

Educators' Skills Development Marine Biodiversity

Grade 10 – 12

Final Report

September 2015

**Environment
Learning and
Teaching**

Planting trees in whose shade
we do not expect to sit

envirolearn@bundunet.com

+2782 7827979

P.O. Box 78
Rosetta
3301
South Africa

Introduction

The Educators' Development in Marine Biodiversity Project was initiated in April 2014 with the proposals and required documentations. The first tranche was received in August 2014. The first report was submitted at the end of September 2014 and the second tranche received in mid-November 2014. The second report was submitted in November 2014.

This report is the final report of the project and will cover all the information related to that project progress, including the information reported on in the two previous reports. The report will include:

Component 1	Phase 1	Project Development
	Phase 2	Resource material
	Phase 3	Training Session 1
		Training Session 2
Phase 4	Portfolio of Evidence - Evaluation and Moderation	
Component 2	National participation/meetings	Participation in national educator training project - Fundisa for Change

The following appendixes attached to this report are:

Appendix 1	Copy of the Teaching Marine Biodiversity Unit
Appendix 2	Copy of the Portfolio of Evidence
Appendix 3	Copy of the score sheet
Appendix 4	Copy of the Programme – Fundisa for Change Conference and Launch
Appendix 5	Copy of the Programme – Training of Trainers

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Component 1 – Training Course

Phase 1 - Project Development

During the project development phase the following outcomes were achieved:

Initiation of the Project	Project proposal
	Discussions and meetings with Wildlands Conservation Trust on project concepts
	Development of budgets
	Completion of project documentations (MoU, etc)

Planning and notification of Training	Located an appropriate venue for training in the region
	Notification to the appropriate representatives of the Eastern Cape Department of Basic Education
	Obtaining support from and notification to additional facilitators, course assesses and monitors.
	Identification of the appropriate and available accrediting organisation (this is to be Rhodes University).
	Identification of the correct credit points for the course (this will be 12 credits at NQF Level 5).
	Invitation developed and sent to regional District Office, Life Science Subject Advisor and Life Science, Grade 10 – 12 teachers in the Elliotdale and Willowvale regions.
	Development and printing of the first session programme
	Logistical arrangements for the first session, e.g. catering, accommodation, participant numbers, venue hire for lectures, arrangements for excursions, etc.
	Compiling files for the participants' Port Folios of Evidence

Phase 2 - Resource material

A large variety of resource material relating to the course content was presented to the participants.

The most important resource was the Teaching Marine Biodiversity, Grade 10 – 12 – Fundisa for Change book. The primary author of this document was Janet Snow. This was the first time that this resource was used which gave us an opportunity to critique the content and make suggestions for the second print run. Other Fundisa for Change resources included; the Core Text and Methods and Procedures book. Appendix 1 – Copy of the Teaching Marine Biodiversity Unit

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Supporting resources consisted of:

- Taxonomy and Classification: The Backbone to Biodiversity
- Science on Sea (Grades 7-12)
- Hands On - East Coast Rocky Shores
- Hands On - East Coast Estuaries and Mangroves
- Hands On - East Coast Dune Plants
- Hands On - East Coast Sandy Shores
- Caring for our Dunes and Beaches
- Caring for our Rocky Shores
- Caring for our Estuaries
- Variety of Environment magazine with articles related to marine biodiversity
- Vision books with articles related to marine biodiversity
- Copies of DVD on Large Marine Ecosystems
- Copies of 3 films related to Marine Biodiversity which were developed by Rhodes University Students
- CD with copies of the presentations given during the session.



Photo 1:

One of the participants with the resource material he received during the first session of the Teaching Marine Biodiversity course.

Additional material was developed for second training session. The focus of this material was related to assessment processes appropriate for Grade 10 – 12 Life Science.

