

# Teachers' Training in Environmental Education Mombasa, KENYA



## December 2005 Seminar Report

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## Executive Summary

The concept of teachers' seminars was modeled on a similar project in Tanzania by the Association of Swiss teachers in co-operation of the Tanzanian Teachers Union. This has since been adapted to meet the Kenyan needs particularly at the Coast through partnership with the Municipal Education Office and other key players including CORDIO-EA, Lafarge Eco Systems and the International Ocean Institute (Eastern Africa).

The third "Teachers Training in Environmental Education" seminar was held from December 5<sup>th</sup> through December 9<sup>th</sup> 2005 in Mombasa, Kenya. The report details the various players and participants involved in the seminar. Results of the initial evaluations carried during the seminar week are included and basic comparison is made between this third seminar and the earlier two seminars carried out in 2003 and 2004 respectively.

Focus still remains on training teachers to use effective methods to pass correct information to their students and ultimately train/ guide fellow teachers. Participants of the 2005 seminar will be implementing the teacher to teacher transfer in addition to various projects used to enhance knowledge and skills transfer to pupils.

Mombasa , 2006

Sarah Ater



## **Acknowledgements**

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*To all of you I say thank you!*

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## **1.0 Introduction**

### **1.1 Background information**

The concept of teachers' seminars in Environmental Education is modeled on a similar project in Tanzania undertaken by the Association of Swiss teachers in co-operation with the Tanzanian Teachers Union. This concept was adapted in Kenya to meet the Kenyan marine and coastal resource conservation and management needs through partnership with the Municipal Education Office and other stakeholders including CORDIO-EA, Lafarge Eco Systems and the International Ocean Institute (Eastern Africa).

The Teachers Training Seminar in Environmental Education was held for the third consecutive year since its inception in 2003. The first ever pilot seminar was sponsored by ProZim Society while organization at the local level was done by Baobab Trust. 5 teachers from two schools participated in the pilot seminar and four were certified after confirmation of follow-up activities. The second seminar was carried out in December 2004 and was sponsored by ProZim Society while organization was coordinated by both ProZim and Baobab Trust. A total of 14 participants including 13 teachers from 8 primary schools and one Program outreach Officer from a local organization were involved. 12 teachers were certified after successfully carrying out follow-up activities. The Mombasa Municipal Education Office has been instrumental in supporting the seminar ever since.

The third seminar held in 2005 was organized by ProZim and fully supported by local organizations. CORDIO-EA, a regional research organization was the main sponsor apart from Lafarge Eco Systems and International Ocean Institute-Eastern Africa. Other supporters included Watamu Turtle Watch, KESCOM, Kenya Wildlife Services and Peake Tours as well as several facilitators who shared their knowledge, time and experience freely. 12 participants were drawn from the entire Coast Province including one Environmental education officer and a Turtle conservation group member as well as 10 teachers. Like the second seminar, the opening of the third seminar was presided over by the Municipal Education office.

### **1.2 Objectives**

The third seminar was built on the objectives of:

1. Reaching out to more teachers
2. Increasing the environmental capacity of those teachers to pass relevant and correct knowledge and experience to their pupils
3. Exposing the teachers to different methodologies that are effective for EE knowledge transfer

Together with these; additional areas were incorporated to ensure sustainability and greater involvement of local partners. For these reasons, it was necessary to:

- Include a marine component into the seminar and
- Encourage greater support and involvement of local partners

The marine component is important due to the geographic location of Coast province and its general proximity to the Indian Ocean thus the need for a greater understanding and appreciation of the marine environment. Support and involvement of local partners is important for sustainability of the program.

## **2 Participation**

Support and participation of local partners entailed nomination and sponsoring of participants to attend the seminar as well as assistance in follow-up and implementation of projects by participants in their respective locations. 2 non teachers were also involved as they would gain valuable exposure and have opportunities to share their knowledge and experiences with others in the community.

### **2.1 Collaboration**

Potential participants were selected based on criteria decided upon by the partner organizations but also had to have interest in environmental issues and have the capacity to mentor environmental conscious pupils as well as influence and guide fellow teachers to be environmentally conscious.

The reason for this was to increase involvement of various partners in the training program and to ensure follow-up and support of their nominees as they implement their proposed projects in their respective areas. Nominees are thus situated in close proximity to supporting organizations to allow for this oversight. The following is a short description of collaborating organizations.

#### **2.1.0 Municipal Education Office - Mombasa**

The Mombasa Municipal Office oversees and provides guidance to primary schools within the Municipality. Although it runs its programs through the local government, it is answerable to the Ministry of Education under which its activities fall. The office is an important player as it provides the needed support for teachers involved in extra curricula activities including clubs such as environmental and wildlife clubs.

#### **2.1.1 ProZim Society**

The ProZim Society is a Charity Organization involved in promoting education through provision of scholarships to children with limited financial means and capacity building

of Kenyan primary school teachers particularly in the area of environmental education (EE).

### **2.1.2 Coral Reef Degradation In the Indian Ocean-Eastern Africa (CORDIO-EA)**

This is a regional research organization involved particularly in research on coral reefs with respect to ecology, management and socioeconomics. CORDIO-EA also assists in implementation of national and regional coastal conservation initiatives.

The organization covered costs of participants' accommodation, daily catering, stationary and other administrative overheads as well as use of office space and facilities.

