Communication Education and Public Awareness CEPA Action Plan for the Nature Conservation Sector NCS

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Contents

Acronyms

Convention on Biological Diversity	CBD
Communication Education and Public Awareness	CEPA
Decade of Education for Sustainable Development	DESD
Environmental Education	EE
Education for Sustainable Development	ESD
International Year of Biodiversity	IYB
National CEPA Strategy	N.CEPA.S
Nature Conservation Sector	NCS
National Commission for Wildlife Conservation and Development	NCWCD
Protected Areas	PAs

Executive Summary

This report suggests an action plan for CEPA implementation as a reflection on the international CEPA strategy suggested by the Convention of Biological Diversity CBD and the National CEPA Strategy by Gabi Mikhail (2005). The report suggest a mechanism for implementing the CEPA strategic plan in order to improve the performance of the environmental education programmes within the protected areas and widen the Nature Conservation Sector NCS networks. The plan aims at reaching larger audiences to ensure that CEPA's message is disseminated within the whole country. The target timing for the action plan is the end of the Decade of Education for Sustainable Development DESD. However, the short term plan is the year 2010 the International Year for Biodiversity IYB as recommended by the head of the NCS. The report drafts a training manual for environmental education that may be addressed to environmental researchers and other relevant groups.

The report figured out that there are very few individuals within the NCS who received sufficient training on CEPA applications. There are no concrete system that is operating the implementation of CEPA neither in the PAs or in the NCS main office. The number of CEPA coordinators is very limited and cannot cover the whole country. Although there is a sufficient available fund for PAs that ask for certain budget, the tools and instruments used for the implementations are confined to lectures and presentations in almost, all PAs.

The report recommends seven main points that I believe can facilitate the implementation of CEPA within NCS/PAs. These recommendations are:

- Setting up an international network to promote the efforts of NCS
- Establish a network with relevant national groups;
- Train rangers of the protected areas on CEPA application;
- Update the library of the NCS with relevant materials for the use of the different research areas
- Widening the dissemination of the NCS Newsletter
- Organising events
- Establish a national force team from PAs to collect data about the conservation topics within school curricula and data on indigenous knowledge from the relevant PAs.

1. Introduction

The international concern for the conservation of biodiversity is growing rapidly. Many events have taken place over the last few decades; the most popular ones are the Rio summit (1992) known as the United Nations Conference on Environment and Development (UNCED). Following this summit, the convention of biological diversity (CBD) was launched and put a set of recommendations, one of which is article 13 on Communication, Education and Public Awareness (CEPA). The second is the Johannesburg summit (2002) on Sustainable Development. This second summit highlighted the significance of Education for Sustainable Development (ESD) and proposed the decade 2005-2014 as the Decade of Education for Sustainable Development (DESD).

The underlying values for ESD that directed the DESD initiatives included respect for the dignity and human rights for all people throughout the world and a commitment for social and economic justice for all; respect for the human right of the future generations and a commitment to intergenerational responsibility; respect for the greater community of life in all its diversity, which involves the protection and the restoration of the Earth's ecosystem; respect for the cultural diversity and commitment to build locally and globally a culture of tolerance, non-violence and peace. These values are derived from and supported to the above definitions for SD that are widely used by the international community. Sustainable development is reached through a learning process, which develops awareness, knowledge, understanding of the environment and critical thinking skills. The DESD is a world programme that aims at redirecting education around sustainable development, which is supported by economic, environmental, cultural and social aspects.

In this proposal a review for the international CEPA produced by CBD and IUCN and the N. CEPA.S produced by Gabi Mikhail (2005) had been undertaken and therefore, the proposal is suggesting an action plan for CEPA to be implemented by the Nature Conservation Sector NCS/Protected Areas PAs and other relevant parties.

I propose this guidance for planning CEPA within the NCS to put into effect a learning process that I have gained over the last 10 years working in St Katherine protectorate as the environmental education (EE) coordinator and also as a result of a PhD programme I have completed during the last three years. Accordingly, this action plan has taken into

consideration the national and international CEPA strategies suggested by CBD/IUCN and a local Egyptian expert.

2. Goals

The broad goal of this initiative is to facilitate the NCS/PAs mission by suggesting course of actions and instruments to implement the CEPA strategy. The action plan aims to make a contribution that enables the strategic plan to be implemented within the NCS/PAs, enhance their EE programmes performance and allow for concrete operational programmes. The proposal is flexible to be adapted to the needs and problems facing the different PAs. The plan also aims to develop a network of partnership between the NCS and other concerned national and international parties. A special concern in this action plan is given to the international year for biodiversity IYB 2010.

3. Target audiences

- Protected Areas PAs staff

- Nongovernmental Organisations NGOs (national and international)

- Government agencies

- Education sector (principals, teachers and students)

- Tourism (tour operators, tourists, tour guides, eco-guides)

- Media

- Interested groups (national and international environmental centres, youth centres, indigenous communities and their formal bodies, religious groups, businesses)

- International organisations and fund raisers , UNDP, IUCN, UNESCO, UNEP, GIF,

4. Target Timing

This proposal suggests an action plan that effectively implements the CEPA strategy. The target timing for this plan is 2010 – 2014 the end of the decade of Education for Sustainable

Development DESD. However the short term plan is 2010 where the NCS need to take immediate actions for the international year for biodiversity IYB. First by the end of 2014 the action plan is hoping to:

4.1 Setting up an international network to promote the efforts of NCS. The network will enable effective engagement in the conservation issues and access and benefit sharing ABS negotiations worldwide to share our experience and learn from others and maximise the benefits and protection of the country's biodiversity. It also allows raising funds that support the CEPA implementation.

Requirements:

- Activate and update the websites of the PAs and upload all the achievements to highlight the effort NCS is undertaken.
- Contact international organisations offices in Egypt (UNDP, UNEP, British Council, Fulbright etc.,) to appoint focal point personnel to attend conferences and events they organise as representatives of the NCS.
- Assign two senior NCS IT staff for evaluating the existing NCS and EEAA websites and upgrade them to a high quality according to the user's expectations. The budget required is:

Item	Type	Amount	Period	Total	NCS Comments
Local expert	Contract	LE 4000	3 months	LE 12,000	
2 senior NCS staff	Incentives	LE 300	12 months	LE 7,200	
Total for activity 1				**LE 19,200**	

4.2 Establish a network with relevant national groups;

Establishing a network as such, requires a lot of homework to understand the dynamics of the situation and work out who are the appropriate target groups to deal with. Communication and Partnership between NCS and the education sector and relevant NGOs or other entities concerned by CEPA, can stimulate an innovative bottom up process to build awareness about the PAs and to put in place an approach that is sustainable. Hence, there is an urgent need to establish channels of communication with organisations such as the ministry of education to set up a training programme for principals, teachers/supervisors to train them on the principles and methods and best practices for EE. The same idea can be adopted with the social affairs agency to train members of relevant NGOs. The idea is the need to focus on strategic training that creates a greater multiplier effect, so instead of giving lectures in schools that won't cover the whole target group of targeted audiences. The NCS is supposed to cover a large number of schools within the ministry of education and this will not be possible with the limited number of environmental researchers working on CEPA. On the other hand, there is a large number of schools from different educational stages within the whole country. The approximate estimate is over 25.000 schools. Therefore it is suggested to concentrate on smaller number of target groups that would have a bigger effect as they access the larger target audience. People such as supervisors and senior teachers in the ministry of education would be better to deal with rather than dealing directly with teachers and students. In other words, target groups have to be very well identified; current random choice of target groups should be totally avoided as it would lead to pointless time, effort and financial resources wasting.

Requirements:
- Signing memorandum of understanding MoU with the ministry of education and the ministry of social affairs to start the training and agreeing that NCS provides the necessary curriculum for their implementation;
- Preparing educational materials for educators' use (training manual, fact sheets about wild species, CDs, videos about PAs)
- A training programme for the chosen stakeholders

- Annual incentives such as rewards for schools that provide best EE projects or organising contests within the schools. The budget required is:

Item	Type	Amount	Period	Total	NCS Comments
Annual rewards	reward	LE 10,000	-----	LE 10,000	
Transportation	-----------	LE 5,000	Annul	LE 5,000	
Reprinting awareness materials	budget	LE 50,000 (EEAA budget)	Annul	LE 50,000	
Printing a training manual	---------	LE 5,000	Annul	LE 5,000	
Total for activity 2				LE 70,000	

4.3 Train rangers of the protected areas on CEPA application;

- There are very few rangers in the PAs who have made progress on CEPA application or who have gained, to some extent, the experience required for implementing proper EE programmes within their protected areas. Therefore, this action plan is urgently aiming to constitute a training programme for rangers on how to carry out appropriate CEPA programmes for their PAs. EE programmes need to be addressed, particularly, to children through formal and informal channels. Interpretation and visitor management programme is essential to raise awareness among visitors.

Requirements:

- Contacts with rangers who already obtained training on EE such as Arafa (Wadi Rayan, trained on the US), and other individuals in the NCS to prepare for a workshop to set up the training programme.
- Invite PAs managers and CEPA coordinators to attend a training programme that would improve their programmes and enable them to gain understanding of appropriate tools and instruments to establish good practice for CEPA.
- Print copies of the training manual for the use of PAs managers and CEPA coordinators

- Provide educational materials such as, fact sheets about main species in all PAs, pictures of the species, and posters representing the various environmental events. The budget required is:

Item	Type	Amount	Period	Total	NCS Comments
NCS annual reward	reward	LE 2,000	Annual	LE 2,000	
Transportation	-----------	LE 5,000	Annual	LE 5,000	
Printing training manual	---------	LE 5,000	Annual	LE 5,000	
Training food and beverages	Budget	LE 15,000	Annual	LE 15,000	
Total for activity 3				LE 27,000	

4.4 Update the library of the NCS with relevant materials for the use of the different research areas

A professional library is needed in the NCS to enable researchers to update their knowledge and develop better performances.

Requirements:

Item	Type	Amount	Period	Total	NCS Comments
Shelves	budget	LE 2,000		LE 10,000	
Books	Budget	LE 10,000	Annual	LE 10,000	
Total for activity 4				LE 20,000	

4.5 The newsletter of the NCS

I have received old digital copies of the newsletter for the year 2007. I presume that the newsletter has been updated on the last two years; therefore, I prefer to wait until I receive an updated version so I can comment on it and suggest other methods for improvement. As for the newsletter for the year 2007, it seems to me that it aims at internal target groups of the EEAA. My first reaction to it is that it needs to be translated and communicated with international organisations offices in Egypt such as UNDP, UNEP etc,. This can be done via emails and other formal channels such as

contacting the CEPA coordinator within these organisations. The newsletter can be used as a tool to highlight the NCS efforts and raise funding opportunities for the PAs and NCS.

4.6 Organising events

In collaboration the media and environmental education department in the EEAA various activities can take place. Communicating our work with them may save efforts and budget that might be already there.