Resources relating to the assessment component were:

- Teaching Marine Biodiversity for Grade 10 – 12 Life Science – ASSESSMENT.
27 page document collated by Janet Snow
- From Formative Assessment to Assessment FOR Learning: A Path to Success in Standards-Based Schools.
6 page article written by Rick Stiggins
- Draft Exemplar – Biodiversity Grade 10 – 12 – Biodiversity Section 3 – Assessment
17 page document developed by Fundisa for Change

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Phase 3 - Training

The training sessions conducted at Donald Woods Centre (DWC), Hobeni (on route to Cwebe Nature Reserve). Not only was the location of the venue important (being close to the schools in the region and allowing for a short excursion to view marine ecosystems in the Dwesa/Cwebe Reserve), but the focus of the DWC is to support the community, thus a worthy organisation.

Training Session One

A total of 22 of contact hours were held during this session. The programme included:

General Introduction to the course and session	
Teaching Methods and Processes	Improve your Teaching Practice
	Methods and Processes
Marine Biodiversity Know your subject Teaching practices related to Marine Biodiversity	Definitions of key Concepts
	Teaching practices for Biodiversity Concepts
	Taxonomy
	Teaching practices for Taxonomy
	Role of Marine Biodiversity
	Teaching practices for Role Biodiversity
	Human Impacts on Marine Biodiversity
	Teaching practices for Human Impacts
	Emerging Responses to Marine Biodiversity Impacts
	Teaching practices for Biodiversity Impacts
Marine Biodiversity and CAPS (Curriculum Assessment Policy Statement)	Identification of the CAPS requirements related to Marine Biodiversity and the progression therein.
Assignments and Portfolio of Evidence	Introduction to Assignments
	Assignments and Tasks requirements

A field excursion was held within the Cwebe Nature Reserve. Participants were given specific tasks to achieve during the excursion and they presented on their findings. One comment received during the review process was: “the excursion opened my eyes to the different marine ecosystems”. A copy of the programme is presented in Appendix 1.

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Photos 2 and 3:
Participants working on their tasks during the field excursion to Cwebe Nature Reserve

Training Session One Evaluation

A formal evaluation is being conducted by a Phd student from Rhodes University. This will allow for a full monitoring and evaluation report at the end of the course, although this might not be available at the end of the project period.

A component of the course evaluation was obtaining feedback from the participants. The following table gives examples of the responses received from the participants.

Question	Some Responses
What were are expectations from the training?	"... to gain more knowledge on how to teach and address the learners on ecosystems"
	"... learning about marine biodiversity and why do we have to teach it to our learners"
	"that the course will be run effectively and will improve my knowledge and skills and as well as build my confidence to accurately teach the topic involved"
	"know more about marine biodiversity, and know more about teaching strategies of marine biodiversity"

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Would you say your expectations have been met? Please explain.	“yes, now, I can stand with confidence in front of my class dealing with ecosystems and biodiversity, especially marine biodiversity”
	“Yes, I gained a lot, especially in terms of the teaching strategies”
	“Yes and more, our subject knowledge has improved, learned more about the different teaching methods. this made me see how easy and simple lessons can become”
	“ ... the course has indeed enlightened me and gave me that in-depth understanding of marine biodiversity”

If any, what more support would you like to receive for your professional development?	“Support on assessment which shows the progress with the mastering of content” [Note: this will be covered in the second session]
	“To conduct other workshops, which will focus on other biodiversity, i.e forest”
	“More workshops like this one”
	“Content gap from other topics, and also some tips on how to conduct practical tasks like we did in the activities we did”

What did you like most from the training? Please explain.	“Presentations, activities and useful resources which will support my teaching example, going for an excursion”
	“The training was fruitful, it gave me strategies on how to conduct lessons, to make teaching and learning fun and exciting”
	“I like their practicality, we get to see what we usually only see in the books”
	“Interacting with other teachers in a controlled environment, and the training itself and Janet’s positive encouraging manner”
	“In fact there is no specific part but the entire provision of the course was beneficial”
	“The explanation on ecosystems and also the impact of human activities on marine biodiversity”
	“Full participation of all people involved (learners and facilitators)”

