# Training Course Climate Change Education Inside and Outside the Classroom

Rhodes University Grahamstown, South Africa 8-11 October, 2013

# **REPORT ON THE TRAINING COURSE**



#### Background

Between January and May 2013, a training course for secondary school teachers on "Climate Change Education Inside and Outside the Classroom" was developed by Dr Lausanne Olvitt, Senior Lecturer in the Environmental Learning Research Centre, Rhodes University and Dr Gillian Cambers, Co-Director of the Sandwatch Foundation. The preparation of this course was supported by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) through the Section for Small Island Developing States and the Section for Education for Sustainable Development. The course was developed in the context of UNESCO's Climate Change Intersectoral Platform project "Climate Change Education for Sustainable Development in African Small Island Developing States (SIDS) and Coastal Regions: Building excellence through teacher education".

The course combines elements from UNESCO's *Climate Change Education for Sustainable Development Course for Teachers* with the Sandwatch programme's methodology (measure, analyse, share and take action - MAST) and has been developed specifically for educators in African coastal regions and SIDS. These regions are especially vulnerable to the impacts of climate change and the challenges it raises for the wellbeing of people and the ecosystems on which they depend. The course supports a range of educators, most especially secondary school teachers, but also teacher educators

and community educators, to teach about climate change in ways that reflect the principles of education for sustainable development (ESD).

The objectives of the course are to:

- Stimulate and support the integration of education for sustainable development (ESD) approaches in pre- and in-service teacher education courses, in cross-curricula classroom practice, and in non-formal (community-based) learning programmes.
- Support educators to take local, contextualised action to mitigate and especially to adapt to climate change.

The aims of the course are to:

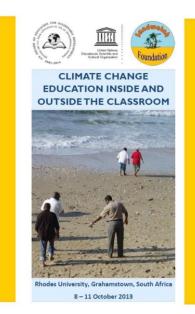
- Introduce educators to the MAST (measure, analyse, share and take action) application of ESD in the context of climate change.
- Incorporate rigorous scientific knowledge and ethical reflection into climate change adaptation and mitigation approaches and measures in small islands and coastal regions.
- Provide an outline course and supporting documents which educators can use to develop Climate Change ESD programmes, activities or materials specific to their professional and social-ecological context.

This report describes the first roll-out of the course, which took place at Rhodes University, Grahamstown, South Africa, from 8-11 October 2013. A second roll-out in Cape Verde in November 2013 will involve participants from West Africa. After these two pilots, the course will be finalised.

#### **Participants**

The participants came mainly from central and southern Africa and comprised secondary teachers, teacher educators and community educators from non-governmental organisations (NGOs). The list of participants is presented as Annex 1.

#### Agenda



The course consists of three modules and was delivered over a four day period. Module 1 presents some local and global perspectives on climate change and its impacts, as well as giving a background to climate change science and ESD. Module 2 introduces the participants to the Sandwatch approach and includes a field trip which allows participants to investigate past changes and future climate change scenarios at a local beach location. Module 3 provides an opportunity for participants to build on the materials and activities presented and develop an educational intervention that they will undertake on return to their home countries. The agenda for the four day course is presented as Annex 2.

#### **Delivery of the Course**

The training course was opened by Professor D. Wilmot, Dean of the Faculty of Education and Professor Rob O'Donoghue of the Environmental Learning Research Centre. They welcomed the participants to Rhodes University, a renowned centre for environmental learning and research, and emphasised the need for everyone to share their experience and knowledge about this very important global concern – climate change. Ms Khalissa Ikhlef, Programme Specialist from UNESCO's Section for SIDS also welcomed the participants and stressed the need for feedback on the course, especially its content and relevance.

Following this, the participants introduced themselves and outlined their expectations from this course. This was followed by a circle sharing activity during which participants had the opportunity to share their personal experiences and knowledge of climate change.