It is important for the mobilisation of the work of NCS to organise events such as conferences, seminars and workshop on the national level. Organising events to celebrate the environmental occasions is one of the main concerns. **A special concern is given to the year 2010 that is designated as the international year for biodiversity IYB. Hence, some immediate actions are listed below:**

- **Biodiversity contests:** organising competitions on school level to include simple activities for primary stage, and more advanced ones for preparatory and secondary stages. The competitions will involve best drawings that represent biodiversity for the young age and biodiversity loss for the latter. Preparatory and secondary stages: can participate as in team works to design environmental projects that work on finding solutions to environmental problems. Mapping the area activity (7.4.2) that includes finding local environmental problems and local solutions for the different local areas can be a good base for implementing the project. The activity has been implemented in local schools in remote areas in St Katherine and met great success.

- **Protected Areas level**: selecting the best project e.g. butterfly conservation project St Katherine, nominating each month for a specific activities choosing by the different PAs depending in their situations and linked to the various environmental occasions listed in section 10 for instance in the second of February, celebrates the wetland day and therefore, the activities of the month can be designated for materials that address the EE activities to this occasions (CEPA coordinator may help in suggesting activities to be done);

Other PAs such as Siwa or St Katherine, can allocate the day of indigenous people on the 8 August to conducting traditional activities and practices of the local community, in collaboration with members of the communities, which proved to be effective in the educational programmes. Other rangers from different PAs can move in specific occasions to the PAs that are linked directly to the occasion to help and exchange/gain experience of the work of other PAs.

- **NGOs level:** in cooperation with relevant NGOs, campaigns to be organised to support various concepts such as reduce, reuse and recycling (organise exhibition exchange property, learn recycling techniques) can be implemented section 8.1.4 provide an outline for recycling campaign with universities.

- **Media:** Establish communication channels with different media to promote the efforts of the NCS and convey its message to the public. This can be done through different commitments. For instance, documentary films about the protected areas can be shown in the local Egyptian channels. One general documentary film can be shown in the national, regional and international channels. These movies and other materials (e.g. articles) are to highlight the goals of the IYB.

- **Indigenous community:** a proposal by Professor Mostafa Foda to organise a conference about indigenous knowledge and indigenous people engagement in biodiversity conservation in Egypt to highlight the effort Egypt does in that respect and to communicate our achievements with international interested groups and exchange experiences with them (further details will be followed in a separate report).
  Cooperation with relevant indigenous NGOs and projects such as the Bedouin village project in St Katherine may also highlight the efforts the NCS is doing in that concern.

- **Volunteering Scheme:** Activation for the volunteering scheme within the PAs is needed to encourage interested groups such as Sahara Safari, Wadi food centre to get involved in our activities particularly in the environmental celebrations.
  NCs may encourage universities to send students volunteers to train them on the PAs programmes while they can be given task to do and work for the PAs whilst conducting their researches.

- **Access and Benefit Sharing ABS:** The CBD has delivered a set of decisions, the two obvious ones are conservation and sustainable; and a third one that has seen less progress is related to equitable sharing on the benefits arising from genetic resources. At the CBD COP 9 governments provided a clear mandate and road map for the next two years to enable an international Access and Benefit Sharing (ABS) regime to be adopted at the UN Biodiversity Summit in Japan 2010. It is significant for Egypt to highlight what have been done already and what are the future plans in that respect. Therefore, exhibitions are essential to highlight and promote the projects that have been adopted by the NCS. Khaled Allam confirmed that the efforts that have been done so far are not communicated with external bodies and therefore are not sufficient.

- **Business:** Encourage business that support the sustainable use of the natural resources, such as tourism companies, big businesses to sponsor the IYB by displaying posters that promote this year and draw attention to the biodiversity of Egypt. Other instruments can serve the same purpose such as display special posters in museums and promoting certain species, they may model them and sell them in their shops, design post cards with some information about that species,

- **Small business:** Encouraging supermarkets to sell their products in a special bag that they can sell it for the public who can use it for all the time (a bag for life) an idea that is implemented within different districts such as Waitrose, in the UK.

Requirements:

Posters, Banners, Calendars, PowerPoint presentations, other illustration materials

Item	Type	Amount	Period	Total	NCS Comments
Celebrating at least 5 national events	Budget EEAA	LE 125,000	Annual	LE 125,000	
Transportation	-----------	LE 5,000	Annual	LE 5,000	
Printing awareness materials	---------	LE 20,000	Annual	LE 10,000	
Conferences	Budget,	1,000,000	Annual	1,000,000	
Total for activity 6				**LE 1, 150,000**	

4.7 **Establishing a national force team from the Protected Areas** to collect the data relevant to environment and protected areas in the school curricula. In Protected Areas close to local communities, data about their indigenous knowledge that is related to conservation is also essential to include it in the environmental education programmes and cope with the international concern in that respect. A period of one month will be given to the first task and a period of 6 months will be given to the second one.

Sum up of all the activities

Activities	Budget	NCS comments
Activity one	19.200	
Activity two	70.000	
Activity three	27.000	
Activity four	20.000	
Activity six	1.150.000	
Total	1.286.200	

5. Draft Manual for: Communication, Education and Public Awareness CEPA

This manual encompasses the educational definitions, principles, tools, and related materials that can make environmental education successful and effective. The manual needs to be communicated with the biodiversity team to provide the scientific data about critical species to focus the implementation of the manual.

6.1 Background and definitions

6.1.1 Environmental Education is about making the link between the quality of the environment and the quality of education; it brings learners into a direct contact with their environment.

EE is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among human, their culture and their biological surroundings. Environmental education also entails practice in decision making and self formulation of a code of behaviour about issues about environmental quality.

Principle 19 of the United Nations conference on human environment held in Stockholm, Sweden, in 1972 declared that "education in environmental matters for younger generations as well as adults... giving due consideration for the underprivileged is essential.

The UN Stockholm conference 1972 led to the formation of the UNEP which together with UNESCO founded the international environment education programme in 1975. The IEEP was launched at the EE conference in Belgrade by UNESCO and UNEP. A global framework for EE is known as the Belgrade charter

It has been recommended by the CBD/IUCN that the CEPA coordinators should correlate their messages to the interests of their audiences so the message can be linked to their daily lives.

It has been recommended by the CBD/IUCN that the CEPA message should move from the one path communication to critical communication that enable participation and a shared meaning among those with different perceptions and therefore, develop the possible solutions. CEPA coordinators and practitioners should recognise the significance of multi-disciplinary and multi-stakeholders processes. This involves science, community, decision makers, and environmentalists in dialogue.

Learning to make innovative change needs to take place at three levels:

1. At the individual level by developing new knowledge and skills through training, communities of practice, inter-disciplinary learning and exchange networks and distance learning;
2. At the organisational level to establish new priorities, new procedures, and new practices, to reposition their services and to be able to deal with the innovations to be implemented;
3. At the society level through new agendas, new partnerships, networks and new ways of interaction and participation.

6.1.2 CEPA definition

The IUCN Commission on Education and Communication expands the phrases associated with the CEPA acronym, to expose the range of tools and processes involved in bringing about change in people and society. Other factors were added to the term as a result of a PhD research that tackled the subject. The table below provides a spell out the elements of the concept of CEPA.

The Main Elements of CEPA

Acronym	The element	Description
C	Communication	Communication is about the exchange of information. It is based on establishing a dialogue between sectors and stakeholders to increase understanding of issues and to support collaborative planning and acting for the environment.
	Capacity development	Capacity development enhances the skills of individuals and social groups often through participatory training. It also develops the policies and procedures of organisations so that they can work more effectively for the environment.
	Criticality	Criticality the ability of people to reflect individually or collectively on their own practices to bring about social change.
E	Education	Education develops understanding, clarifies values, develops attitudes of concern for the environment and develops the motivation and skills to act for the environment.
	Empowerment	Empowerment develops the agency or competence to take responsibility for decision making.
P	Public Awareness	Public awareness is a first step in developing understanding and concern, to help people know of the issue, to make the issue part of the public discourse or put the issue on the agenda.
	Participation	Participation allows for different knowledge to be shared in the learning process that builds people's abilities and empowers them to take responsibility and action to bring about changes for the environment. "Participation" is used with a wide diversity of meanings. There is increasing empowerment with progress from informing stakeholders, to consultation, to consensus building, to devolved decision making, risk taking and partnerships.
	Partnerships	Partnerships are cooperative working relations between organisations that add value to each others' contributions in work on a project or task. Partners can contribute different skills, ideas, financial and technical support to each other.
A	Action	Action is required to make a change in the biodiversity condition awareness is not sufficient.
	Action learning	Action learning is a process designed to build capacity using reflection and assessment on the effectiveness of action taken. Other similar terms are action research, adaptive learning or adaptive management, and transformative learning.

6.2 The need for conservation education and outreach:

The need for improved education and outreach about the environment grows as conflicts over natural resources increase. The public affect the success or failure of environmental management efforts. Therefore, the conservation of natural resources depend in part on how well natural resources managers communicate with public groups and policy makers to raise concerns and support for natural resources conservation. Whereas, researchers could spend years designing plans and studying biological processes, they might fail to achieve the conservation goals as they cannot appropriately communicate with the target public knowledge and concerns. Wherever, the public is informed and involved, the conservation goals can be achieved.

Most people worldwide claim that they care about environmental protection, however, their concern about wildlife species is confined to attractive and emotionally species. Other endangered species are not seemed to be favoured for protection regardless their vital role in the ecosystem.

Various school curricula include environmental topics, but very few focus in conservation goals. Although there are some innovative attempts, teachers do not have the time or are not qualified to implement it.

6.2.1 Conservation education/ education for sustainable development objectives

Education for sustainable development emphasizes three goals: protect the environmental systems that sustain life, enhance social justice for all people and ensure appropriate development.

6.3 Objectives of Environmental Education

Awareness

Awareness generates a general understanding of the environment and enables people to know the effect of their behaviour on the local and global environment in both the short and long terms.

Knowledge

Acquiring knowledge helps people on the individual and collective levels to gain a range of experiences and a basic understanding of the knowledge and action competencies necessary for sustainable development.

Values

A sense of value helps all members of the society to attain feelings of concern for issues of sustainability and a set of values upon which they can make judgments about appropriate methods of acting as individuals as well as and with the wider community to promote sustainable development.

Participation

Participation provides individuals, groups and societies with opportunities, which allow them to act as active citizens and get involved in practicing skills of environmental citizenship. These skills enable them to be actively participating in every level that promotes sustainable development.

Skills

Gaining environmental skills is a big success in the process of EE. Skills equip people with the needed action competence of environmental citizenship. This enables people to identify and predict environmental problems; and most importantly cooperate with others to minimize, solve and prevent these problems to happen.

6.4 EE components

Education about the environment

It involves developing the sound base of knowledge, understanding and skills that people will need if they are to make sense of environmental issues.

Education in the environment

It also called firsthand experience, which plays an important role in learning. The experience can start in the school itself in its ground and immediate localities. The environment at firsthand and through secondary sources, also, provides stimulus for learning a wide range of skills – education through the environment.

Education for the environment

It involves developing informed concern about and encouraging sensitive use of, the environment now and in the future. The focus is on sustainable solutions to environmental problems, taking into account the fact that there are conflicting interests and different perspectives, and informing the choices that we all have to make.

6.5 EE Themes

Lifelong learning

The potential for learning about sustainability throughout one's life exists both within formal and informal educational settings.

Interdisciplinary approaches

Education for sustainability provides a unique theme to integrate content and issues across disciplines and curricula.

Systems thinking

Learning about sustainability offers an opportunity to develop and exercise integrated systems approaches.