What did you like least from the training?	“There is nothing negative as far as I am concerned”
	“Timing for grade 12 teachers as we are preparing for trial exams, but because it is very valuable we can sacrifice”

Any general comments or recommendations you would like to make regarding your own professional development?	“I would be glad if more of such courses are organised with other difficult topics for all grades”
	“more courses should be done to include more Life Science teachers and even those teaching Geography could also have modules on marine biodiversity”
	“it is improving my professionalism. it is strengthening my confidence”
	“I have benefited, I was not confident teaching especially taxonomy, and those big scientific terminologies, now I am more confident.

Training Session Two

A total of 18 contact hours were held during the second sessions.

Assessment was the predominate focus for the second session. The programme also included a recap and overview of the first session (the content knowledge and pedagogical practices related to biodiversity). Participants were given opportunities to present and discuss the progress with their Portfolio of Evidence assignments.



Photos 1 and 2:

Participants working on their on-course tasks relating to assessment in Marine Biodiversity

Research has indicated that teachers are having difficulty with the assessment requirements of the Curriculum Assessment Policy Statement (CAPS). Drawing on the CAPS documents, Marine Biodiversity units and supporting theories (like Blooms Taxonomy) the second session looked at assessment in general, assessment for learning, assessment of learning and assessment related to Life Science and specifically relating to biodiversity.

Some participants' comments to the question; What is it about the Fundisa for Change training framework do you think will have the most impact on your practice (if at all) were:

- "... helped to elaborate or explain what assessment is and its different forms",
- "... will develop my expertise of assessing learners",
- "... location of marks and weighting these marks",
- "... emphasised that knowledge is not the [only] thing that learners need to acquire."

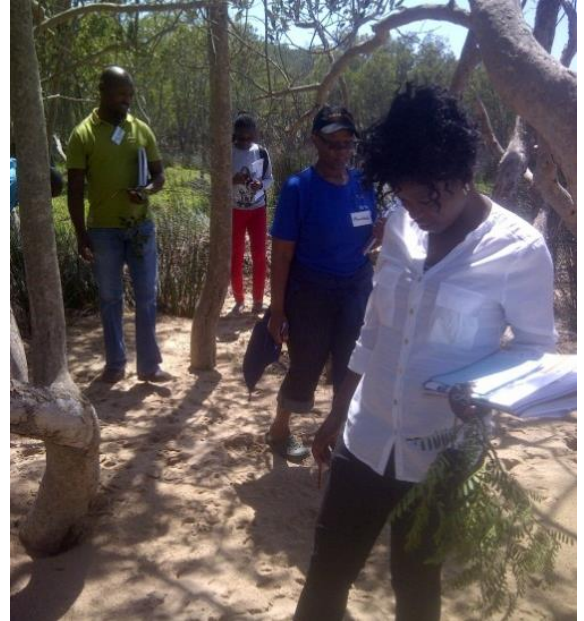
As part of the programme we conducted an excursion to the mangrove forests at the Bashee River estuary in the Dwesa/Cwebe reserve. Prior to the excursion none of the teachers could recall previously seeing a mangrove forest. During the activity one teacher remembered going to a mangrove forest as a child, but at the time he did not have any knowledge of the ecosystem, or even that it was a mangrove forest. The excursion not only served to assist with content knowledge related to the mangrove forest but teaching practices during excursions were highlighted and assessment processes for activities of this nature were conducted.

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Photos 3 and 4:

Participants working on their tasks during the field excursion to the mangrove forest in Cwebe Nature Reserve

Training Session Two and Course Evaluation

A formal course evaluation is being conducted by a PhD student from Rhodes University. This will allow for a full monitoring and evaluation report at the end of the course, although this might not be available at the end of the project period.

A component of the course evaluation was obtaining feedback from the participants. The following table gives examples of the responses received from the participants.