### **2.1.3 Lafarge Eco Systems (LES)**

This is a subsidiary of Bamburi cement ltd. which has been involved in rehabilitation of the world renowned Haller Park in Mombasa.

Apart from fully supporting two participants, LES provided in-kind support in the form of venue, furniture and equipment as well as daily transport to and from the seminar venue.

### **2.1.4 International Ocean Institute- Eastern Africa (IOI-EA)**

This is a one of the regional centers of the IOI network which focuses on promotion of education, training and research to enhance sustainable use of ocean space and marine resources. IOI fully supported two participants from Msambweni.

### **2.1.5 Other organizations**

Watamu Turtle Watch supported three participants from Watamu by providing them with return fare to and from Mombasa while KESCOM supported one participant from Msambweni providing his return fare. Kenya Wildlife Services allowed free park entry to the participants during the excursion to the Mombasa Marine Park while Peake Tours provided a boat and fuel for the boat excursion to the marine park.

## **2.2 Participating Schools**

### **2.2.1 Private Schools**

#### **Desliz Nursery and Primary**

This is a privately owned school that is situated in Kisauni area of Mombasa. The school had an existing eco-club formed with the support of Eco ethics International while the two participating teachers had been involved in the 2004 seminar and afterwards implemented a paper mache project.

### **PAG Community School**

This is a private school in Kongowea area and supported by the PAG church. The participating teacher was nominated by ACTS, an organization that supports needy children by paying school fees and is keen on promoting environmental consciousness among the school populace.

### **KAG Msambweni School**

This is a private school in Msambweni area. It is supported by the KAG church and reaches only standard 5. It has neither a wildlife, environmental nor eco club. Two pre-primary school teachers from the school attended.

## **2.3 Public Schools**

### **2.3.1 Mida Primary School**

This is a Public school in the area around Mida creek, Malindi. The school has had an active wildlife Club and has been involved in various competitions. Currently, an existing tree seedling project generated Kshs. 8,000 in 2005 alone. The Wildlife club Patron from the school attended the seminar.

### **2.3.2 Gede Primary School**

Gede Primary school is a public school in Gede area of Malindi district. The school has had an active Wildlife Club and been a strong contender in the annual Marine Environment Day competitions. The assistant club patron attended the seminar.

### **2.3.3 Denyenye Primary School**

Also a public school, the school is one of the beneficiaries of the Bamburi Cement Ltd. Green schools program implemented through Lafarge Eco Systems. So far, over 2,000 seedlings have been planted at the school under supervision of the participating teacher.

### **2.3.4 Mkokoni Primary School**

A public school along Kwale road, it is another of the schools in the Green schools program implemented by Lafarge Eco Systems. More than 5,000 seedlings have been planted in the school under supervision of the participating teacher who is also an active Wildlife club Patron.

### **2.3.5 Kongowea Primary School**

This is a public school in Kongowea area of Mombasa. The school has neither a wildlife, environmental nor eco club. The participating teacher from the school was nominated by ACTS.



### **3 The Seminar**

#### **3.1 Preparatory work**

The main challenges in organizing the 2005 seminar were in

1. Getting local partners actively involved
2. Soliciting support to cover seminar costs
3. Restructuring to ensure sustainability of the program
4. Adopting a suitable criteria for the selection of participants

Although the 2004 seminar report provided a good background and suitable introduction to the training program and its achievements to-date; many organizations felt that they needed more time before they could get actively involved especially in terms of providing financial support. The program was however generally lauded as a useful and much needed program. All parties consulted (both individuals and organizations) pledged to provide in-kind support including time, ideas and available facilities.

Many people were consulted to give suggestions on the way forward and a parallel study was conducted to determine other parties involved in education and awareness and possible ways of complementing conservation education efforts (results of this study are available in a separate report).

Due to the willingness of various parties to be involved despite restricted financial means, some offered to cover return transport for participants from their areas. Supporting organizations were further involved in nomination of participants as they would in future carry out the follow-up regarding their participants.

Two participants from the 2004 seminar were also approached to attend the seminar and share their experiences in the projects they were carrying out. The two were also allowed to attend the full seminar as new aspects of the marine environment were being covered for the first time.

#### **3.2 Proceedings**

The seminar was officially opened by the Deputy Municipal Education Officer (Mr. D. Lenjo) and ran from Monday 5<sup>th</sup> December till Friday 9<sup>th</sup> December 2005 starting daily at 8:30am and ending at 5pm. Apart from a few difficulties experienced in setting up the seminar hall on the first day, the whole week went well. 11 of the 12 expected participants were in attendance the whole week while the 12<sup>th</sup> participant came on the 3<sup>rd</sup> day. There were no delays in starting the morning sessions as the availability of transport ensured participants arrived on time.

Most of the participants were at ease by the end of the morning session on the first day. Some took a little longer to loose their shyness but by the third day all were actively involved in discussions and activities. One participant had some difficulty getting fully

involved as he was more comfortable with Kiswahili whereas English was the main mode of communication. Having majority of the participants accommodated together also helped much in making them at ease with each other.

The seminar was planned in such a way that the theme of the first two days was the terrestrial environment using Haller Park as a model. During the two days topics covered included introduction to the environment and discussions on its worth as well as factors that influence whether or not people look after the environment. This was followed by an overview and history of EE including examples from Tanzania and South Africa. The session on history and overview of Haller Park was reinforced by an excursion focusing on plant and animal identification and adaptations. Discussions were also held on how to handle EE effectively and efficiently in the classroom with emphasis on use of available and affordable resources. In the terrestrial games session “What am I”, “True or false” and “People food web” were used for learning.