Partnerships

Partnerships between educational institutions and the broader community are key to advancing education for sustainability.

Multicultural perspectives

Achieving sustainability depends on an understanding of diverse cultural perspectives and approaches to problem solving.

Practical applications

Practical applications for learning allow firsthand experience that give learners a sense of the place and its value.

Empowerment

Lifelong learning, interdisciplinary approaches, systems thinking, partnerships, multicultural perspectives and practical application for learning empower individuals and institutions to contribute to sustainability.

6.6 Guiding the design of an educational programme

Planning:

- What is the conservational problem or issue we want to address?
- What are our goals and objectives?
- What audiences or stakeholders are involved in the issues to be communicated?
- What are their backgrounds, needs, interests, and actions?
- For each audience what changes or actions are desired?
- How can audience members be involved in the planning process?
- What constraints and resources are there?
- What message must be sent?
- What channels and activities will most efficiently result in the desired changes in knowledge, attitudes, or behaviours?

Implementation:

- What modifications are indicated by pilot tests of activities and materials?
- Is scheduling, funding, and staffing adequate and efficient?

Evaluation:

- How will we know if the strategy worked?
- What are the outputs and outcomes of the programme?
- Have we assessed key indicators of success, such as changes in the environment or in audience knowledge levels, attitudes, or behaviours?

This all can be carried out through dialogue, negotiation, listening to others and respecting their perspectives,

The EE programmes should include effective participation of the target audiences. They should assess whether the audiences have gained understanding of the topics introduced. They should guarantee the targeted groups' concern and appreciation to the environment and whether they are properly equipped by the skills that prepare them to act effectively on the environmental and conservation problems. Most EE materials represent what the Brazelian Paulo Freirei (1972) called "banking education" where the teacher feed students with

information and deal with them as empty vehicles. Nevertheless, the "critical education" enables people to be expressive and prepare them for their future role.

In order to figure out what are the best methods to communicate the educational message, it is important to have a look at what exactly EE is? Is EE only about making the scientific information available to learners? EE is known as the methods and programmes that teach people about the environment in general and particularly teaches how the ecosystem works. Other elements were also added to the term in which EE aims to change people's attitudes about nature and change people's behaviour in dealing with natural resources.

Sustainability is an essential term that is connected closely to EE which I see no strong presence for in most reviewed materials of EE. The term sustainability was defined in the Brundtland report 1987- in which "Sustainability is the ability to meet the needs of the present generation without compromising the ability of the future generations to meet their needs". This definition is the most quoted definition and is widely used to enhance EE programs in order for the EE educators to not only teach about environment but to get people to become involved as active citizens to consider sustainable development in their lives. Therefore, EE programmes started to include other important dimensions as considering the social and economic aspects while designing their programmes. Cultural aspect is one of the essential aspects that could be addressed particularly in PAs close to local communities.

6.7 Target population for EE materials

It is important before embarking upon designing any EE materials to identify carefully the target groups to whom the EE materials are addressed. In fact children and young people are the most important target groups that all EE programs around the world give most of their attention and effort because it is strategically easier to change their attitudes in that early age than when they grow older. Children and young people were given great concern in various conferences from the Human Environment conference in Stockholm (1972) and Rio Summit (1992) where agenda 21 emphasized the right of youth to be involved in decision making on chapter 25 and the right in education on chapter 36. Children and young people were also given great attention on the World Summit in Johannesburg (2002) and consequently on the commitments of the Decade of Education for Sustainable Development DESD 2005-2014.

Community groups, indigenous populations and non-governmental organizations are also important targets and gain much attention of all national and international bodies concerned with environmental issues.

6.8 Objectives of EE NCS/PAs

Environmental educators should state clearly what the goal of the EE materials is and what outcomes the educational programs should bring. In the case of the NCS and the PAs the obvious outcomes required are to:

- Promote the significance of biodiversity conservation

- Attract people to learn and care about conservation issues

- Enhance people knowledge about biodiversity conservation

- Enable people to understand the value of the PAs

- Get people involved in conservation efforts

- Prepare children and young people to take active role in conserving biodiversity

- Prepare young people to take part in decision making concerning environmental issues

The next section will outline possible EE materials to be addressed to various target groups. These materials target children from various educational stages primary, preparatory and secondary education.
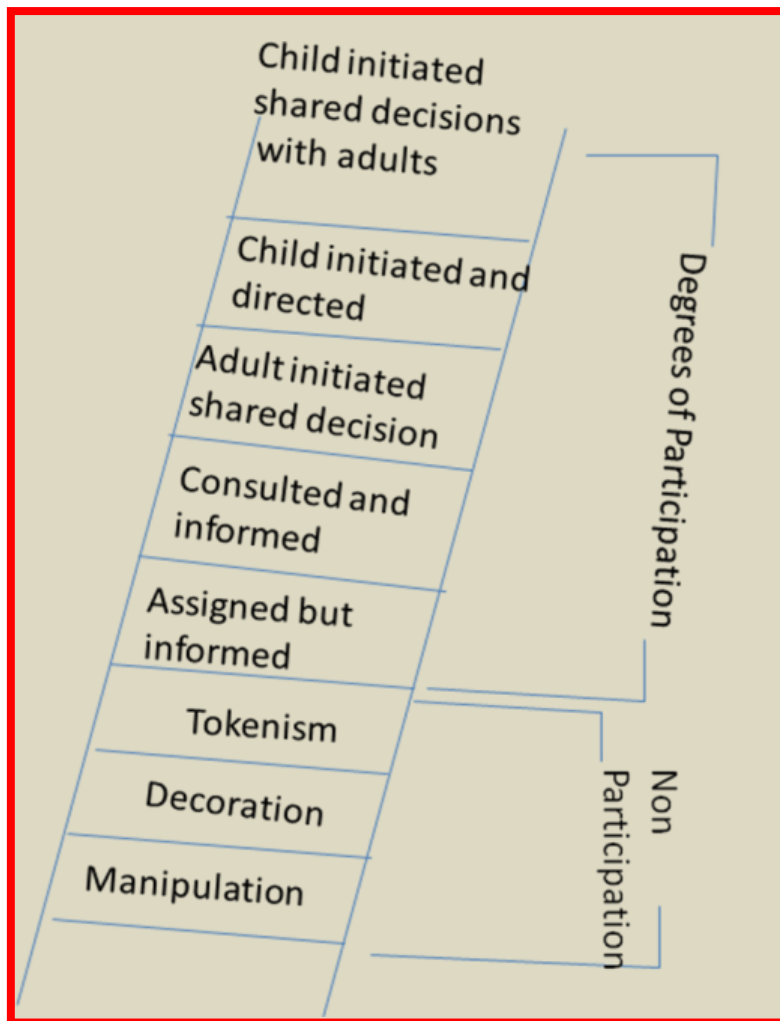
6. **Children from Primary Education**

7.1 Background:

The years of the early childhood and primary education is the most formative period in children lives in the rate of their physical growth, learning and development. It is an essential preparation for adult life so that children learn gradually to take their independent place in society.

However, while preparing children EE materials, educators should take into consideration that children are not just adults-in-waiting. They need to take full opportunity of their lives as children; the education addressed to them should focus on their current stage of being and the process of becoming. Gradually, children participate in environmental conservation as active citizens who understand and value the environment and contribute to its protection. Many environmental education programmes only manipulate children in issues which may not be understood. For instance, this happens when some environmental activists give children posters to carry in rallies and demonstrations, with little appreciation from children of the underlying principles and values.

Below a demonstration of the levels of children involvement in EE programmes through the metaphor of the ladder model. The Ladder Model is adopted from the planning theory and has been introduced to the educational setting by Hart (1992, 1997). The Ladder Model examines how children participate in the process of decision-making. The ladder, therefore, gradually moves through different levels from non-participation to different degrees of participation, and so moves from the non-empowerment of children to them taking part in activities designed and led by adults to full participation with -at the top of the ladder- children taking the initiative and sharing in decision-making.

Hart Model of Child Participation

7.2 EE programme for children age 6-8

The EE materials addressed to children of primary education possibly till the age of eight should be very simple and include more entertainment activities than raw lectures. It can be class based, schoolyard or short field trip visits preferably accompanied by members of their families.

7.2.1 Possible EE materials

Place of the program

The program can be implemented inside the school, the PAs, visitor centres, public libraries.

Objectives

The main objective of this program is to give pupils a glance of basic knowledge of wildlife conservation and initiate the ability of good understanding, appreciation and enjoyment of wildlife and its protection.

Implementation

The programme can be implemented twice a week, each day include taught and practical activities. The taught activity has to be very simple and include visual images than a lecture. The taught activity can also be undertaken through field visits (on field learning).

Activities:

The program includes four options

Day one: include either visual presentation or video show, and some practical art activities

Presentations: very short demonstration of important species either plants or animals, preferably one each. The lecture should not take more than 30 minutes and will involve slide show of colourful photos of these important species. The lecturer gives simple explanation about their features and habitat and where they live in Egypt and in which PA.

Video show: display video documentaries about Egypt's PAs and its natural resources that can be used to show children aspects of the country's biodiversity. However, it is preferred to prepare very simple videos for a child walking with a ranger to explore the PA. This will be more approachable to pupils' minds.

Practical activities: Simple drawings, colouring images, children can be given a photograph of one of the wild animals/plants they have seen in the presentation and another image represents the outline of the animal/plant without any details. The children can be asked to insert the details in the image using crayons.

Educators can give the children some "cut and paste papers" and ask them to create an image about the animal/plant.

They can also be given some materials such as clay, wire of soft material, cotton etc, and ask them to create tangible models.

Children can be given some mixed images of animals with some parts of their bodies missing or inserted in another animal's image. The children will be asked to correct the images by inserting the right parts in the right places. A demonstration is shown below about some animals of the Kingdom of Saudi Arabia which was done in a workshop with the female department of the National Commission Wildlife Conservation and Development NCWCD.
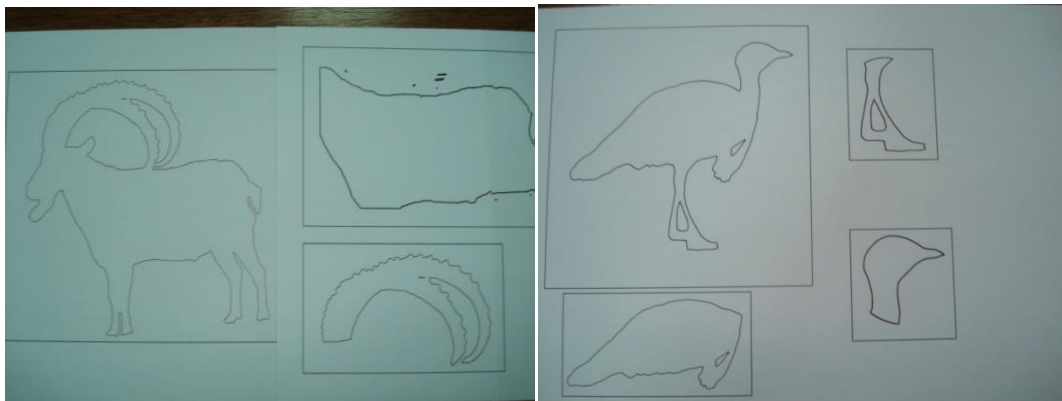
Educational Materials Produced by the Computer Specialists in Riyadh

One of the optional activities that make the environment subject appeal to children is by asking them to draw where they live and then indicate if there is any natural element in the drawing and how the drawing represents biodiversity if they draw different kind of natural resources.