Question	Some Responses
What kind of impact do you think the training will have on you professionally (if at all)?	The programme has been a great value to me as a teacher who has been one again refreshed with techniques in delivering his lessons with confidence.
	This improved my knowledge of my subject content and I hope to be a better teacher as from now.
	Develop my profession in terms of teaching. Develop and improve my confidence for teaching
	I can now encourage my teachers to do excursions and guide them on how to go about preparing for and conducting those.
	It has built my confidence and made me a better teacher who goes to the classroom with new approach to how to teach my topics.
	This is strengthening the love I have for my subject (job).

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What is it about the training framework do you think will have the most impact on your practice?	The knowledge content has been of tremendous help for me and has enlightened me the more to carry on with my teaching work
	The framework has made one to see the three components group together. Without content knowledge one cannot be able to teach better and assess better. The emphasis on teaching and assessment make me to realise that one cannot actually teach without planning the assessment as these two go together.
	The teaching methods were exposed to seem very good and will definitely make a difference in our classrooms if a variety of them can be used correctly and appropriately.
	Now I got a chance to know the teaching methods, how do we go about assess[ing] a particular topic.
	Yes it has an impact. Janet the facilitator helped in elaborating or explaining what assessment is and its different forms. She emphasised that knowledge is not the only thing that learners need to acquire.

How would you describe the support you received to teach environmental content knowledge?	It is a very relevant support in that it has equipped me with new knowledge and better understanding of concepts related to the areas covered during the sessions.
	It is great because several resources are provided which help to broaden the content knowledge. Provides opportunity for the participants to be actively engaged in the learning process.
	It is very good and effective. It will make a difference in our presentations in classes.
	This enhanced the content knowledge on environmental studies and will improve my teaching in class and the confidence I gained.
	The support was sufficient at least there is a better understanding of environment aspects, the challenges in environment.

Phase 4 – Portfolio of Evidence Evaluation and Moderation

Each participant was encouraged to complete a Portfolio of Evidence to show their teaching practices. A copy of the Portfolio of Evidence is supplied in Appendix 2. The portfolio consisted of assignments for:

Content	Details
Part 1 - Know your learners	Evaluation of the learners abilities
Part 2 - Know your subject	Progression within the curriculum
	Teaching resources overview
	Summary of resources
	Critical Review of resources
Part 3 - Improve your teaching	Develop three Lesson Plans
	Teaching lessons and supply proof of teaching
	Describe the pedagogical methods used
Part 4 - Improve your assessment	Set Exam questions
	Set Assessment task (not test or exam)
	Implement and review assessment
	Reflection on contested knowledge

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Portfolio of Evidence Evaluation

The Portfolio of Evidences were evaluated by Janet Snow (Master in Education) and Alan Peter (Bsc, Head Subject Examiner (Life Science), Independent Education Board (IEB). A copy of the score sheet is included in Appendix 3 – Copy of the score sheet

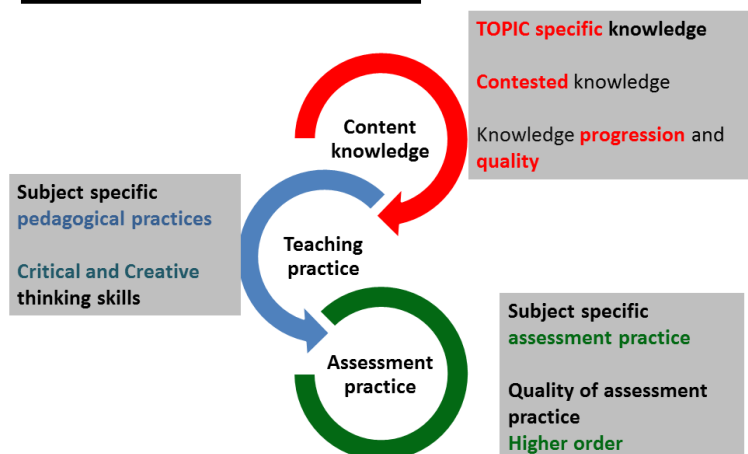
Course and Portfolio of Evidence Moderation

