session two to be submitted at the last contact session.

The course was, however, structured in such a manner that if a teacher did not do the assignments and/or attend the second or third sessions, learning of the content and pedagogical processes would still have occurred.

Three teachers completed all the assignment requirements. All were assessed by Delta Environmental Centre and received competent status. They will now all be accredited 12 NQF Level 5 points after verification by the SETA.

Life Science - Formal Monitoring and Evaluation

The workshops were formally monitored and evaluated (M&E) by a representative from Rhodes University. An interim report has been made available (see Appendix 5). The full report will be presented as a Masters Thesis during the first quarter of 2013.

Some extracts of the interim report are:

- The workshops are very interactive and all the teachers were encouraged to participate. Flexibility in how the workshops were run was a plus as teachers were able to their concerns and get them attended.
- Teachers said they were advised by their district official to use the content exemplar as a reference when they order textbooks the teachers will use with their learners. The official saw the exemplar as having “good stuff” that should be used to check for progression and using that to choose a textbook “that has more relevance like these files”.
- Teachers note that the workshops have given them an opportunity to study and analyse the curriculum document in-depth. It is their first time to get a clear understanding of the

changes in the curriculum and to feel confident in implementing it and feel that they will be one of the experts of the CAPS curriculum.

- The trainers did not rigidly stick to the workshop programme but rather allowed teachers to raise their concerns and to deal with them.

The three previous reports showed informal evaluations conducted at the end of each session. Copies of these evaluations are available on request.

Geography, Climate Change course for Grade 10 - 12 teachers

Three sessions of the Climate Change course were conducted. The first session was held on 12 and 13 March 2012. The second and third sessions were held on 7 August and 12 October 2012.

Unfortunately the attendance for the geography course was lower than the Life Science course. The reasons for the lower attendance have been put down to:

- Fewer schools in the region which offer Geography as a subject
- If a school does offer Geography as a subject, some of the schools have one teacher who teaches all the FET grades. This means that the teacher would find it difficult to leave the school for the workshop sessions.
- As this was a pilot study these implications of the above points were not known prior to conducting the course, so the number of schools invited to the workshop was too low. (See Lessons Learnt below).

Geography - Session One

The programme for Session One included

<p style="text-align: center;"><u>Core-text</u> Environment, Science, Society & Sustainability Core Text</p>	General Introduction
	Know your subject
	Improve your Teaching Practice
	Methods and Processes
	Improve your Assessment Practice
	Environment and Social Justice
	Environment and Sustainability
	How is Climate Change Being Viewed
<p style="text-align: center;"><u>Climate Change</u> Know your subject (Content Knowledge)</p>	Climate system
	Links with the curriculum
	Energy Exchange
	Greenhouse effect
	Earth's energy balance and role of global circulation
	System interaction and impacts
	Water quantity and quality
	Responses to Climate Change
<p style="text-align: center;"><u>Improve your Teaching Practice</u></p>	Methods that develop critical thinking
	Methods and learning theory
	Methods of quality teaching and learning
<p style="text-align: center;"><u>Assignments</u></p>	Introduction to Assignments
	Assignments and Tasks requirements

Mr A. (Toni) W. Hambly assisted with the content knowledge component of the workshop. Mr Hambly taught geography for over 30 years, was the Independent Education Board chief examiner (wrote the matric papers) for over 6 years and was one of the authors of the Via Africa Geography, Grade 10 textbooks. His years of experience in teaching assisted the participants in the course to see what teaching methods and activities could be used to teach the topic appropriately.

Geography - Session Two

The second workshop was conducted on 7 August at Treverton Schools, with all meals and teas provided.

The programme for Session Two included

- Recap on Workshop 1
- Assignment 1 – Discussions
- Assignment 2 – Discussions
- Improve your Assessment Practices
- Workshop 3 information and requirements

Geography - Session Three

This session was conducted concurrently with the Life Science Session Three. The focus for Session Three was Assessment Practices – particularly pertaining to ‘higher-order’ questions and answers. The Geography assignments were reviewed individually.

Geography - Assignments

The option to complete assignments and receive accreditation was presented to the participants. Unfortunately, none of the teachers participating in the Geography course completed all their assignments and were unable to present their work for evaluation and accreditation. This is an indication to the pilot project that not all teachers are concerned or require accredited NQF points. However, when the Department of Basic Education introduces their Continued Professional Development requirements, this course will be able to support those CPD points.

Geography – Evaluations

Evaluations were conducted after the training sessions. These evaluations were fully reported on, in the previous three reports. Some extracts of those evaluations are:

- The content of the training was relevant to my development and accreditation
- It was a useful workshop. I wish other aspects on Geography can be covered.
- Workshops of this nature should be expanded to more schools.

When asked “What did you like the most about the training?” the responses were:

- The presentation of the workshop, different teaching methods, assessment and the way certain confusing and difficult aspects were clarified.
- The methods of how to pass on the knowledge to the learners

Component 2 – Resource Development to support the Educator Development Courses

Resource material was developed for each course. The material was divided into Core Text (general information on environmental education), Content Knowledge, Pedagogical Methods, Assessment Methods and Assignment Requirements for their Portfolio of Evidence. (A copy of the resource material has been given to a Wildlands Conservation Trust representative.)



Figure 1: indications of resource content

The Life Science resource file consisted of 120 pages and the Geography file 130 pages. Besides the resource files provided, additional resources were given to participants, to extend the teachers' competence and knowledge. These resources included; a book titled *Methods & processes to support change-oriented learning* and different issues of *Environment* magazines, *Climate Change Mind Maps* and a booklet titled *Perceiving & visualising ecosystem services* to strengthen the teachers' understanding of the role of biodiversity.