Day two:

Field visit: It would be a good opportunity to get children exposed to aspects of nature through a one hour tour in the visitor centre, or to guide them in a visit to nearby area in the protected area. In the field children get the chance to have firsthand experience by being in

contact with natural area. They may be able to see aspect of the wildlife they learned about, such as animals, plants and formation of rocks. The exposure to nature will increasingly create high sensitivity towards natural resources conservation on young children. By the help of the educator children will make observations about e.g. the important sites, well know species in the area and develop a sense of other practices needed in the outdoor. Children should be encouraged to record their observations. They can also be given sheets with images of natural resources know for this area to record what they have seen by ticking each image.

Gathering: after each activity children may gather for another half an hour with their educators to talk together about what they have learnt, what they liked, what they did not like and what they want to see next.

Questionnaire: a simple questionnaire is distributed to children after the discussion to fill by the help of their educators. Educators read the questions and the child tick one of the faces in the questionnaire (from happy to sad face)

Questionnaire:

Did you enjoy the program?	🙂	🙂	☹️
Did you like the explanation?	🙂	🙂	☹️
Did you enjoy the video?	🙂	🙂	☹️
Did you enjoy the tour?	🙂	🙂	☹️
Do you want to join the program again?	🙂	🙂	☹️

Learning outcomes:

At the end of the program (evaluation every 3 months) children will:

- Be aware of some of the different wildlife species in the PAs
- Become motivated to learn more about them
- Get some basic knowledge about wildlife
- Start to appreciate and care about the environment
- Participate by not only listening to their teachers but also contribute by how they perceived the information given to them through conversation in the gathering sessions and by producing the above mentioned and other crafts.

Story telling method is also a successful way that is often used to educate children about the environment. The stories are imaginary stories about wildlife species living in the PAs. They are very useful in teaching children in an entertainment way about the features, behaviours and the habitats of the wild species.

7.3 Children from age 9- 12

There are various activities that could be done with this target group, activities varied between indoor and outdoor. In fact the outdoor activities are most recommended because out of classroom activities put students in direct contact with nature, outdoor learning enables students to understand thoroughly the value of natural resources and develop respect to nature through a firsthand practical experience. However, when in many cases there are difficulties that the outdoor education can take place due to lack of budgets or other reasons. Therefore, there are always alternatives that allow students/learners to have a sense of nature. It has been confirmed by many experiential bodies such as the National Curriculum Council in England that any place of learning should provide a valuable sources of experiential learning. One of these places is the school ground which has the advantage of easy and immediate accessibility. Active involvement in caring for school ground establishes a framework for attitudes and skills which can be built upon in secondary phase. A commitment of schools to

promote such positive attitude in their pupils will enhance general environmental awareness and lay foundation for the wider view of conservation.

The program outlined below can be very useful in promoting positive attitude of children in the age 9-12 towards biodiversity conservation.

Place of program

The program can be implemented inside the school, where possible in one of the PAs close to the students' school.

Objectives

The main objective of this program is to increase the knowledge of biodiversity conservation and start to promote PAs and their importance on biodiversity conservation. The program start to get children involved in problem solving for environmental issues.

Implementation

The program can be implemented twice a week,

Place of the program:
Class activities, outdoor activities
Day one
Presentation integrated with practical activities:
1. **The program will always start with a presentation:** The presentation explains about the PAs and a range of issues related to biodiversity conservation such as reasons of species extinction, why is that detrimental to ecosystems and to national economy and to the quality of life in the country in general. It is also important in this session to let children know about the NCS as the official body that protect wildlife, establish and run the PAs.

7.3.1 Practical applications:

Throughout the presentation different activities can take place to keep the lecturing to the minimum. The activities illustrate the ideas of the presentation on the web of live, sustainable use of natural resources and biodiversity under sections 7.4.1 and 7.4.3. These activities will clarify some of the problems facing nature conservation and explain the significance of establishing PAs. These activities can be used during the programme as sort of learning through fun which is a useful technique that is used in many countries all over the world either in developed or developing countries.

Presentation 2: the geographically closest PA to the students:

The presentation will introduce students to the closest PA to them on geographical basis by giving some general information about the PA. Consequently the presentation will focus on the important wild species in the PA.

Day two: field activities

The filed activities can also start with a session giving instructions on Wilderness Touring Ethics to introduce children on ethical environmental issues while walking in natural areas. The field activities can be implemented in the school ground or in one of the PAs close to the school:

School activities:

Option one: Teaching children how to take care of their school garden by planting some of the local plants that exist in the area. Children will be advised to avoid exotic plants that may impact negatively on the other local species. In St Katherine protectorate, children were taught about the negative effect of the camphor tree (*Eucalyptus*) on the seasonal shrubs that grow naturally in the environment. This tree absorbs the ground water and its big root system kills the roots of the other native plant species.

Children can join in a cleanup session after the planting within the school which has to involve their teachers/educators as well. Teacher/educator should lead by providing good examples to their students.

Option two: The field training may involve monitoring wild species, as there are always natural plants in the garden. Carrying out simple monitoring of the wild plants can be simply done by creating a quadrate of a certain size (one meter by one meter) and ask the participants to count the natural plants and make a list of them, also they may count any other evidence of other species that they might see. They can write their observation on what they see in terms of what these species mean to them and whether they can see any value of it at all. At the same time the educators can help them by the scientific information and what these species mean to ecosystem conservation.

The educator can bring samples of plants to show the students samples of other wild plants and discuss with the students the difference between the wild and the planted trees.

NCS/ PAs can organize a training program for educators to teach them how to set up their own mini-herbarium at school level, as a useful educational source.

Students can be assessed to take samples from water of wells within the PAs; they can use the PA's analysis equipment to measure the purity of the water. In case of evidence of water pollutions, students by the help of the educators can figure out the reasons for that and suggest solutions to keep the water clear.

Field trip activity:

Bird watching: applicable to most protected areas

In case of difficulty of implementing the activity during the school term; the field trip can take place on summer terms in cooperation with the summer centres, public libraries, or youth centres. The field trip will explore one of the PAs, it is significant to carry out a nature based activity to illustrate the ecosystem definition in practice, how the ecosystem operates and the linkages between living and non-living components of that ecosystem. Students can do various activities in this area with the help of the rangers.

Participants:

1 EE educator/and or a volunteer

2 Teachers

20 students

1:2 rangers

Timing of the trip:

The trip can start either early in the morning from 7 am to 12 am or in the afternoon from 3 pm to 7 pm depending on the season. This is to watch as many birds as possible.

Tools and materials needed:

Binoculars

Trash bags

GPS

Fact sheets about wildlife species

Notebooks and pencils

Starting the day:

The field visits should start with a session that extends to 20 minutes <u>on **health and safety issues in the field**</u>. Moreover, educators must be aware that the methods they apply in the class to control the students may not work in the field. Other methods such as special gestures and signs are recommended for many reasons, one of which is keeping the group quite and not disturbing wildlife, also for the safety issue where it is not possible for the trainer to go around talking to a student if they are on a hill for example. With a group of 20 students there should be at least three educators.

Health and safety issues include:

- Carry enough water at least a big bottle of water
- Walk very quietly and in single file to avoid stepping on the plants and disturbing animals.
- Do not walk on unknown routes or take short cuts.
- Make sure everyone wears flat shoes or comfortable sandals.
- Make sure in the visit everyone wears long sleeves and a shawl on the head to avoid sun heat or shocks.
- If we need to approach a plant while walking, we should throw some dust or a little stone to discover whether there are any snakes or scorpions that could harm us.
- There are some plants that participants should not touch, such as spiny and poisonous ones (to be identified by the professionals, according to the different areas).
- While walking participants should not talk loudly, in order to be able to hear the sound of birds.

Start the visit:

First Half an hour:

The field visit can start by talking to the ranger biologist. The ranger can explains about the work of the protected area in monitoring birds migratory/ local. Educators should encourage students to ask questions or make their own observations about the area.

An hour, Bird watching:

The group can move in a tour around the area for bird watching, the ranger could specify suitable areas for doing the activity. Here the educator should carry some fact sheets about the possible birds that might exist in the area. It is advisable to give each student a sheet that includes a number of 5 birds, (a photo of each bird, their local and common names, and some information about them). Students may watch the birds by using the binoculars they have and search for them in the fact sheets provided.

Each three students can share one fact sheet and one binocular. They sit in a position where they can see birds and cooperate together to record information about three different birds in their notebooks in which one at a time carry the binocular and tell the second student to

record the features of the bird s/he sees, the third students try to find this bird in the fact sheet and read all the information about it.

Group session:

All the groups gather in one area and exchange their information and count how many different birds they watched and learnt about.

Walk in the wilderness:

The field training may include walks in the wilderness so children would be able to practice what they have learnt through the instructions of wilderness touring ethics class training.

An hour walk: where students can do many activities such as observing the wild plants and trees and recording what they see as they are walking along. The observation can include:

- Colours and shapes of the plants,

- Whether there are flowers on the plants or not,

- Are there any nests on the trees,

- Have they seen animals or signs of animals close to the plants etc.

After 15 minutes the leader of the group may ask them to stop in one area that have a density of plants and trees and ask them to work in small groups of four, to carry out the quadrate activity of monitoring the plants and signs of animal species. This task may take 20 minutes and then all the groups sit together and discuss the observations of each group and compare it to the information they collected individually.

The students' observation will lead to obtaining a good knowledge about various wild species in the area and their habitat. The firsthand experience of the knowledge that students gain from their own efforts will be unforgettable and will encourage students to explore and learn more about nature.

The group can rest in a shaded area and have their lunch, then make sure to collect their trashes and the leader may encourage them to collect rubbish scattered around the area

especially around and inside the plants for another one hour. It is very important that adults should share actively in this activity to promote a sense of respect to nature.

Half an hour: Tracing animals' footprints is a very good activity that can be done with the help of a local member who can identify to the participants (the animal, which leg is the footprint belongs to<front or back>). Also the activity is useful in which it introduces the participants to the behaviour of the animal and which plant they eat, if there are footprints around a certain plant, and also the plants that do not have evidence of animals around it might be a poisonous plant or there might be other reasons to be identified by the professionals.

Half an Hour: Learning the correct way of cutting a plant and which parts to use is one of the good activities that can be done in the field to teach students the dangers of uprooting the natural plants/trees.

The GPS usage is useful in which if an animal was spotted, the leader of the group can spot where it was seen and write down all the relevant information given by the students. This gives the students a sense of involvement and contributing to wildlife monitoring where the information create a data base of scientific knowledge.

Wrapping up session:

At the end, the group gather and discuses what they have seen during the day. They can make connections between all living beings such as the link between animals and plants, water and birds and also human interaction with all of this.

Questionnaire:

The same questionnaire of the primary stage can be used but the trainer may include another part for the students to fill. This part includes:

- What other areas they want to learn about,

- What other methods can be used

- Any other comment they want to state to improve the program

Learning outcomes:

- Interacting directly with nature and appreciate the efforts of the NCS/ PAs,

- Respect and understand how the natural world works,

- Concept of ecosystem and biodiversity will be easier to absorb,

- Practicing scientific approaches of monitoring wild species,

- Enabling children to work as a team work,

- Enabling children to care about each other and about nature,

- Work as part of a wider community,

- Learning together and not competing against each other.