The theme for the third and fourth days was the marine environment with Mombasa Marine Park as a model. The third day began with a mid week summary followed by an introduction to protected areas. Guest facilitators gave presentations on mangroves, sea grass and corals focusing on those ecosystems, their importance and threats they face. A session on waste and pollution preceded the discussion on how to handle waste in schools and that of games on the marine ecosystem. Games covered included “Invertebrate word search”, “Coral reef word search”, “Coral reef unscramble” and “Ocean animals label me”. All this was reinforced by an excursion to Mombasa Marine Park where emphasis was on identification and adaptation of species.

On each day there was a session on sharing of experiences which helped to prepare the participants for planning of projects to which all of the last day was devoted. The final day began with an end week summary after which participants planned their projects working in school or location teams and presented to their fellow participants for critique. Post questionnaires were handed back in by the participants just before the closing ceremony where certificates of attendance were awarded.

Group sessions, discussions and presentations were well received and everyone got a chance to present or lead at least two sessions. It was also pleasantly surprising that all assignments were done and handed in on time by participants. The sessions on environmental games and sharing of experiences were most popular while the technical topics handled by the guest facilitators were intriguing. It was however evident that it was too much new knowledge for one day thus guest facilitators should be allocated sessions on different days. This would also help in planning the time as there were numerous questions after the talks.

There were daily evaluations on each of the 5 days to determine relevance, level of importance and get suggestions for improvement regarding different topics and how they were covered on each day. On day one (1) and three (3), different color stickers were used to denote different ratings. Participants used a common sheet on which to place their stickers. On day two (2) and four (4) participants were given individual sheets to

fill and submit. The sheets had predefined rankings greatly reducing the amount of time needed to fill. The ratings by participants as well as other comments provide useful insight into areas that need to be emphasized as well as those that need improvement. A pre-seminar questionnaire was used at the start of the seminar to determine the level of exposure participants already had in environmental matters while a post seminar questionnaire on the last day summarized the participants' perceptions on all aspects of the seminar. Evaluations are highlighted in section 5, while samples of the evaluations are in the appendices.

#### **4 Follow up projects**

Participants agreed on their projects as follows:

- Denyenye Primary – tree nursery
- Mkokoni Primary – tree nursery
- Gede Primary – tree nursery
- Mida Primary – tree nursery
- Desliz Primary – tree planting
- PAG Community School – garbage collection
- KAG Academy – tree nursery
- Kongowea Primary – flower gardening
- Watamu Turtle Watch – cleanups
- Msambweni Turtle Conservation Group – cleanups

##### **4.1 Monitoring and Challenges**

Monitoring is planned for term 1 of 2006. Partner organizations which supported and nominated participants are expected to assist in follow-up of their nominees. This is to be done through regular visits to confirm that projects are on-going as well as offer advice in instances of difficulty. During the planning process, participants developed projects that are realistic to implement within their financial, administrative and resource circumstances. As such, organizations are not necessarily obligated to support them in terms of resources. Participants were also encouraged to use and reuse available resources to minimize costs.

Visits will be made to the various localities to assess projects as well as participants' progress in mentoring others. The visits will be planned in consultation with nominating organizations and participants.

It will be interesting to note the performance of private schools compared to that of public schools. This is because experiences from the past two seminars have indicated that teachers from private schools have been more successful in implementing their projects. Another notable difference is that in the 2005 seminar teachers from public

schools are the ones that had more environmental exposure and were already carrying out various projects. Thus, it may turn out much easier for them to implement their proposed project.

Concerning the choice of projects, the tree nursery was very popular as teachers were amazed by the success story of Mida Primary School Wildlife Club which has been preparing tree seedlings. They managed to sell the seedlings and were able to treat themselves to a party and still had a balance of Kshs. 8,000 from the proceeds.

## **5 Evaluation**

### **5.1 Pre seminar evaluation results**

All the participants indicated they had taught subjects or topics which relate to Environmental Education (EE) including Science, Social Studies, Religious Education, English, Kiswahili, Mangrove/ tree rehabilitation and Turtle conservation. However, over 78% did not think they were effective due to inadequate resources, inadequate knowledge, inadequate support from administration and parents (in schools) as well as their own inappropriate teaching methods.

All participants felt that following the seminar they would be more effective in transferring knowledge and skills to others. The same would in turn be transferred to other people's homes and neighbours hence ensuring that many people are reached.

The areas participants felt should be emphasized during learning include: how to care for the environment and keep it clean, benefits of conservation, effects of not conserving, care (non pollution) of water, waste management, identification of animals, birds, plants, importance of environment, restoring a polluted/ degraded environment, utilizing waste, use and reuse of available resources and how man can help in restoration.

Majority (78%) of the participants either had environmental clubs in their schools or had been involved in some kinds of conservation awareness activity.

The results of the pre seminar questionnaire influenced some of the activities of the seminar which were tailored to address specific needs of resources and knowledge inadequacies. All areas mentioned as needing emphasis were covered either during the talks by guest facilitators or group discussions and presentations.