The circle sharing activity proved a useful way for participants to exchange views on climate change

After the presentations and activities relating to climate change impacts and ESD, there were some interesting discussions about the types of education learners need to cope with climate change. In particular, participants emphasised the need for:

- Critical thinking skills
- Basic literacy and numeracy skills which affects learners' ability to read and understand complex issues such as climate change
- Contextualisation of global issues at the local level
- ICT skills

Module 1 concluded with presentations and activities on climate change science and distinguishing between adaptation and mitigation.

During the delivery of module 2 the context changed from the global to the local level. After a presentation and activity relating to the Sandwatch approach, a general orientation was given about the location and background to the field trip site and the measurements and activities to be undertaken. After this, participants worked in small groups to carry out some more research into the beach locations using the internet and especially tools such as Google Maps. The field trip to Port Alfred involved participants visiting two beach sites: West Beach and Kelly's Beach and was the main activity on the third day of the course.

During the field trip, participants had a briefing about past changes at the sites from Mr Fanie Fouché, Deputy Director of Community Safety in the Ndlambe Municipality. They then observed and measured different aspects of the beach to gain an insight into past and future changes. On return from the field trip, participants worked in small groups to prepare key statements about how the beach had changed in the past and prepared scenarios and levels of confidence into how the beach might change in the future as a result of climate change. The results of the investigations are summarised in Annex 3.





A briefing from Mr Fanie Fouché about recent beach changes provided useful information before participants commenced with their own observations and measurements

The third module was presented on the final day of the workshop and after a presentation and discussion contextualising the earlier activities, participants worked individually with a planning template to prepare a specific educational intervention that would be implemented on their return home. A brief outline of each participant's proposed intervention is presented as Annex 4.

#### **Course Evaluation**

At the end of the course, participants completed an evaluation and the results are presented as Annex 5. The questions which related to the organisation, content, relevance and delivery of the course were rated very high, between 6 and 7 (the top score being 7) by 80-85% of the participants. A similar result was obtained in response to the question relating to the participants' competence to implement the education intervention on their return home. Some comments on the course are presented below.

- "The course should not only focus on formal education. Informal education should also be incorporated because the farmers and communities are custodians of the environment and natural resources. The role of indigenous knowledge in climate change should not be ignored because we need to build on what farmers and communities know already".
- "The course helped me to analyse carefully what climate change is, and to be careful on the assumptions related to its impacts. As a result it has provoked a desire to read more and learn about climate change for me and my learners".
- "The course is really practical in our climate change interventions as it gives us the room for critical thinking, analysis and sharing of information from diverse experiences".

## Annex 1

## List of Participants

Name	Email	Country	Function	Institution
Mahah Vladimire	mvlardimire@yahoo.com	Cameroun	Program Coordinator; Education for Sustainable Development	The Environment and Rural Development Foundation (ERuDeF)
Maarifa Ali Mwakumanya	<u>m.mwakumanya@pwaniuniversity.ac</u> <u>.ke;</u> <u>maarifaali@yahoo.com</u> <u>info@pwaniuniversity.ac.ke</u> ,	Kenya	Senior Lecturer, Environmental Sciences	Pwani University
Caroline NJOKI Wamaitha	njokizimmer@yahoo.com	Kenya	Education officer	BirdLife International
Joshua Kiama Wabungu	fona@naturekenya.org	Kenya	EE coordinator	Nature Kenya, Friends of Nairobi Arboretum
Leonard Akwany	leonard.akwany@mespom.eu ecofinder@ecofinderkenya.org	Kenya	Coordinator	Ecofinder Kenya
Tamara Maretlane	tamara@lesothodurhamlink.org	Lesotho	Projects Co-ordinator	Lesotho Durham Link: ESD and CC programme
Mosiuoa Caroline Ntokeng	maletycn@gmail.com	Lesotho	Senior teacher	Ministry of Education and training, Motsekuoa High School
Lestatsi Lebohang	LetsatsiLg@gmail.com	Lesotho	Senior teacher	Ministry of Education and training, Motsekuoa High School
Tselane Edna Mohloai Jobo	<u>mantoetse_ejobo@yahoo.co.uk</u> & <u>m.jobo@lce.ac.ls</u>	Lesotho	Teacher trainer	Lesotho College of Education (LCE)
Lineo Molejane	lineomolejane@yahoo.co.uk	Lesotho	Outreach Community Educator	Ministry of tourism, Environment culture