The educator can also make their own observation and assessment about the students by:

- How well they behave in trips or even in class,

- How well they engage in discussions,

- How they care about each others,

- How they are able to behave as members of a teamwork,

- How they sufficiently progress in learning about biodiversity.

7.4 Suggested other EE materials

EE materials can depend on the training approaches that the educator is using. Training approaches can include the following:

- **Class based practical implementation for the knowledge gained**

Below Some applications for activities that simplifies complicated concepts such as biodiversity, sustainable use of the natural resources and ecosystem.

7.4.1 Activity one:
All the world is a web:

Objective of the exercise: To demonstrate an understanding of how different parts of an ecosystem are interconnected.

Skills gained: Develops creative thinking, oral expression, role-playing, an understanding of cause and effect, cooperation.

Materials needed: Ball of long rope, (about 20 meters), sheets of paper.

The exercise:

Each child chooses the name of a species of wildlife in the area (plant, mammal, bird or insect). Each child writes the name of their ecosystem member and draws it on a piece of paper and then tapes it onto the front of their shirts. Having these signs on the children shirts help children to remember the identity of each other as wild species during the activity. Educator asks children to stand in a circle to represent an ecosystem. Each child represents a part of the ecosystem. Then educator asks them to look around the circle and think how all living things are connected.

The game starts by asking one child who represents a living being to hold onto the rope and pass it to another child, who in turn represents another living creature s/he can live on. However, if the children fail to make the connection, then the teacher can possibly help the rest of the group to make the web of life according to the ecological connections. For example, a plant (depending on the species of the plant) could be connected to the dabb lizard because it provides food for the dabb and the dabb can be connected to the fox because foxes eat dabb, and so forth.

After instructing the children to make a star-shaped web, the educator explains that harming any part of the web can hurt the entire web. The educator then asks children to imagine what would happen if, for example, the plants were cut or removed from the web? The 'plant student' would then shake or tug on the rope, the educator can ask the rest of the group if they could feel changes through the rope.

After the children are given the chance to play for a while, the educator stops the game and discusses how they are connected and which members have the most connections to others and why might this be the case.

The educator completes the exercise by asking children whether they think humans are part of the ecosystem. The educator asks them to express their agreement or disagreement with the statement starts with 'humans are', including examples to support their view. The educator can encourage the Children to write some comments on the back of their signs. Examples of these comments from other EE programs that have undertaken in St Katherine protectorate included: "all animals and humans are connected and influence one another", "some animals eat plants and some eat other animals" and "I never knew the connection between the butterfly and the plants".

7.4.2 Activity two:

Mapping the area:

This exercise can be done during or after a field visit to one of the PAs.

Materials needed: sheet of papers, pencils,

Participants: small group of students (four each)

The exercise: the educator divides the children into groups each consisting of four or five children. The educator encourages the children to name their groups after the surrounding natural areas or give it a name of any wild species they know. The educator asks each group to work together and to form a map for their area. Each group is given a list that included the following questions to help them form the map:

1. How is the land shaped in your area? High/low points
2. Where are the places that are prone to floods?
3. Where does your drinking water come from?
4. Where does your wastewater go?
5. Where do different kinds of wild plants live?
6. Where do different kinds of wild animals live?
7. Where have humans built things? (Buildings, roads, etc.)
8. Where does your food grow?
9. Are there domestic animals in your area?
10. Are there any forms of traditional life in your area? (Clothes, tools, products, etc.)

Objective of the exercise: To identify components of local natural systems and how human systems impact the environment.

Skills gained: Formulating questions, interviewing, observing, researching, organizing information, comparing and contrasting, citizenship skills, mapping.

Materials needed: One large piece of paper for each group, pencils and notebooks.

The activity: the educator asks children to create a map of their area using the list of questions to guide them. For example, to draw how the land is shaped, they could include the major mountains or valleys. The educator encourages children to write information or draw pictures or symbols. The educator tells the children that the map does not have to be beautiful or even precise, just their best interpretation of where they live. The educator gives the children 20 minutes to complete their maps. After they finish, the educator asks them to share their maps with the other groups and compare them.

At the end of the session, the educator asks the children to discuss with their parents how the area may have changed during their lifetime as one of the activities to be undertaken the following day.

In the next day the educator asks the children whether they had discussed with their parents about the changes that may have occurred in this area.

After the discussions the educator divides the children into the same groups as before and the children start to draw another map on how the area may have looked in the past, depending on the information they had gathered from their families.

The educator then asks the children to compare the two drawings and find out the changes that happened over the time. They can also try to figure out whether these changes have caused environmental problems.

The last activity is to discuss with the educator what are the problems and how in the children view they can be resolved.

7.4.3 Activity three the sustainable use of the natural resources

Materials needed: big box of sweets, chalkboard, and sheets of papers

Participants: At least three groups of four students in each group

The educator divides children into four groups and names each group according to their surrounding mountains. Each group represents four different generations using natural resources. In this activity, the educator may use a box of sweets that represents the natural resources and each generation represents itself by one child from each group. So each group includes four children and three children helps in following up the process of the game by

either counting or recording the number of sweets the other children use. Then, the educator asks each child to take some sweets with only two fingers for 10 seconds and after each round, the group counts the sweets s/he managed to take and also count the remaining sweets. Sweets that fell down from the child shall be counted as waste.

Each of the four groups undertakes the same activity on three occasions' and on the fourth occasion, the educator adds more steps to the game. These included outsider factors such as drought (decreases the number of the sweets from a box to two handfuls), rain (increases the number of the sweets – one handful) and diseases (decrease the number of the sweets – half handful). On the last round the children should be able to realize how to take the sweets wisely. Then the educator shall discuss what happens at each step and how to apply this to the place where children live. Also, a short discourse about the laws for protecting the environment could be presented. This activity is valuable exercise that explains the sustainable use for the natural resources.

7.4.4 Activity four: Biodiversity

Objective: define biodiversity and create a word web that illustrates some of the complex connections in the web of life. Discuss at least one way biodiversity affects people's lives

Skills: organizing, analyzing (identifying components and relationships among components), interpreting, relating

Ages: 11+ suitable for adults

Time: one session, an hour

Materials: chalkboard, pencils, container for key words, and web words in separate pieces of paper.

Background

Biodiversity is the variety of life forms around us; it is also everything that living things do, the grand total of interactions of living things among themselves and with the environment. These interactions can be as simple as a moth's dependence on one species of plant for food and the plant's dependence on the moth for pollination. At another level, the moth and the plant also depend on all of the elements that make up their ecosystem from clean water to the right climate. At still another level, this ecosystem interacts with other ecosystems to form a huge, global system of interacting parts.

The activity tells the trainer how the participants are thinking about biodiversity before starting the session.

The facilitator prepares two containers, each one have some words written in small pieces of papers. The first container contained the key words that the participants chose to be the key word that is used to form the web. The second container contained more words that participants used as the web words. Participants were encouraged to use other phrases and verbs to help make the connection; phrases such as leads to, causes, is the reason for were useful phrases to use.

One of the groups chose the word "Humans" and the other group chose the word "Earth" as their key words.

Each group then chose another set of words randomly as web words to for form the web. They used words such as animals, plants, energy, natural habitat, future generations, rivers, seas, etc., the images below were the result of the first exercise done with the female department of the NCWCD.
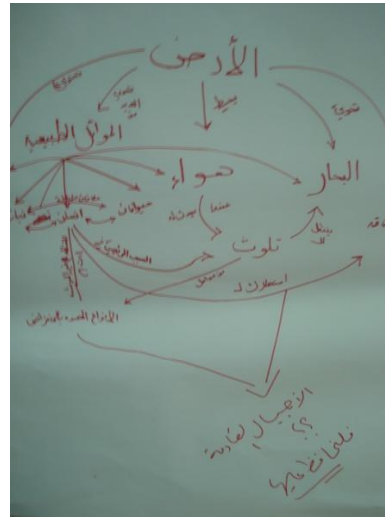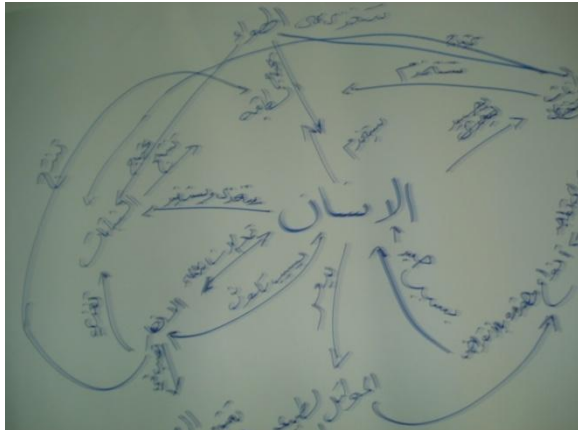
Results of the first exercise done by EE Trainers in Riyadh

Each group then chose a representative to explain the web they created. The two groups then looked at the similarities between the two webs.

The facilitator then asked them to work as one group to form a new web but this time using the word biodiversity and also use the web words provided earlier. The following image was the result of the exercise done with the NCWCD.
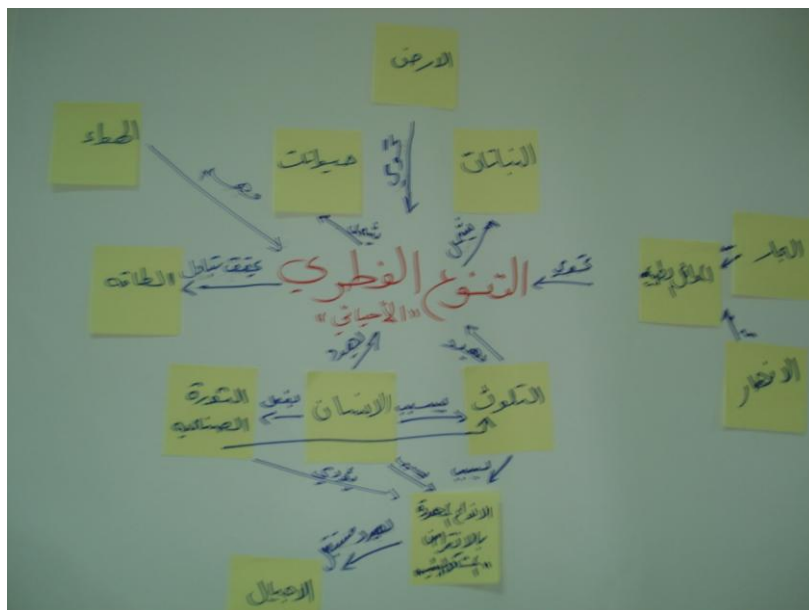
Result of the Second Exercise by the female trainers in Riyadh

7.5 Preparatory and Secondary school

In this stage of life young people need to feel valued and safe to express their views and share their perspectives. They need to feel that the change could possibly happen within their schools, local areas, nations and the broader context to which they contribute. Therefore, young people should be heard and their opinion should be taken seriously in issues that involve them. Young people's concern about the physical environment is important since it may raise significant issues that adults never thought about.