### **5.2 Daily evaluation feedback results**

On the first day 45.5% of the participants rated the day as very good in overall. Another 45.5% felt it was satisfactory while 9% felt it was not very good. All indicated they had benefited from sharing of experiences while the introduction to the environment and effectiveness of introduction session in making them at ease were both rated as 63.6%

very good, 27.2% satisfactory and 9% not very good. Time management was generally described as good and facilitators motivating.

On day 2 participants rated the allocation of time for the Haller Park excursions as good however, they suggested that animal and plant identification guides be used as well. 54.5% of the participants rated group discussions as effective in involving everyone while 36.4% felt they were very good and 9% satisfactory. Suggestions for EE in the classroom were rated as 18.2% extremely likely, 45.5% very likely and 36.4% satisfactory. Seminar support materials were rated as excellent by 36.4% and very good by 63.6% of respondents. Although 9% felt that the overall organization of the day was not very good; 18.2% felt it was satisfactory while 36.4% felt it was very good and another 36.4% felt it excellent.

On the third day 91% of the participants rated the session on mangroves as relevant while 9% rated it as very relevant. 16.6% of the respondents considered sea grass very relevant, 25% as relevant and 58.3% as satisfactory. Corals were considered very relevant by 75% while the remaining 25% considered them relevant. Games were rated very relevant by 75%, relevant by 8.3% and satisfactory by 16.6%. Only 33.3% of the respondents felt that games had been allocated adequate time. 58.3% felt that both mangroves and corals received adequate time while 75% felt that sea grass received adequate time.

On day 4 participants rated the relevance of the trip to the marine park very highly however they suggested that it should start early and time should be observed. Also, swimming lessons should be given before the trip, adequate floaters provided to all participants and more time allocated to snorkeling. 9% of the participants are extremely likely to start waste management projects in their schools and 91% are very likely to do the same. The likelihood of using games in teaching was rated as extremely likely, very likely and satisfactory by 36.4%, 45.5% and 18.2% of the respondents respectively. Participants rated the overall organization for that day as 45.5% excellent, 54.5% very good and 9% satisfactory.

### 5.3 Post seminar evaluation results

The seminar brought together 10 (7 trained and 3 untrained) teachers with an average of 8.6 years teaching experience. Among them, all subjects offered at primary level between pre-primary and Standard 8 were being taught. At the end of the seminar, all participants (including the 2 non-teachers) were asked to rate the extent of success and relevance (importance) of various topics. The results are tabulated below through averages on a maximum scale of 5

PROGRAM	EXTENT OF SUCCESS	IMPORTANCE FOR PARTICIPANTS
<b>A</b> Introduction to the environment	4.55	4.90
<b>B</b> Overview and history of EE	4.00	4.73
<b>C</b> History, overview of Haller Park	4.55	4.82
<b>D</b> Excursion to Haller Park	4.82	4.90

<b>E</b> Handling EE in the classroom	4.45	4.64
<b>F</b> Haller Park animal descriptions and food webs	4.36	4.55
<b>G</b> Mangroves	4.36	4.55
<b>H</b> Sea grass	4.00	4.27
<b>I</b> Coral reefs	4.64	4.55
<b>J</b> Waste and pollution	4.55	4.73
<b>K</b> Excursion to Marine Park	4.82	4.82
<b>L</b> Planning an school project	4.18	4.09
<b>M</b> Sharing of experiences	4.73	4.55

All participants felt they would use their new knowledge and it would positively influence their teaching. 77.8% found the level of scientific input for their work as teachers as very important whereas 11.1% found the level of scientific input very difficult to understand. The most preferred effective teaching aids were listed as games, excursions, practical activities, drama and open discussions.

The most beneficial sessions were listed as handling EE efficiently and effectively, sharing of experiences, environmental games, overview and history of EE, excursions, waste & pollution and the history of Haller park while the most disappointing was not having an opportunity to plant a tree and leave a mark, limited interaction with participants staying at home, monotonous breakfast at guesthouse, pepper in the food and some sessions being too short.

Suggestions for improvement included having more participants & facilitators as well as increasing the number of days, giving more time for lectures, having guest facilitators on different days, observing time, spreading lectures evenly, holding seminars more frequently, simplifying the 1<sup>st</sup> questionnaire, allocating more time for visit to marine park, including an excursion to a school to see projects and providing travel allowances.

The summary of aspects of the course is tabulated below by percentage of the number of respondents:

	Excellent				not satisfactory
	5	4	3	2	1
... the atmosphere during the course?	90.9%	9.1%			
... the location of the course?	100%				
...the facilitators at the course?	72.7%	27.3%			
... the timetable of the course?	54.5%	45.5%			
...the place where you were staying?	87.5%	12.5%			
...the food at the seminar?	81.8%	18.2%			
... the allowances you received?	55.6%	33.3%			11.1%

Summary of aspects of the course is tabulated below by percentage of the number of respondents:

Perfect	needs major improvement			
5	4	3	2	1

63.6% 18.2% 18.2%

At the end of the seminar participants received certificates of attendance. Another certificate (of Merit) will be presented to participants if they successfully implement their proposed projects.

## **6 Conclusions and recommendations**

Although there were new aspects; lessons learnt in the first and second seminars were applied while planning and carrying out the third seminar. Whereas planning started early, as well as soliciting of partners and supporters it took a little longer than anticipated before there was confirmation of possibilities of assistance.