Name	Email	Country	Function	Institution
Lintle Khitsane	lintlek@gmail.com	Lesotho	Lecturer	Lesotho College of Education (LCE)
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Rabenandrasana Fanjanuwna M.Dorris	dorrisrabe@gmail.com	Madagascar	Educator of Geob Progamme, Teacher	Globe Programme & teacher of science
Emmanuel Charles Mukwona	nafemko@yahoo.co.uk	Malawi	Outreach Community educator	Ministry of Environment and Climate Change
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Munaaba Edward Paul	edwardbkb@yahoo.com	Tanzania	Executive Director EE/ESD Network manager	Africa Partnership on Climate Change Coalition
Mulyowa Pross	pmulyowa@yahoo.com	Uganda	Teacher trainer and Coordinator of Climate	National Curriculum Development Centre

Name	Email	Country	Function	Institution
			Change Education	
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Khalissa Ikhlef	k.ikhlef@unesco.org	France	Programme specialist	UNESCO Headquarters
Gillian Cambers	G_cambers@hotmail.com	Fiji	Co-director of Sandwatch	Sandwatch Foundation

#### Annex 2 Course Agenda

#### 8 October 2013

- 8.30 10.00 **Course Orientation** 
  - Welcome and housekeeping •
  - **Group Introductions** •
  - 1.1 Presentation: Course Overview
- 10.00 10.20 Morning Tea
- 10.20 12.30 Climate Change: Local and Global Perspectives
  - 1.2 Activity: Circle Sharing
  - 1.3 Activity: Some Climate Change Stories •
  - 1.4 Hand-out: Climate Change Impact Descriptions for Africa & SIDS •
  - 1.5 Presentation: ESD as a response to climate change in Africa & SIDS
- 1.00 2.00Lunch

#### 2.00 - 3.30 ESD as a response to climate change in Africa and SIDS

- 1.6 Hand-out: An Introduction to Education for Sustainable Development
- 1.7 Hand-out: Climate Change & Education for Sustainable Development
- 1.8 Hand-out: The Focus of Climate Change Education
- 1.9 Activity: Educational Approaches •
- 3.30 3.45 Afternoon tea
- 3.45 4.30 Future climate change scenarios? •
  - 1.10 Activity: Future Scenarios
- 4.30 5.00 Wrap-up Day 1, looking ahead to Day 2

#### 9 October 2013

- 8.30 9.00 Group discussion on Day 1matters
- 9.00 10.00 Basic Science of climate change
  - 1.11 Presentation: Climate Change Basics ٠
  - 1.12 Hand-out: Climate Change Basics •
- 10.00 10.20 Morning Tea
- 10.20 12.30 Climate Change: adaptation, mitigation

1.13 Activity: Adaptation or mitigation? •

12.30 - 1.30 Lunch

### End of Module 1

1.30-3.00 **Exploring Sandwatch** 

- 2.1 Presentation: Exploring Sandwatch
- 2.2 Activity: Exploring Sandwatch Small Group Discussion
- 3.00-5.00 <u>Field Trip Preparations</u>
  - 2.3 Notes: Field Trip Logistical Guidelines
  - 2.4 Presentation: Field Trip Preparations (this includes information about the activities to be undertaken during the field trip)
  - 2.5 Activity: Field Trip Preparatory Work

## 5.00 - 5.30 Optional Activity

• Review selected Sandwatch training videos that cover different types of measurements