Interactive presentation:

Introduction about the NCS and their efforts on conservation

Presentation about the closest PA to the school/local area (45 minutes to one hour)

This presentation starts with asking students about whether or not they know the nearest PA to them. Students are divided into small groups to find out among themselves (the name of the PA, when and why it was established, what are the important aspects of this PA).

After 5 minutes the groups share their responses, if they do not get it right, the educator starts to present the correct information. If they get it correct the educators repeats the information again in more details and support it by maps and images of the general features of the PAs.

Before the educator moves to the other set of slides in the presentation s/he asks the students about the important species in the PA if they already get the first question correct. If not the educator may start to present the images of the wild species and ask the students if they recognise them at all, how did they know about them or where did they see them.

The educator should then choose the important species in this PA and start to set another discussion between the students in small groups to discuss in detail:

- How do they see these species, are they important at all,

- Why or why not they are important,

- How do they benefit humans,

- How do they sustain the ecosystem balance

Students may be given 10 minutes to this discussion and then each group share with the whole class their discussion. As the group is discussing, the educator starts to collect their opinion together and write it down in the board. Then the educator compares the responses concluded from the discussions to the information s/he already has in the presentation.

The next slides discuss the problems facing the PA and its solutions. This can follow the same method of the previous slides in which students will be asked to think about one or more problem facing the PA, think why it is happening and if they can suggest any solutions to these problems. The educator then starts to compare the presentation with the responses s/he gets from the students.

Activities after the presentation

Activity one: a problem facing the environment and the community

Give the students a problem that is facing biodiversity conservation in different areas. The educator can give the students a statement such as "Farmers in certain areas are removing the hedge rows of their gardens"

1. educator ask the students to think in small groups in one minute why farmers remove hedge rows

2. Discuss the responses with the whole class

3. Ask the students to work in small groups and think as if they are farmers and write down why they want to remove the hedge row

4. Discuss the reasons with the whole group

5. Ask the students to think as conservationists what do they think about hedge removal and their impact on the environment

6. Discuss the reason claimed by the conservationists

7. Student will be given boxes that include information about either the farmers or the conservationists' views

8. The last task is to bring the two perspectives together and try to find a solution to the problem that accommodate the two opinions or write the appropriate recommendations to the NCS/PAs.

The same idea can be applied to hunting wild animals in or close to the PAs. Another option of a problem can be overgrazing. Other wider problems can also be discussed on the same base such as climate change. However, climate change as a difficult topic maybe needs to be discussed from a different angel before applying this exercise.

7.5.1 Climate change lesson

Climate change is one of the central topics that receive global concern. Climate change has great impact on wildlife; therefore, it must be given a considerable attention on EE materials. The trainer/ educator needs to find a starting point for teaching such complicated topic. S/he needs to break down the topic and make it more relevant and accessible to students, break it down to things that students can relate to as the trainer make it more digestible. The lesson tackles: how humans are influenced by green house effect?

Materials needed

Notebooks, pencils, calculators,

Method used: an interactive discussion of causes of global warming; this leads students to think on what things that they can do to reduce global warming.

The lesson

The educator can start by writing some questions to start the discussion with:

What is a carbon footprint?

How our lifestyles do influence our carbon footprints?

How can we alert our lives to decrease our carbon footprints?

The trainer tries to avoid teaching students pure science lesson while presetting such topic. Pure science whether students understand it or not, often results in some misconception around the topic discussed. Accordingly, the educator must move away from the conventional teaching in classrooms to letting students feel that they are dealt with as active citizens who contribute to finding solutions to environmental problems.

The educator can lead a discussion with the students on where the carbon emissions comes from and who is the most likely to bring the worst effect of climate change.

There are many ideas that can help simplifying the discussions here such as comparing developed countries with the developing ones.

The educator can ask the students what will happen if the temperature raises continue as they have been in the last few decades.

Students may come with ideas such as ice cap milting, sea level raises. Then the educator can make it more personal to the students by asking them what climate change is going to do with them as individuals. How much global warming we are responsible for? What kind of things we do causes climate change.

Students can use the calculator to calculate carbon production in their everyday life, so they can calculate the amount of gas they use, water, food, electricity, and so forth. They can multiply this by the number of people living in one house.

They can apply this to the country multiplied by the population size, then to the region by comparing a number of countries and then to the whole world, in which they can reach themselves to how this whole process works.

The exercise will create a sense of responsibility on the students, where as individuals they can be involved and do things to reduce carbon emissions.

The educator can then introduce the global concerns that attempt to tackle the problem such as the Kyoto protocol. Also issues of sustainable development help mitigate the problem, the educator can bring examples of sustainable development ideas and projects that are spreading around the world, and s/he can also extract ideas from the students' discussion.

The students may start to think themselves of what kind of things they can do to reduce the problem.

Learning outcomes

- Understand what climate change is
- Allow students to understand the global processes behind the impact which often locally felt.
- Bring in the whole economic, social and ecological systems within the local effect
- Introduce the international protocols that deal with the environmental problems
- Understand concepts such as sustainable development
- Strengthening the voice of the young generation by empowering them to contribute to such problems

7.5.2 Activity two: Sample of EE activities that enable students' learning about the aesthetic value of a place.

The educator can give the students different sets of images of buildings. They will be required to put each set of pictures together and think what they are and what they like and what they do not like about the pictures and they may also guess what these building might be.

Discussion with the educator on how these buildings can affect the landscape

The students can apply the same idea to their own school and state what they can do about it to give it the aesthetic value they wish to see.

Students will be given sets of pictures of natural areas and try to put them in pairs as they think they may fit together.

Students compare the natural and the human made images and may state how they feel about them.

Students will be asked to think about the natural areas again and to see whether there is any human impact of them

One of the set of pictures might be about the PAs they learnt about, the educator will examine if they were able to recognize them and put them in correct pairs.

7.5.3 Demonstration of the habitat loss caused by human impact

The activity can be implemented with students of preparatory and secondary schools and also is relevant to adults. Such activity can go alongside the lectures, particularly the lecture on ecosystem and environmental problems.

Materials

Green and blue hard sheets, chairs, tables, five large bed sheets or blankets for a group of 25 participants.

The activity

Trainers give background information about some of the endangered species which face habitat loss through the lecture on biodiversity. Then they can apply this exercise that illustrates the idea of habitat loss through entertainment and to break the lecture routine. The process of the activity requires the trainer to:

1. The trainer discusses with the participants the elements necessary for a habitat (food, water, shelter and enough space). The trainer then tell the participants that they will represent wild animals in their habitat and observe what is happing when an investor disturb these animals in their natural habitat.

2. The trainer divides the participants into four groups: herbivores, carnivores, vegetation such as trees and shrubs and people who will act as investors. The trainer should plan for three times as many herbivores as carnivores with a small number of investors in comparison to the other two groups. The number of participants acting as vegetation may vary. For example, the groups can be divided into 2 investors, 3 carnivores, 9 herbivores, and 6 trees or shrubs.

3. The trainer may set up an open area either in the meeting room, another large room, or in any other open area that can copy a large track of natural area before any development. Investors should stay on one corner of the room and they should discuss the possibility of developing this land into a shopping area with a major highway.

4. The trainer may provide each herbivores with 2 chairs to use as a shelter, 3 pieces of green hard sheets to symbolize food, 1 piece of blue hard sheet to represent water, and some vegetation (as represented by other students). The trainer also provide each carnivores with

one chair to use as their home, space equivalent to that used by 3 herbivores, 3 herbivores as a potential food source, 1 piece of blue hard sheet to represent water, and some trees and shrubs represented by participants.

5. The trainer asks the herbivores to arrange their food, water and shelter, including the students who are "vegetation," in order to symbolize their habitat. Then, s/he needs to ask the carnivores to move into the area to set up their habitat and look for possible food sources (herbivores). Participants should then start to act the animals' roles. All these arrangement procedures including investors planning may take around 10 minutes.

6. When all actors are settled in their habitats, then the trainer asks the investors to appear in the picture. The investors may use about five minutes to build their development project and they should explain what they are doing while acting. The trainer should restrict these investors to an area of the same size of a space of three herbivores. S/he may ask them to use sheets or blankets to construct their project. Some of the acts the investors may do are trees removal (without hurting any students who are acting as trees), shelters (portrayed by chairs) food and water represented by hard sheets.

7. When investors are done with the project, the trainer should start to discuss with the group what happened, what are the consequences, what happened to the animals and how this happened. S/he may ask questions like how could the investors have done the project differently or used different areas to reduce the negative impact for wildlife and what kind of area they should have used. The trainer may ask the participants to discuss what was realistic about the activity and was not.

8. The trainer then asks the participants to sum up some of the possible impacts on wildlife from development project, have they noticed similar impact on their areas. Are there any development projects they know that have improved wildlife habitat. What are the choices for development projects, what are the positive action people should take to minimize the impact on wildlife and other factors of the environment?

Learning Outcomes:

- Participants learn about the impact of development on land and natural habitat of animals.

- Participants learn that loss of habitat is a critical problem facing wildlife.

There are some other activities that are useful to apply for all target groups including adults. The trainer can show the learners an image such as the one below and asks them to state what is wrong with this photo. The group then start to respond either as individuals or in small groups to find out the incorrect acts in the image and try to suggest better ways of behaving responsibly. The image below and other images are used in websites such as www.teachingtrees.org.uk/, www.epa.gov.

Find Incorrect Behaviours in the Photo

The educators may create other images that are connected to natural resources and apply the same method.

7.6 Other important EE materials

- Fact sheets about different natural resources to be used especially in the field trips.

- Brochures about each PA of the 27 declared PAs distributed in the country.

- Posters that include the important wildlife species and those in critical conditions.

- Posters and tangible materials that are produced by the trainees themselves to ensure the visibility of the work they are doing and to allow trainees to feel the consequences of their gained knowledge and inspire them to care about the environment.

- Prepare booklets about wild species

- Organize contests and environmental competitions as one way of evaluating the awareness of the trainees and to motivate them to learn more.

- Organize exhibitions in collaborations with schools to display the environmental products that the children produce during the EE programs.

- Organize events that include participants from various entities where they can take part in the event not only as trainees but also as active participants.

8 Plan for EE campaigns

8.1 Introduction

The idea of EE campaigns is implemented all over the world. An example of the EE campaign is the camp fire initiative in the USA. The camp fire was initiated in the year 1910 and the founder of this campaign Luther Gulick adopted its name as it originated from the first communities and domestic lives. As once people were able to make and control fire they could develop and foster a sense of community. A similar idea has been adopted in St Katherine protectorate where camp fire represents an essential part of the Bedouin lifestyle in Sinai. Therefore, a summer campaign is implemented every year with children of age 9-12 year old to enhance their understanding about wild life conservation. Every year the

campaign is adopting a major theme that could be the theme of a global environmental event such as environment day or to tackle a problem facing the natural resources in the PAs.

The EE campaign may follow a multidisciplinary approach in which educators/trainers from different backgrounds can participate. The EE campaign can take place in the natural environment; however, some indoor activities may have effect as well.

The campaign will be developed across generations. The rationale behind an intergenerational program is to promote a learning process that involve different generations working together to solve an environmental problem through combining the imagination of a child with the wisdom of an adult.