In-kind support of the venue and transport provided by Lafarge Eco Systems eased the budget and ensured the aspect of time was adhered to during the seminar. The willingness of facilitators to share their knowledge and time was a big boost to the quality of content covered at the seminar.

Participants were very active in different activities during the seminar. Having a small number (12) also guaranteed that interaction was easy both amongst participants and also with facilitators.

Based on the ratings of extent of success and importance of various topics to participants; future seminars would need to allocate adequate time for covering EE in the classroom effectively and efficiently while addressing resource inadequacies. Introduction to the environment as well as waste and pollution were considered very important while the topic on sea grass was a very new area to most. Also, excursions were useful in reinforcing what was learnt and should be maintained while the suggestion to visit a school project should receive serious consideration.

Availability of funding enabled participants from Kwale and Malindi to participate for the first time. However, the costs of accommodation consumed a significant proportion of the budget. With the involvement of these participants, the program has now begun successful transformation to a regional one. The main challenge will now be to sustain the quality and momentum of the training program.

It is remarkable that most of the prospects from the 2004 seminar have begun to be realized. These include

1. Review and expansion of course content as well as area of coverage with the introduction of the marine environment into the program and inclusion of participants from Kwale and Malindi.
2. Establishment of initial partnership with local organizations including CORDIO-EA, Lafarge Eco Systems and the International Ocean Institute.
3. Formations of cluster groups as the teachers begin mentoring other teachers in their areas in 2006.

There still is need to strengthen the training program and support its growth and expansion especially as there is no other awareness program that is currently meeting the needs of teachers in the way that this particular training program does. It is strongly recommended that options for working out a similar program for secondary school teachers also be explored.



## 7 Appendices

### Appendix 1: Program for the week

	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
9.00-10.30	<b>Welcome Address</b>  Introduction  <b>Overview of the week</b>	<b>Excursion to Haller Park</b>  Plant/ animal identification, soil profile  Nutrient cycle	<b>Review of planting,</b>  <b>mid week summary</b> <b>Introduction to other protected areas:</b> <b>parks &amp; reserves</b>	<b>Waste and Pollution</b>  Origin, impact, mitigation <b>Waste management in schools</b>  <b>Environmental games on marine ecosystems</b>	<b>Recap of topics</b>  Feedback
	<b>Tea break</b>	<b>Tea break</b>	<b>Tea break</b>	<b>Tea break</b>	<b>Tea break</b>
11.00 – 12:45	<b>Introduction to environment:</b>  It's definition, value, importance  Cultural interactions with environment	<b>Handling EE in the classroom</b>  Covering EE effectively & efficiently  Possible activities	<b>Oceans are living:</b>  Linkage between land and sea,  <b>Mangroves</b>	<b>Introduction to planning a school project (Part I)</b>  Brainstorming session: projects, sustenance	<b>Planning a school project (Part II)</b>
	Lunch	Lunch	Lunch	Lunch	Lunch
13:50 – 15:10	<b>Overview and history of Environmental Education (EE)</b>  Evolution of EE  Case studies from EAME	<b>Haller Park animal descriptions &amp; Food webs</b>	<b>Sea grass:</b>  Requirements, importance: (Ecological, physical, economic)	<b>History of marine parks</b> <b>Excursion to Mombasa Marine Park</b>  Mini Beach Cleanup	<b>Planning a school project (Part III)</b>
15.15-16.30	<b>History, Overview of Haller Park</b>  Challenges, way forward	<b>Environmental games on terrestrial ecosystems</b>  <b>Feedback, sharing of experiences</b>	<b>Coral reefs:</b>  Requirements, importance, threats		<b>Presentation of school projects</b>  <b>Handing in questionnaires</b>  <b>Tea break</b>
	<b>Tea break</b>	<b>Tea break</b>	<b>Tea break</b>		<b>Issuing certificates</b>
16.45-17.15	<b>Daily feedback and sharing of experiences by previous participants</b>	<b>Tree planting</b>	<b>Daily feedback and sharing of experiences by previous participants</b>		<b>Closing ceremony</b>

## Appendix 2: Pre seminar Questionnaire

Dear Teachers

In order to meet your needs for practical activities in Environmental Education (EE), it would be useful for us to know, what you are doing or have done in environmental education. Please assist us by answering the following questions:

1. Think about your lessons in class. Did you ever teach subjects that you think belong to EE? Which subjects were these?

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2. If you ever taught EE, do you think you did it effectively?

absolutely θ 5	θ 4	θ 3	θ 2	not at all θ 1
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- a) What exactly was it (e.g. teaching method, inadequate knowledge or resources), that made you feel you taught or did not teach effectively?

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3. Do you think with teaching EE (in the past or in the future) your lessons had or will have an influence on student learning?

In the past (before the seminar):

absolutely θ 5	θ 4	θ 3	θ 2	not at all θ 1
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What kind of influence?

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In the future (after the seminar):

absolutely θ 5	θ 4	θ 3	θ 2	not at all θ 1
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What kind of influence?

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4. Do you think, that parents, neighbours, other children will learn something in EE from your pupils?

absolutely θ 5	θ 4	θ 3	θ 2	not at all θ 1
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Why do you think this?

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5. What is it exactly, that you think that your pupils should learn in the EE in their lessons?