### 10 October 2013

07.45 Gather at ELRC for fieldtrip

8.00-2.00pm <u>Field trip</u>: Travel to/from Port Alfred, complete field activities, picnic lunch In small groups and at different sections of the beach:

- Observation, record taking, preparation of a group sketch map and discussion of issues at the beach section
- Conduct the pre-prepared survey of residents/beach users' views of how the beach has changed
- Conduct beach width measurements at 3 places along the selected beach length
- Picnic lunch
- 1.00 Bus departs back to Grahamstown
- 2.30-4.30 <u>Reviewing Past Changes & Building Future Scenarios</u>
  - 2.6 Presentation: Reviewing Past Changes & Building Future Scenarios
  - 2.7 Activity: Reviewing Past Changes & Building Future Scenarios Small Group Discussion
- 4.30-5.00 <u>Using the Sandwatch International Database</u>
  - 2.8 Presentation: Sandwatch International Database
  - 2.9 Activity: Using the Database to Enter Field Trip Data

### End of Module 2

### 11 October 2013

- 8.30 10.00 Preparing a classroom activity
  - 3.1 Presentation: Lesson Planning for Climate Change
  - 3.2 Hand out: Case Studies of Classroom-based Climate Change and Environmental Interventions
- **10.00 10.20** Morning Tea
- 10.20 11.00 Choosing an Educational Intervention
  - 3.3 Activity: Choosing an Environmental Intervention
- **11.00 12.00** Developing your educational intervention
  - 3.4 Activity: Developing your education intervention
  - 3.5 Hand-out: Planning template

12.00 - 1.00	Lunch
1.00 - 3.30	<ul> <li><u>Developing your educational intervention continued</u></li> <li>3.6 Hand-out: Guidelines for Post – Course Feedback</li> </ul>
3.30 - 3.45	Evaluation
3.45 - 4.00	Closing

End of Module 3

## Annex 3 Results of Module 2 Field Trip and Group Work

#### West Beach

#### **Group 1 Key Statements**

Changes in the past:

- Until 2007 the beach changed very little medium confidence
- Since 2007 evidence of climate change/sea level rise has been visible and the beach has experienced regular flood episodes high confidence

Projection for next 20 years:

• The sand dunes will retreat inland, as will the beach and encroach on the car park – medium confidence.

Proposal for making West Beach more resilient:

• Mobilise municipality and community to stabilise the dunes by planting vegetation.

#### **Group 2 Key Statements**

Changes in the past:

- There has been a reduction of vegetation cover on the sand dunes high confidence
- There has been an increase in wave strength medium confidence

Projection for next 20 years:

• Sand dunes will move further inland – medium confidence

Proposal for making West Beach more resilient:

• Revegetating the sand dunes using natural vegetation by schools/municipality/beach authority

### Kelly's Beach

#### **Group 3 Key Statements**

Changes in the past:

- The beach front is very unstable because of the strong waves as evidenced by the collapsing dunes and exposed sand bags high confidence
- The beach is continuously getting narrower medium confidence

Projection for the next 20 years:

• The beach will have disappeared based on the current rate of dune collapse/beach erosion – medium confidence

Proposal for making Kelly's Beach more resilient:

• Encourage schools and communities to plant indigenous trees on the dunes.

### **Group 4 Key Statements**

Changes in the past:

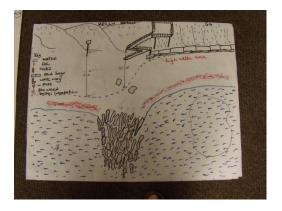
- Sand dunes at Kelly's Beach have reduced in size and height high confidence
- The high water mark at Kelly's Beach has encroached inland medium confidence

Projection for next 20 years:

• The high water mark will continue to encroach inland – moderate confidence

Proposal for making Kelly's Beach more resilient:

• Replant dunes with natural vegetation.