The Life Science Monitoring and Evaluation indicated that:

- Teachers are happy with the good resource materials they have received. They say the materials have enabled an easier understanding of subject content; it has also allowed for exposure to more resources and has helped with the understanding of CAPS as the exemplars are aligned with the CAPS.
- Teachers felt the workshops helped them a lot due to materials given.

Component 3 – Activities which supported the Educator Training Programme

National Teacher Development Network for Environmental Education

A consortium of partners (including Janet Snow) established the environmental teacher development initiative (National Teacher Development Network) in 2010. The NTDN is currently led by Rhodes University. This consortium develops educator training modules.

Thus far the consortium has:

- Completed the first two subject, grade and topic specific exemplars.
- A Core-Text exemplar was created to be the base and background for the grade, subject and topic specific exemplars.
- The Monitoring and Evaluation processes were established.

Two pilot studies to monitor and evaluate the exemplars have been conducted. One of the pilot studies was conducted in the Mpumalanga region. As this was conducted by a different organisation, it will not be reported on here. The second study formed part of the Life Science, Biodiversity course reported on here. The M&E component, the logistical component (accommodation, transport) for extra NTDN representatives was financially covered by the NTDN.

This consortium will be developing other educator training modules in the near future. Again these will allow for curriculum-linked training in those specific fields. Janet Snow's participation will allow her to be one of the accredited presenters of those modules.

During the report period, Janet Snow attended (and contributed to) two National Teacher Development in Environmental Learning meetings. These were held at Rhodes University for a two and three-day period respectively.

Environmental Education Association of Southern Africa (EEASA)

At the Environmental Education Association of Southern Africa (EEASA) conference, held at Rhodes University from 11 – 14 September, Janet Snow and one of the teachers (from the Life Science Course) presented their findings of the course. The teacher (Antonia Nkobela's participation at the conference was sponsored by Department of Environment (organised by Janet Snow).

Wildlands Conservation Trust Symposium

Janet Snow attended and presented at the Wildlands Conservation Trust Symposium. The presentation title was "Educator Development in Environmental Learning".

Lessons Learnt from the Pilot Project

1. For future workshops the number of schools invited to the workshops will be increased.
2. The number of participants at the first training sessions was dictated by the project funding. It would be possible for workshops to be held with 15 – 20 teachers and still be effective.
3. It was found in the pilot that not all schools offer the subjects covered, so it is advisable to obtain a list of schools offering the subject from the Department of Basic Education prior to sending out the invitations.
4. The course structure could be altered. A suggestion is for the first session to be a three or four day workshop, followed by short one-day follow-up sessions for those teachers who would be conducting the assignment section.
5. Not all teachers are interested in obtaining the accredited points so do not want to do the assignment sections. Unfortunately they miss the educational processes which are achieved by doing the assignments but attending and actively participating in the workshops would still be very beneficial.
6. There was a debate as to when the courses should be held. Some teachers request the workshops to be held over their holiday period while others say they would not attend if held then. Guidance on the most appropriate system should be obtained from the Circuit offices in the regions.

Conclusion

Two training courses were conducted. The courses were structured to be grade, subject and topic specific. A formal monitoring and evaluation process was conducted by Rhodes University as part of the Life Sciences, Biodiversity course. A total of 19 teachers received intense training for up to five days per participant (Level 1 Influence of Training). The Level 2 Influence of Training is estimated at 1862 learners per year.

Indications are that the teachers' content knowledge, pedagogical and assessment practices were low prior to the courses. Although the courses are not able to address all the teaching requirements (in the short period) they have facilitated the teachers to become more competent and confident to teach the curriculum requirements related to the topics addressed during the courses (Biodiversity and Climate Change).

Teachers' comments indicate that the workshops are addressing an urgent requirement for in-service teachers, who have not received training in regard to the new concepts (biodiversity and climate change). Despite the lack of previous training in these fields, the teachers are expected to teach the topics. These courses were able to empower the teachers to be more competent to address the requirements.

We would like to thank the Critical Ecosystems Partnership Fund and Wildlands Conservation Trust for the opportunity to conduct these training courses to upgrade the teachers' teaching practices related to Biodiversity and Climate Change.

Thank you

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**Educator Development in Environmental Learning
Project**

Budget and Expenditure Breakdown

2012 Wildlands Trust Educator Development Project

<u>Workshop Budget - 20 Participants</u>	<u>Expenditure</u>
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<u>Category</u>	<u>Totals</u>	<u>Totals Expenditure</u>	<u>Budget/Expenditure Difference</u>
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Accommodation and Catering	R 16 200.00	R 13 689.00	R 2 511.00
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Transport	R 28 000.00	R 17 064.21	R 10 935.79
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Resource Material	R 6 600.00	R 10 389.45	-R 3 789.45
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Workshop Administration	R 11 000.00	R 13 250.00	-R 2 250.00
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Trainers Time	R 38 000.00	R 38 000.00	R 0.00
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Accreditation of Life Science assignments (conducted by external examiner)			
This component was not previously budgeted for			
(incorporates - assessment, registration and administration for SETA)			-R 5 000.00

Telecommunications:	R 1 000.00		
Postage and Delivery:	R 500.00		
Meetings & Events:	R 21 600.00		
Miscellaneous:	R 2 000.00		
Indirect Cost (max 13%):	R 9 200.00		
Total:	R 34 300.00	R 35 777.86	-R 1 477.86

Project Totals	R 134 100.00	R 133 170.52	R 929.48
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Total cost per educator trained	R 7 008.97
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