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6. Do you have an environmental or related club at your school? \_\_\_\_\_

Thank you very much! 😊

### Appendix 3: Day 1 evaluation

Use the relevant color sticker to indicate the ratings of various activities. Place the color sticker that reflects your opinion below the question:

Very good	?	Not very good	?
Satisfactory	?	Poor	?

1. How effective was the introduction in making you feel at ease?
2. How well did “Introduction to the environment” provide you with knowledge?
3. What is your overall assessment of day 1?

Use the relevant color sticker to indicate the ratings of various activities. Place the color sticker that reflects your opinion below the question:

Yes	?	No	?	Not sure	?
-----	---	----	---	----------	---

4. Do you have a clear grasp of EE and its evolution?
5. Have you benefited from sharing of experiences?
6. Use one word to describe time management
7. Use one word to describe facilitators

## Appendix 4: Day 2 Questionnaire

### Teachers' Training in EE 2005 (Day 2)

Please answer the following questions by putting one tick in the appropriate box for each question

time    relevance

1 Please rate the allocation of time on the Haller Park excursion how relevant did you find the activities you were involved in?	excellent	<input type="checkbox"/>	<input type="checkbox"/>
	very good	<input type="checkbox"/>	<input type="checkbox"/>
	satisfactory	<input type="checkbox"/>	<input type="checkbox"/>
	not very good	<input type="checkbox"/>	<input type="checkbox"/>
	poor	<input type="checkbox"/>	<input type="checkbox"/>

2 How effective were the group discussions in involving everyone  <i>Comments</i>	excellent	<input type="checkbox"/>
	very good	<input type="checkbox"/>
	satisfactory	<input type="checkbox"/>
	not very good	<input type="checkbox"/>
	poor	<input type="checkbox"/>

3 How feasible were suggestions for EE in the classroom  <i>Comments</i>	extremely	<input type="checkbox"/>
	very likely	<input type="checkbox"/>
	satisfactory	<input type="checkbox"/>
	not likely	<input type="checkbox"/>
	impossible	<input type="checkbox"/>

4 How would you rate the success of the day  <i>Comments</i>	excellent	<input type="checkbox"/>
	very good	<input type="checkbox"/>
	satisfactory	<input type="checkbox"/>
	not very good	<input type="checkbox"/>
	poor	<input type="checkbox"/>

5 How useful did you find the seminar support materials?  <i>Comments</i>	excellent	<input type="checkbox"/>
	very good	<input type="checkbox"/>
	satisfactory	<input type="checkbox"/>
	not very good	<input type="checkbox"/>
	poor	<input type="checkbox"/>

6 How would you rate the <i>overall</i> organization of the day?  <i>Comments</i>	excellent	<input type="checkbox"/>
	very good	<input type="checkbox"/>
	satisfactory	<input type="checkbox"/>
	not very good	<input type="checkbox"/>
	poor	<input type="checkbox"/>

7 Any other comments
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### Appendix 5: Day 3 evaluation

Use the relevant color sticker to indicate the relevance of various sessions to your work. Place the color sticker that reflects your opinion below the question:

Very relevant ?	Satisfactory	?
Relevant ?	Not relevant	?

1. Mangroves
2. Sea grass
3. Corals
4. Games

Use the relevant color sticker to gauge the adequacy of time allocated to various sessions. Place the color sticker that reflects your opinion below the question:

Adequate ?	Inadequate ?	Not sure ?
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1. Mangroves
2. Sea grass
3. Corals
4. Games

## Appendix 6: Day 4 Questionnaire

### Teachers' Training in EE 2005 (Day 4)

Please answer the following questions by putting one tick in the appropriate box for each question

		time	relevance	
1	Please rate the allocation of time on the Marine Park excursion how relevant did you find the activities you were involved in?	excellent	<input type="checkbox"/>	<input type="checkbox"/>
		very good	<input type="checkbox"/>	<input type="checkbox"/>
		satisfactory	<input type="checkbox"/>	<input type="checkbox"/>
		not very good	<input type="checkbox"/>	<input type="checkbox"/>
		poor	<input type="checkbox"/>	<input type="checkbox"/>

2	How effective were the group discussions in involving everyone  <i>Comments</i>	excellent	<input type="checkbox"/>
		very good	<input type="checkbox"/>
		satisfactory	<input type="checkbox"/>
		not very good	<input type="checkbox"/>
		poor	<input type="checkbox"/>

3	What's the likelihood of starting a waste management project In your school <i>which project is that?</i>	extremely	<input type="checkbox"/>
		very likely	<input type="checkbox"/>
		satisfactory	<input type="checkbox"/>
		not likely	<input type="checkbox"/>
		impossible	<input type="checkbox"/>

4	What's the likelihood of using games learnt in teaching?  <i>Comments</i>	extremely	<input type="checkbox"/>
		very likely	<input type="checkbox"/>
		satisfactory	<input type="checkbox"/>
		not likely	<input type="checkbox"/>
		impossible	<input type="checkbox"/>

5	How would you rate the coverage of the topic on waste and Pollution <i>Comments</i>	excellent	<input type="checkbox"/>
		very good	<input type="checkbox"/>
		satisfactory	<input type="checkbox"/>
		not very good	<input type="checkbox"/>
		poor	<input type="checkbox"/>

6	How would you rate the <i>overall</i> organization of the day  <i>Comments</i>	excellent	<input type="checkbox"/>
		very good	<input type="checkbox"/>
		satisfactory	<input type="checkbox"/>
		not very good	<input type="checkbox"/>
		poor	<input type="checkbox"/>