Sketch map prepared by one of the groups



A group work on their sketch map

## Annex 4 Summary of Proposed Education Interventions (List incomplete)

#### Cameroun

• Mahah Vladimire: Design a manual to guide secondary teaches about climate change. Immediate intervention – manual outline and discussion with colleagues

#### Kenya

- Maarifa Ali Mwakumanya: Adapt MAST approach to lake shore with environmental club members at university; immediate intervention develop a module for university students.
- Leonard Akwany: Adaptation to floods and droughts and climate change with learners and communities. Immediate intervention prepare lectures and case studies.
- Joshua Kiama Wabungu: Sensitisation for all learners about climate change. Immediate intervention lectures and open discussion

#### Lesotho

- Tamara Maretlane: Apply Sandwatch approach to lake/reservoir water levels and climate change with environmental club teachers and primary school teachers. Immediate intervention workshops and monitoring
- Lintle Khitsame: Integrate climate change into agriculture for student secondary teachers. Immediate intervention – develop course synopsis
- Lineo Molejane: Range and fire management and combatting desertification with communities. Immediate intervention – workshop and training
- Mosiuoa Caroline Ntokeng: Address impacts of climate change on drought and conservation agriculture with secondary school students. Immediate intervention investigations with the students to identify issues.
- Lestatsi Lebohang: Greenhouse gases and climate change with secondary school teachers. Immediate intervention lesson plan

### Madagascar

- Mirindra Zo Andrianantenaina: Communicating with illiterate, indigenous local people climate change and coastal erosion. Immediate intervention film/video to explain concepts.
- Rabenandrasana Fanjanuwna M.Dorris: Using the MAST approach to measure beach erosion and climate change with high school students. Immediate intervention Conduct training about climate change

#### Malawi

- Emmanuel Charles Mukwona: Improve understanding of greenhouse gases and link with deforestation with 3<sup>rd</sup> year BSc students. Immediate intervention lecture and preparation of educational materials
- Marlene Chikuni: Mainstreaming ESD across faculties in university with faculty in students. Immediate intervention – discussion with colleagues.

#### Mauritius

• Deepak Gooljar: Use MAST to work with secondary school students to measure beach erosion. Immediate intervention – start monitoring

#### Mozambique

• Antonio Armindo Ruben: Adapt MAST to address water and climate change with university and secondary school learners. Immediate intervention – workshop to introduce concept of climate change.

## Rwanda

• John Gakumba: Adapt the Sandwatch approach to measure and address soil erosion and climate change with school teachers and communities in a lake environment. Immediate intervention – field trip and workshop.

#### South Africa

- Raphael Bhembe: Apply elements of the MAST approach to air pollution from a factory and climate change with learners. Immediate intervention lesson plan.
- Eunice Jurgens: Apply MAST approach to beach environment with learners. Immediate intervention hold a workshop.

#### Tanzania

• Munaaba Edward Paul: Apply Sandwatch MAST approach to coastal environments with teachers

#### Uganda

- Mulyowa Pross: Apply the Sandwatch approach to lakeshore changes and climate change with teachers, learners and communities. Immediate intervention research and prepare a paper/article about the site and approach.
- Ssekaggo Ronald: Apply MAST approach to work with local community to stabilise and revegetate the banks of a stream draining into Lake Victoria. Immediate intervention prototype lesson plan/activity.

#### Zambia

- Mwiya Subulwa: Adapt MAST to measure soil erosion and land degradation in the face of climate change with college students. Immediate intervention Discussion and field trip
- Chinyama Naipelekela: Reforestation and climate change with students and teachers. Immediate intervention hold a workshop.

#### Zimbabwe

- Peter Chatanga: Habitat and biodiversity loss and climate change with student teachers. Immediate intervention Training and course work
- Juma James: Deforestation and climate change with student teachers. Immediate intervention tree planting around campus.
- Nyamukunda Moliana: Waste management and climate change with college community. Immediate intervention prepare a lesson plan.

## **Annex 5 Course Evaluation**

Twenty-five participants completed the evaluation form.