Rhodes University is the accrediting organisation. They moderate the Portfolio of Evidence and supply the accreditation certificates. This is currently in progress. Of importance, the process is underway to get the course endorsed with the South African Council of Education to be incorporated into the Continued Professional Teachers Development (CPTD) point system (implemented for school heads in 2015 and teachers in 2016). Thus those teachers who have completed the full requirements of the course (contact session and completed their PoE will be able to receive CPTD points).

Component 2 – National Meetings

Janet Snow attended the Critical Ecosystem Partnership Fund meeting held in the Eastern Cape in October. Although the focus of this meeting was on conservation projects, Janet was able to give a short presentation on the teacher development project in a presentation entitled: “Known knowns, Known unknowns, Unknown unknowns”, referring to the contested and incomplete environmental knowledge. In the presentation the course components were highlighted:

Course components



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Janet Snow also attended the national teacher development network – Fundisa for Change Teacher Education Conference and Launch (24 – 28 February 2014). Accommodation and transport was supported by the Department of Environmental Affairs. Mr Albi Modise (Director-General, Department of Environmental Affairs, opened the conference. Some of the topics addressed during the conference were:

- Transformative Environmental Learning through Teacher Education,
- Teacher Education Theory and Practice (including Assessment) for Transformative Environmental Learning
- Teaching methods and assessment for transformative environmental learning and ESD (Janet Snow was Workshop co-convenor for this workshop).

Appendix 4 – Copy of the Programme

The Fundisa for Change – Training of Trainers symposium was attended (27 – 30 May 2014). Accommodation and transport was supported by the GIZ funds. Important components of the symposium were:

- How to run a good training of teachers programme
- Knowledge and Assessment Practice
- Pedagogy and Methods – Planning for Environmental teaching
- Teacher’s Assignment and Assessment of Teacher Training
- Accreditation framework

Appendix 5 – Copy of the Programme

Conclusion

A full accredited course was conducted at the Donald Woods Centre near the Dwesa/Ceba Nature Reserve. Teachers in Life Science (Grade 10 – 12) from the Willowvale and Elliodale regions in the Eastern Cape were invited to attend. The Life Science Subject Advisor for the region attended the course. Representatives from Rhodes University assisted with the facilitation of the course at the same time as conducting a full evaluation (at PhD level) of the course and the course outcomes.

The topic for the course was Teaching Marine Biodiversity, drawing on the Marine Biodiversity Units developed by Janet Snow, etal. for the national teacher development network, Fundisa for Change. Participants attended intensive (total of 40 hours) contact sessions. In order to obtain the full accreditation, the participants completed a Portfolio of Evidence which looked at; understanding their learners and progression within the curriculum, proof and critical review of teaching and assessment practices. The course was structured in such a way that those participants who were unable to complete the Portfolio of Evidence would still benefit and develop but would not receive the accredited certificate.

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Lessons were learnt in regard to the systems of conducting the course. For instance, in the future the structure of the course will include more but shorter sessions. Greater support for the Portfolio of Evidence is required (as teachers find this to be very difficult to complete).

It was noted that on average the teachers' biodiversity knowledge was poor and more specifically their marine and marine biodiversity knowledge was significantly low. This is an indication that they were not confident to teach marine biodiversity. After the conducting the course the teachers' content knowledge was significantly improved but for this transfer to competent teaching more sessions to develop the depth of knowledge would be required.

We thank the Critical Ecosystem Partnership Fund and Wildlands Conservation Trust for their support in the education of our teachers and, by extrapolation, to the next generations' environmental learning.

Thank you



Janet Snow
Environment Learning and Teaching
Tel: + 27 (0) 82 782 7979
email: envirolearn@bundunet.com



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