7	Any other comments
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## Appendix 7: Post Seminar Questionnaire

Dear Teachers

Please cross the appropriate box or fill in the answer! Thank you! ☺

Details will be treated as confidential

Name: \_\_\_\_\_ Age: \_\_\_\_\_

Sex: \_\_\_\_\_ School: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

How many years have you been teaching? \_\_\_\_\_

Which standards are you teaching? \_\_\_\_\_

Which subjects are you teaching? \_\_\_\_\_

Are you a trained or an untrained teacher? \_\_\_\_\_

1. **Contents of the seminar:** Please look at the program and rate the two following questions for each part of the seminar (A until M)

a) To what extend did we succeed in ....

	very much				not at all
	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>A</b> Introduction to the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B</b> Overview and history of EE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C</b> History, overview of Haller Park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D</b> Excursion to Haller Park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>E</b> Handling EE in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>F</b> Haller Park animal descriptions and food webs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G</b> Mangroves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H</b> Sea grass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>I</b> Coral reefs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>J</b> Waste and pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>K</b> Excursion to Marine Park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>L</b> Planning an school project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>M</b> Sharing of experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



b) How important are the different parts of the seminar for your work as teacher?

	very much				not at all
	5	4	3	2	1
<b>A</b> Introduction to the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B</b> Overview and history of EE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C</b> History, overview of Haller Park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D</b> Excursion to Haller Park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>E</b> Handling EE in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>F</b> Haller Park animal descriptions and food webs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G</b> Mangroves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H</b> Sea grass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>I</b> Coral reefs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>J</b> Waste and pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>K</b> Excursion to Marine Park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>L</b> Planning an school project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>M</b> Sharing of experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Please rate the following for the whole seminar:

a) The level of the scientific input <b>for my work</b> as teacher was...	very im- portant 5 0	4 0	3 0	2 0	not im- portant 1 0
b) The level of the difficulty of the scientific inputs <b>for myself</b> was...	very dif- ficult 5 0	4 0	3 0	2 0	not dif- ficult 1 0
c) At the moment I think that I would use my new knowledge at school	absolu- tely 5 0	4 0	3 0	2 0	not at all 1 0

3. Which ones of the methodologies from the seminar can you apply in your classes?

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4. In future: Do you think with teaching EE your lessons will have an influence on student learning?

absolutely 0 5	0 4	0 3	0 2	not at all 0 1
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Why do you think this?

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5. Other Aspects of the Seminar: What do you think of ...

	excellent			not satisfactory	
	5	4	3	2	1
... the atmosphere during the course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... the location of the course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...the facilitators at the course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... the timetable of the course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... the place where you were staying?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...the food at the seminar?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... the allowances you received?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. a) Further comments: What did you benefit most from in the seminar?

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b) What did you not like in the seminar?

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7. What is your overall assessment of the course?

	perfect			needs major improvement	
	5	4	3	2	1
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. If there will be another seminar next year: How do you think the course can be improved?

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Thank you! 😊

# **Teachers' Training in Environmental Education**

## **Summary of the 2006 Term 1 follow-up activity**

### **Introduction**

Through the "Teachers Training in Environmental Education Seminar", carried out in December 2005, teachers were exposed to various topics in ecology so as to help them clearly understand the interrelationships and dependencies of ecosystems as well as the impact of man both positively and negatively. Further; interesting, practical and affordable teaching options were shared allowing the teachers to choose those that fit best into their circumstances. Through the proposed 2005 seminar, it was expected that a strong team of core teachers would be developed and equipped with skills to transfer appropriate knowledge to their pupils through practical and realistic means. The same teachers were also expected to mentor another teacher and guide them in Environmental Education knowledge and transfer of the same to pupils.

Emphasis in the program was on the impacts of day-to-day activities on the environment and teachers were encouraged to serve as examples to fellow teachers and their pupils. The program believes that education and awareness will make people conscious of the need to reduce threats to both terrestrial and marine environments.

### **Objectives**

The objectives of the program include:

- ? To widen and deepen the teachers' knowledge of terrestrial ecosystems and biodiversity using Haller Park as a model
- ? To widen and deepen the teachers' knowledge of marine ecosystems and biodiversity using Mombasa Marine Park and Reserve as a model
- ? To expose the teachers to different methods of transferring the knowledge gained to the other teachers and their pupils
- ? To produce a strong team of core teachers who will be environmental education ambassadors to fellow teachers and pupils

### **Implementation Activities**

Towards the end of the 5-day seminar, the teachers developed SMART projects for implementation in their schools as a way of transferring knowledge to the pupils. The teachers were also mandated to recruit and train at least 1 other teacher. During the term, various visits were made to the teachers' schools to ascertain, guide and motivate the teachers in implementing their projects. Watamu Turtle Watch was instrumental in assisting the teachers from Malindi area through follow-up, guidance and resource support.

The following is a summary of the progress of the participants' projects:

1. KAG Msambweni Academy – tree nursery

The two teachers established a club and recruited another two teachers from the same school to assist in the club activities. They had difficulty achieving success in the initial stages due to limited knowledge, unfavorable weather conditions and availability of land. An exchange visit to Mkokoni Primary proved a useful learning activity for both teachers and pupils. The nursery has since had tremendous improvement.