The course was well structured								The course was poorly structured
15 persons rated the question th 6 persons rated the question 6 3 persons rated the question 5 1 person rated the question 4	he hig	hest s	score	of 7				
The activities gave me the confidence that I can apply the knowledge in my work								The activities did not give me confidence that I can apply the knowledge in my work
12 persons rated the question the highest score of 7 11 persons rated the question 6 2 persons rated the question 4								
I found the Sandwatch Manual useful								I did not find the Sandwatch Manual useful
14 persons rated the question the formation of the format	he hig	hest s	score	of 7				
I learnt things that will be useful to my classroom								I did not learn things that will be useful to my classroom
<ul> <li>13 persons rated the question the highest score of 7</li> <li>7 persons rated the question 6</li> <li>4 persons rated the question 5</li> <li>1 person rated the question 4</li> </ul>								
The facilitators made the material enjoyable								The facilitators did not make the material enjoyable
<ul><li>16 persons rated the question the highest score of 7</li><li>6 persons rated the question 6</li><li>3 persons rated the question 5</li></ul>								
I am confident that I can implement the activity I planned in Module 3								I am not confident that I implement the activity I planned in Module 3
14 persons rated the question the highest score of 7								

7 persons rated the question 6 3 persons rated the question 5 1 person rated the question 4

I would recommend this				I would not recommend this
course to my colleagues				course to my colleagues

17 persons rated the question the highest score of 76 persons rated the question 62 persons rated the question 5

Do you have any further comments or feedback about any aspects of the training?

- The approach was very well thought out, as well as the relevant participants drawn from different institutions with similar objectives.
- Superb planning of all logistics.
- I really enjoyed the Sandwatch fieldtrip activity and I also learnt new teaching strategies like the 'circle sharing' which was a great concept and I look forward to implement it in my class. Thank you loads guys fantastic.
- The course should not only focus on formal education. Informal education should also be incorporated because the farmers and communities are custodians of the environment and natural resources. The role of indigenous knowledge in climate change should not be ignored because we need to build on what farmers and communities know already.
- The course helped me to analyse carefully what climate change is, and to be careful on the assumptions related to its impacts. As a result it has provoked a desire to read more and learn about climate change for me and my learners.
- Thank you for the fantastic and informative training course. The hospitality was great.
- I just wish more reading material could be provided for rivers and lakes.
- The training was well structured and implemented. However, I would expect the organisers (UNESCO) to consider pocket money for the participants in the future.
- The workshop was useful, I really appreciated it.
- I wish such training could be followed by issuing certificate of attendance.
- The course is really practical in our climate change interventions as it gives us the room for critical thinking, analysis and sharing of information from diverse experiences.
- The time frame was too short and sometimes issues were hurriedly rushed through, not enough time to harmonise some ideas. Next time round this has to be put into consideration.
- Training should be continued so as to share problems and achievements of our projects.
- It has been a very interesting learning atmosphere completed with the field trip to the seashore.
- The training was really enriching to high school educators. However, there is a need for another follow-up training to improve and evaluate the modules.
- What a wonderful week, thank you for including me in this course. I particularly enjoyed Lausanne's approach and her practical, interactive yet content-rich presentations. The Sandwatch manual and the beach activities were great.
- The Sandwatch course is really important for Madagascar and should be applied there. You provided us exhaustive information on it. Thank you very much.
- The methods in the Sandwatch manual were very clear and applicable to the age groups I work with, but it would have been good to have had more time to discuss how techniques could be applied to lake and river environments and the impacts of climate change on those environments.
- The training must be done with policy makers in governments too; failure of a majority of projects is largely lack of political will from our governments.
- The course was out of this world and wish for a follow up.
- Might wish to consider increasing number of days to spread out work load.
- Training is very important but for me, understanding the discussion in English is not easy. So I hope UNESCO can make a training in French or another language
- The work covered on Day 1 needed more time for participants to discuss and internalise it.