8.1.1 Campaign 1: The campaign deals with the problem of global warming.

The outline campaign below is led by students of secondary school

The event: environment day (on the 5th of June every year)

The theme of the year 2009 is "Your Planet Needs You - Unite to Combat Climate Change".
The theme of global warming and climate change is a continuing theme for the international environment day since 2007. Hence, it needs some emphasis on the EE materials.

Duration of the campaign: one week

Participants: the campaign will involve the following participants:

Students

Educators

Members of students' families where possible

The campaign is built on the climate change lesson outlined above for the secondary school educational materials. In this campaign by the help of the educator the students are going to lead the campaign to convey their understanding of the problem of global warming to the public represented by their families and members of the different agencies linked to them and to their school.

The first day: Students will write invitation letters to above mentioned target groups in the case of the campaign participants. The invitations can be sent by emails through the school official email to reduce the amount of papers printed for the letters, they can also use recycled papers to write letters to families. They can send group invitation to people who live in the same building or belong to the same family. The letters should be endorsed by the school principal.

Throughout the week students can read and search for materials that guide them to lead the event successfully and answer all questions that might be raised by the participants. Students will also prepare models of ice such as famous buildings in the area or some of wild animals and leave them in the fridge of the school.

The event: in the day of the event, the day will start by the students displaying the ice images in a prominent place in the school where all participants can see them. The ice images are demonstrations of global warming effect, which is milting the ice caps. It is a demonstration to prove that the climate change is happening.

The event starts by a representative student giving a short speech about the event and why they invited everyone to participate in this event.

Another student explains to the participants the agenda for the day and what they are expecting everyone to do. And also give a short presentation about the ice models.

Consequently, the student representative by the help of the facilitating educator starts to divide the participants into small groups and make sure that each group represents a variety of participants.

In each group there will be a student facilitator who guides the participants to what they need to discuss. The group will be asked to discuss the same presentation outlined in the climate change lesson under (section 7.5.1).

Every 15 minutes the whole group discusses their result as one big group and the student facilitator write them down.

After finishing the exercise, the participants will be able to understand what is global warming and what impacts they as individual do, their countries and how the whole world is contributing to global warming by some figures and facts developed throughout the

discussions. All participants from representative of students' families to the Ministry level discuss what kind of actions they want the participants –each in their area of concern- take to reduce the problem.

The event ends by some recommendations to the school manager, parents, and the educational authorities.

Learning outcomes

The significant of this campaign is:

It involves participants from a wide range of age and background.

The campaign allows intergenerational interaction and exchange of experiences.

It empowers students and adults to think together about problems affecting their everyday life.

Give students the opportunity to access knowledge and share it with adults particularly their own families who they may not have the opportunities to talk to them in such issues in the family environment.

Encourage the ritual of reading among students which increases their knowledge in different issues

People are involved and taking action at the local level which should affect the global level if done systematically on a larger scale

Prepare young people to act as active citizens and prepare them for the future role as decision makers

8.1.2 EE campaign for children age 9-12

The event

Environmental summer campaign

The idea of environmental summer campaign was implemented successfully in the St Katherine Protectorate over the last ten years. The campaigns targeted children both boys and girls from a very conservative Bedouin community.

The theme: Enhancing children and adults knowledge about biodiversity conservation

Duration: Four days

Place: PA, visitor centre, School

Participants: educators, 15- 20 students, a local expert, professional interpreters from the VC, members of the family

The campaign

In many cases families and parents are reluctant to send their children in field trips or environmental campaign especially in these campaigns that requires that children spend an overnight there or they spend long time in places that are not familiar to them. It is always a good idea in the summer activities to link children to their families and enable them to have a firsthand experience with the natural world. These kinds of campaigns bring new experience and add to the knowledge of adults and stimulate their enthusiasm to allow their children to join in such activities in the future.

Educators and EE trainers may meet with adult participants to discuss with them the purpose of the campaign. They also discuss the activities they want to undertake and find out if they suit the fitness of their children especially if the activities involve long walk or working under the sun.

Another session with the children and the rest of the group to communicate with them what campaign will involve and ask them if there are things that they want to add to the program.

Day one:

Introduction at the summer activity centre and a visit to the PA's visitor centre

The introduction may include the health and safety instructions and also a discussion of the wilderness touring ethics, parents and children themselves may share their opinions on that matter for half an hour.

The group then head to the PA's visitor centre for a tour and listen to the professional interpreter for a maximum of an hour.

The group then gathers in the meeting room at the visitor's centre for a 'question and answer' session addressed by the children and can be assessed by their guardians.

The children spend the rest of the time to write down their notes about the visitor centre through filling out the following questionnaire with their parents:

What are the different environments did you learn about today?

What PA did you know today?

Did you hear about this PA before?

What animals exist in this PA?

What other animals did you see in the visitor centre?

Where do they live? Desert   mountain   marine

Did you see samples of any plants in the visitor centre?

Are there any connections between plants and animals, animals and other animals in the visitor centre?

Did you like the way the visitor centre is organized? Why? Why not?

Day two:

The whole group gathers in the summer centre or other gathering, revise the health and safety instructions and then head to the PA where they take a tour with a ranger.

Photograph session, where children walk around the area and take photographs of the different natural resources they see. They should be instructed to take the same photos in different positions, close and distant photographs.

Day three:

The group gathers in the summer centre, students present their photographs by the help of their family members; they may discuss the natural images they took in their photographs, did they like these species and why they did not take photographs to other species.

Students will be asked to put their photographs in pairs where there should be a connection between the two species (an animal living on a plant) or (animals eating other animals).

Start activity session

Activity one is the activity of web of the world described in detail in (section 7.4.1).

Activity two: an intergenerational activity where children are given some questions about their own area where they live and ask them to answer these questions by developing a drawing that represents their areas as they see it in the current time.

Children then start to communicate the drawings with their parents and ask them the same questions. Children are encouraged to write down their families responses (the questions are listed in activity two (7.4.2).

Children then start to communicate what their parents said about where they live when they were in their children's age. Children with the help of their family members start to draw another drawing and name it the past drawing (One hour session).

Children with their parents start to think about the environmental problems that have currently occurred and start to produce another drawing about how they want the future to look like.

Day Four:

Children and their parents start to develop some products about the places and the wildlife species they have seen.

The products can be designing post cards representing the different species they saw supported by a comment from the students and their family members.

They may decide to develop the future drawing to a model which includes human behaving responsibly with nature.

Use cut and paste papers or, other materials to develop art craft represent the wild species they learn about.

One of the useful ideas that engage the students more with identifying the feature of the wild animals is the following activity:

Task: drawing

Time: 20 minutes

Materials needed: a coloured image of different wild animals, sheets of papers, pencils,

Participants: working in pairs

The activity:

The activity either involves every two children or a child and an adult working together.

One of the two participants will hold a photo of a wild animal, the other one will hold a sheet of paper and a pencil.

The two participants will be asked to sit in a back to back position and the participant holding the paper and pencil does not know the content of the picture that the other one holds.

The first participant will give the other one description of the image s/he is holding, and her partner start to draw it.

The describer is not allowed to tell his/her colleague that the image is an animal, s/he can give a geometric description as s/he says draw a circle on the top of the page to describe the head of the animal or s/he says draw a triangle in the middle of the page to describe the body of the animals. S/he can also borrow other elements to describe the rest of the body as saying draw two sword in the top of the circle to describe the horns and s/he can direct him/her to where exactly to put them and so forth until s/he complete the drawing or at least have an idea what the image might be and then continue drawing and colour it together.

At the end children fill in the questionnaires as outlined in previous activities above

8.1.3 Environmental campaign addressed to adults female community

An African environmental activist named Wangari Maathai is leading and encouraging her female community to plant trees as a way of mitigating global warming. Wangari Maathai through the green belt movement stated that planting a tree does not require lots of money or technology but it only requires the mobilization of citizen to plant trees and nurture them.

A planting campaign maybe initiated for women particularly those living in rural areas to start from their private properties and learn how to plant trees. The women international day can be a good occasion to start such campaign.

The PAs staff can lead a campaign to help community members to learn best practice in planting trees. Learn what kind of native trees they are encouraged to plant and what other trees they should avoid and why. They can also collaborate with other agency such as the Ministry of Agriculture to teach women the techniques of planting and provide them with seeds or seedlings.

The campaign should be advertised widely on media (newspapers, TV, and women magazine). The website of the NCS can be one of the advertisement sites for the campaign. The campaign should be advertised also within the non-profit organizations, educational sector and all women groups in different areas in Egypt. The campaign may start in one suitable area and when successful, the successful stories can be communicated on media as well and then the EEAA/NCS or relevant NGOs advertise it again to be mobilized in other parts of the country through the help of volunteers. The campaign will not be confined to women but can be extended to include children as well through assisting their mothers and family members. Children with their educator can also organize planting weeks in or around their schools, or in natural areas near their schools.

8.1.4 A recycling campaign

Raise awareness about recycling and reuse ideas among community groups. The NCS/PAs can also cooperate with other agencies such as the non-profitable organizations and universities to lead some of the environmental events that involve the female community. These events can include organizing an exchange event that involves clothes, accessories, books, decoration items, as sometimes women buy items but discover after short time that they do not need them or these items do not fit well in their houses. I was involved myself in contributing to a similar event with London School of Economic LSE in the University of London. The exchange event is a useful idea that the LSE called it zero waste campaign.

In this event the campaign may start with a general lecture on environmental issues; the educator then may invite the participants to one hour session to present their unwanted item and have a look at the other items that might be useful to them.

Three of the University students display posters that show how they manage to implement successful environmental ideas in their colleges; participants discuss the posters' with the students and may advise them of other ideas.

The second day, carry on with another lecture, then the same program of displaying old stuff continue. The participants will be advised to only label the items they want and not collect it until the end of the workshop.

A discussion group of recycling system that is already implemented in the University, if not the session may discuss the possibility of running such system. The facilitator may bring examples that are implemented elsewhere; the University of London is a good example for recycling practices.
(See http://www.lse.ac.uk/collections/reprographics/Recycling1.pdf)

In the Egyptian context, where halls of residents for male/females exist, a parallel session to the previous one may discuss running a system of waste management at the halls of residents.

The poster session continue to display and present the successful stories of University students.

The last day carry on the same program but replace the University recycling by community recycling and find out if there are any successful stories in that respect, otherwise the facilitator can also bring a story from elsewhere that can be successfully implemented in the country.

At the end of the last day, participants collect their new items, and it is always useful to fill in satisfactory questionnaire about the event.

All the EE activities and EE campaigns above represent useful educational materials that not only teach people about the environment but also allow them to be involved and take active role in caring and conserving the environment. The educational materials listed above if analyzed against the Hart Model of Ladder introduced earlier on in this section, will demonstrate great deal of participation. In the early stage of children life children are placed on between the tokenism and assigned but informed steps of the ladder. This means that children are not just recipients but also active on a level that suits their age and their capacity as young children. On the latter stages children move from being consulted on environmental issues, doing many activities that are led by their educators but actively participating on them.

9 Presentations

9.1 Animals:

The EE trainers need to make sure that the audience understand the presentation, remember all the information given on it and find value on learning about the concerned animal species. The presentation should also be promising in influencing and changing the children's behaviours/attitudes towards wildlife. This may happen by undertaking other practical activities and exercises that complement the presentation to attract students' attention. The presentation is better performed if it is an interactive one. The following points are recommended to improve the traditional type of presentation and lead to better results.