## 2. Mkokoni Primary – tree nursery

The teacher already had an existing club within the school and a tree nursery as well as other projects. A paper mache project was introduced and the pupils made creative functional and aesthetic items. With the approval of the school administration, the teacher initiated learning sessions for neighboring schools through Friday afternoon visits to his school. A total of eight (8) schools were hosted and new clubs initiated in the schools after their visits. Club members would take the leading role during visits giving talks and demonstrations.

## 3. Denyenye Primary - tree nursery

The teacher already had an existing club and a tree nursery. Additional seeds were planted in the seedbed, a paper mache project initiated and Assistant patron recruited. There was notable improvement in the tree nursery from the previous year.

## 4. PAG Community School – garbage collection

A club was established by the teacher and after recruitment of club members the garbage collection project was partially implemented. The club was also involved in the schools to the sea program which is a marine environment program with lessons and a guided tour to the coral reef.

## 5. Kongowea Primary – flower gardening

The teacher had a dormant club that was revived however the flower gardening project was not implemented. The school participated in the schools to the sea program which included trips to the coral reefs.

## 6. Desliz Primary

The school had an existing club and was involved in a tree nursery project. This however did not do well due to obstacles of space and inadequate water. The teacher was able to mentor a teacher from a neighboring school.

## 7. Gede Primary – tree nursery

The teacher already had a club as well as some seedlings. For their project, they proposed to add another 5000 casuarina seedlings. This was not achieved due to various limitations.

## 8. Mida Primary

A club already existed in the school involved in a tree nursery project. 5000 casuarina seedlings were to be produced as part of the project however challenges faced included weather conditions and inadequate resources for planting. The club will be donating some of their seedlings to Gede Primary for planting.

## 9. Msambweni Turtle Conservation Group

The member carried out two planned cleanups involving group members' and the community.

## 10. Watamu Turtle Watch

The education officer provided follow-up support for the participants from Malindi visiting regularly and providing guidance.

### **Successes and challenges**

Most of the teachers had identified the tree nursery as the club project however dry weather conditions affected the success of the seedlings particularly in areas where access to water was limited.

Club members in schools whose teachers were actively involved have shown remarkable increase in knowledge as depicted in their day to day activities with several schools placing modified garbage bins strategically and reusing paper to make various paper mache items.

Some teachers indicated that heavy workloads made it difficult to comprehensively administer their projects while mentoring another teacher required the willingness and availability of the other teacher. It was also not easy initiating links with neighboring schools as this required consent from both schools administrators.

### **Recommendations**

Implementation of the participants' project was better done than in the previous years. Majority of the teachers implemented their projects satisfactorily as well as the non-teachers. The following recommendations will help ensure growth and sustainability of the program.

1. Teachers should be encouraged to continue implementation of projects even after certification.
2. Apart from certificates, there is need to recognize outstanding teachers (in project implementation and innovation) probably through the introduction of an award.
3. There is need to build the capacity of teachers in establishing and maintaining tree nurseries which is very popular.

**Photos of some activities**



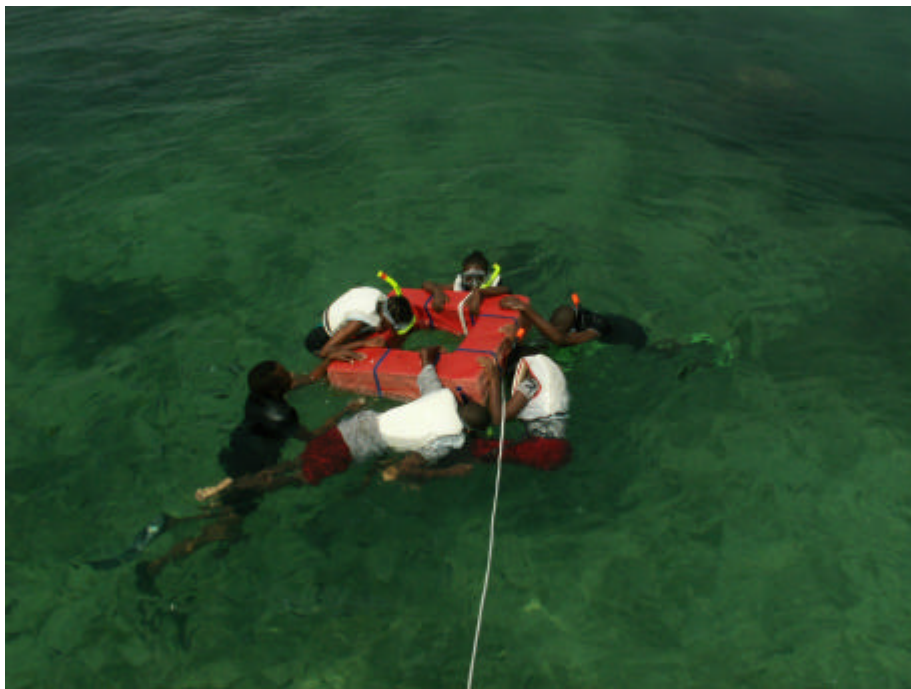
Club members labeling tree seeds at Mkokoni Primary



Peer learning: Explaining about the tree nursery to visiting school students



Preparing for boat trip: Practicing how to use snorkels and life jackets in the swimming pool



PAG students snorkeling in the coral gardens