1. Prepare a separate presentation about each animals that explains:
   - details about the animal's features (colours of different parts of the body, size, breading, specific identification such as identifying the age from the animal's horn, life expectancy for each animal, number in the wild, conservation status …etc,)
   - the role of the animal in the ecosystem in which they live
   - The source of food (plants, other animals)

- The animal's habitat
- The PA in which the animal lives
- The size of the animal in the PA

2. The presentation needs to be more interactive where the trainer allows the audience to share their knowledge about the presented wildlife forms throughout the presentation. Therefore, the trainer may start the presentation by throwing questions about the concerned animal. S/he can ask them if they have ever heard about the species, from whom, do they know any story about that species? … etc.

3. After the presentation depending on the age of the learners, some practical activities may take place, such as:
   - Drawings for the young age as it is presented in the presentation, the drawing may include either the species or its habitat and the students can complete it and colour it.
   - Games that explain the significance of the animal in the ecosystem (attached),
   - Developing a model for the animal species using the real colours of the animal in nature,
   - Asking students to imagine themselves as one of these species. Each two students may play the role of one species, in which one of them represents a species in a healthy environment and the other represents another one in a degraded environment. Each student should state whether or not they are happy about their local environment, explain why, describe the problems they have or the comfort zone they live in. Finally, they may clarify who caused these situations and what can be done either to improve it or maintain it.
   - Students can act as animal species from different habitats such as desert or wetland habitat. An animal for instance, from the desert meets with those from the wetland and they can, by the help of a facilitator, ask him/her to identify themselves, talk about where it comes from, and address all the challenges it faces in its habitats.
   - Students can imagine themselves living in a different time when extinct animal species used to live and ask them about what has happened in their habitats.
   - The trainer can distribute different drawings for different parts of species' bodies and ask the students to put them in the right place.
   - Students can be guided to the interactive page of the NCS website and do some activities with the wildlife such as, click the photo of the wildlife form and get more information, watch the animal living in their local environment. Form a food chain that includes the species.

9.2 Presentation on plant

1. Prepare a separate presentation for each plant species of the major plant families represented in the PAs

2. Description of the plant (shape of the leaves, flowers).

3. Where these plant species grows (in which PA).

4. Conservation Status of the plant (abundant, rare, semi endangered, critically endangered, or extinct), and range of habitats within the PAs shown on a map. Which animals eat it (domestic and/or wild animals)

5. Uses of the plant (traditional use, medicinal uses...), this gives cultural, medical, and even economic value to plant species represented and provides reasons for some clusters of audience about the critical need to protect them.

6. Explain the best ways of cutting parts of the plant for general human, household or medicinal uses without harming the plant itself.

7. Bring pictures that demonstrate that the animal species are the best to deal with plants and humans should learn from them (do not uproot the plant);

8. Explain the traditional system in protecting the environment (the Hielf system) and link it to the Islamic perspective.

9. The presentation may include some practical activities:

   a. Providing an outline for the plant and ask the children to colour it.

   b. Demonstrate the value of the plant in the ecosystem through an educational game that shows what happens if this plant disappears or driven to extinction (see section 7.4.1).

   c. Direct the students to the interactive page of the NCS website to do some activities with the plant such as click on the plant and get more information.

   d. Students can be encouraged to learn how to dry the plants and use it for decoration.

   e. All the activities suggested for the animals can be used here as well to make sure the message reached the children

10 Celebrating international days

Celebrating international events is one of the important tools for meeting the target goals for the IYB. It will enhance people understanding of the various conservation angels that help maintaining biodiversity. Some of the events listed below are directly linked to the IBY and therefore, are considered critical others are indirectly liked and are considered important as they can address the issue of biodiversity. Some of the celebrations are dated very close to each other and can be

combined in one event that deals with the issue celebrated in the two events. For instance, during March there are five events tackling water, health, cultural diversity, biodiversity and women day. Consequently, it is suggested during March to highlight the role of women in maintaining all the above topics.

Event	Date	Significance
World Wetland day	2 February	Critical
International women's day	8 March	Important
World Water day	22 March	Critical
World Health day	23 March	Critical
World Day for Cultural Diversity for Dialogue and Development	21 March	Critical
International Day for Biodiversity	22 March	Critical
World Environment Day	5 June	critical
World Day for Combat Desertification and Drought	17 June	Critical
World Refugee Day	20 June	
World Population Day	11 July	Important
International Day for the World Indigenous People	9 August	Critical
International Youth Day	12 August	Important
World Food Day		Important
International Day for the Preservation of the Ozone Layer	16 September	Critical
United Nations Day and World Development Information Day	24 October	Important
International day for Preventing the Exploitation of the Environment in War and Armed Conflict	6 November	Critical
International Civil Aviation Day	7 December	
International Mountain Day	11 December	Important
United Nations Day for South-South Cooperation	19 December	Important

11. References

Adams, E. and Ingham, S. 2001, Changing Places, Children Participation in Environmental Planning, London, The Children's Society

Aikenhead, G., S. (2001). "Students' Ease in Crossing Cultural Borders into School Science." Science Education **Vol. 85**: 180-188.

Bales, S., S. Eklund, et al. (2000). "Children Perceptions of Elders before and after School-Based Intergenerational Programme." Educational Gerontology **26**(26): 677–689.

Conservation International, World Wildlife Fund, 2002, Exploring Biodiversity: A guide for Educators around the World, London, CI and WWF

Freire, P., Ed. (1972). Pedagogy of the Oppressed. London, Sheed and Ward.

Gilbertson, K., T. Bastes, et al. (2006). Outdoor Education Methods and Strategies Leeds, Human Kinetics

Hart, R. (1992). Children's participation : from tokenism to citizenship Florence, UNICEF International Child Development Centre.

Hart, R., Ed. (1997). Children's participation : the theory and practice of involving young citizens in community development and environmental care London, EarthScan Publications.

Holden, C. And Clough, 2000, N. Children as Citizens Education for Participation, London, Jessica Kingsley Publishers

Huckle, J. and S. Sterling (1996). Education for sustainability London, EarthScan.

Lambert, D. (2009). Climate change http://www.teachers.tv/.

Mason, M. (2008). <u>Critical thinking and Learning</u> London, Blackwell

Mikhail, G. (2005). <u>National Communication Education and Public Awareness Strategy</u>, Cairo, NCS, EEAA.

Reason, P. and H. Bradbury, Eds. (2008). <u>The SAGE handbook of action research : participative inquiry and practice</u> London, , SAGE Publications

Reiss, M. (2001). <u>Representing Science</u>. London, Institute of Education University of London.

Reiss, M., C. Boulter, et al., (2007) "Seeing the natural world: a tension between pupils' diverse conceptions as revealed by their visual representations and monolithic science lessons." <u>Visual Communication</u> **6**(1): 99–114.

Robson, C., Ed. (2002). <u>Real World Research A resource for Social Scientists and Practitioner-Researchers</u>. Oxford Blackwell Publishers Ltd.

Streling, S. 2001, <u>Sustainable Education Re-visioning Learning and change</u>, London, Green Books Ltd

Wangari Maathai, (2009), Climate Change http://greenbeltmovement.org

Francique, M, (2007), <u>Working with young people to create a climate of change,</u> The National Youth Agency

Appendix 1 Rangers received training course during the year 2008

Area	N. of researchers	Training Topic	Venue	Date
Sinai Protected Areas				
Ras Mohamed	1	Preparing the world heritage sites files	Lesotho	4-15/11/08
	3	Professional health and safety	Sharm El Sheikh	16-20/11/08
St Katherine	3	GIS usage and applications	St Katherine	27-30/11/08
	3	Botanical data base Turpo Veg	Tanta	25-26/22/08
AlZaraniq	1	Water Bird monitoring, samples of raptor birds	USA	14/6-11/8/08
	1	Bird monitoring and identification	Libya	
	1	Raptor and soaring Bird monitoring	Ein Alsokhna	29/4-1/5/08
Central area Protectorates				
Wadi El Rayan	1	Fish production and water efficiency	Water Researchers institute Cairo	
	1	Presentation and Interpretation	USA	August 08
	1	Sharing experiences among protected areas	Elba Protected area	
	New rangers	GIS training and GPS usage (senior Researchers)	Wadi El Rayan	
	11	English course	Fayoom	
	10	International licence ICDL	Fayoom	

Appendix 2 EE materials in NCS

Product	Source
المنتدي البيئي للتنوع البيولوجي يوم البيئة العالمي 2006	EEAA, NCD
يوم البيئة العالمي 2006 المحميات الطبيعية في مصر الصحاري والتصحر	EEAA, NCD
كتيب التعليمات لمساعدة حماة البيئة في التعامل مع السياح	NCS
الأراضي الرطبة من منبع النهر الى المصب	EEAA, NCD
المحميات الطبيعية في مصر	NCS
مركز التدريب والادارة لحماية الطبيعة شرم الشيخ	NCS
محمية وادي دجلةُ	EEAA, Danida
كتاب طفيليات النيماتودا التي تصيب أسماك المياة العذبة في مصر	EEAA, NCS
وادي الحيتان موقع التراث الطبيعي العالمي – دليل المتحف المفتوح (عربي وإنجليزي)	NCS, Italian Cooperation
الفيوم ووادي الريان (عربي وإنجليزي)	NCS, Italian Cooperation
محمية وادي الريان (عربي وإنجليزي)	NCS, Italian Cooperation
كتاب العنكبيات المصرية	EEAA
التقرير السنوي لوزارة الدولة لشئون البيئة	EEAA
Butterflies of Egypt- Atlas Red Data Listing and Conservation	EEAA, NCS, Bio-Map, Italian Cooperation
Lake Bardawil Zaranik Protected Area (book)	EEAA, MedWetCoast, UNDP, GIF,
Set of Brochures about Siwa, Wadi EL Rayan, Zaranik, Wadi El Gemal, Abu Galum, St	NCS

Product	Source
Katherine, Nabq, White Desert, Ras Mohamed	
The Flora of the White Desert (Brochure)	NCS, Italian Cooperation, UNDP, IUCN
CD on: Eco-lodge Planning, Design and Operations Handbook	USAID
CD : White Desert Protectorate	NCS
CD: St Katherine Protectorate	NCS
St Katherine Protectorate (brochure and visitor instructions	NCS

Appendix 3 EE Budgets for PAs

	The Protected Area	The Budget LE
1	Wadi Degla	------
2	Wadi El Rayan	5000
3	Lake Qaroun	6000
4	Petrified Forest	-----
5	Al Hasana Dome	-----
6	Elba	39000
7	Wadi Al Gemal	39000
8	Red Sea Islands	29000
9	Ras Mohamed	310000
10	Nabq	-----
11	Abu Galoum	-----
12	Taba	------
13	St Katherine	25000
14	Al Zaraniq	37000
15	Al Ahrash	------
16	Al Burullus lake	8905
17	Al Omayed	1900
18	Ashtoum Al Gamil	9000
19	Wadi Al Asyoti	6500
20	Sanour Cave	------
21	Al Dababia	-------
22	Salouga and Ghazala	13000
23	Al Alaqi	18500
24	Siwa	-------