

# ENVIRONMENTAL EDUCATION HANDBOOK

## دليل التربية البيئية

2009

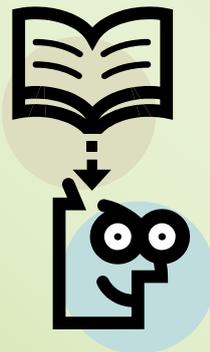
Sharhabil Bin Hassneh Eco Park  
Friends of the Earth-Middle East

### Goals of the Education Program

Protect the Environment



Increase Knowledge



Improve Well-being







## Programs for Children and Youth

The youth program consists of eleven weekends that are divided into two major units.

### UNIT ONE: How You Care for the Earth

*OBJECTIVE: Students will gain an awareness of large-scale environmental issues that affect them, through interaction with and interpretation of the environmental resources of the Eco Park. Both children and adults will understand the importance of environmental preservation, and will demonstrate this understanding by taking practical conservation and pollution prevention measures at home.*

## Water Weekend

Students will learn about global and local water issues, including:

- How much water there is on earth;
- The percentage of drinkable water available;
- Jordan's water resources, including watersheds, surface and groundwater;
- How water is transported and delivered to their homes;
- How to conserve water and protect it from pollution.

Suggested Activities:

1. Students will use a watershed model and add various sources of pollution to it. They will understand how pollution affects the Jordan River itself, and hear stories of how the river was used in the past. Then they will use tools to try to clean the water and discover how difficult it really is.
2. Students will become hydrologists. A school wants to move to a new site. Use the aquifer in a cup model and historic rainfall data to conduct an experiment to see if the groundwater will be safe for kids in the new school to drink. This will lead to discussions about evaporation rates in the Jordan Valley, salts and nutrients in the soil, as well as affects of human activities on groundwater.
3. Participants will learn about what pH balance and indicators are, and make homemade indicators using natural anthocyanins from plant materials. Then they will use the indicator solution to test pH in a range of household materials, such as soda, milk or detergent.

# What's in the Air Weekend

Students will study the day and night sky, including:

- Clouds and weather systems
- Stars and constellations
- Wind and air pollution
- The cycles of CO<sub>2</sub>, oxygen and nitrogen in the atmosphere.

Suggested Activities:

1. Students will experiment with erosion, rocks, sunlight, or go stargazing.
2. Students will learn about thermometers and barometers, and then create their own barometer using simple materials. They will observe the changes in the atmosphere every time they visit the park by swinging their barometer and recording the findings. They will then keep a log book of their findings.
3. Students will discover the wonders of a starry night and hear stories about the stars from around the world. They will make and use a star finder, a mini star viewer, and learn how a telescope works. They will learn about the moon and why it changes phases. Then they will use their new skills to observe outside under the starry skies. Binoculars can be rented.
4. Students will learn the dynamics of a vacuum by creating their own and playing competitive games involving pulling objects across a finish line with their home-made vacuums.

# The Earth

## Under Your Feet Weekend

Students will study rocks and soil, including:

- Different types of rocks and how they are formed
- The rock cycle
- Geology of Jordan and the Eco Park area
- The relationship of water and rocks: how water and rocks affect each other.
- Soil profiling
- Geological map reading, including topography, road cuts, and aerial photos
- Which types of soil are good for growth, and how to improve it (introduction to composting)..

Suggested Activities:

1. Students will try to grow a small plant on various soil plots that contain different types and amounts of nutrients. They will then observe which type of soil is best for planting.
2. Students will find a rock they like and paint on it.

# Yucky Weekend

## (Garbage, Pollution and Wastewater)

Students will gain an understanding of what happens to our waste products after they leave our homes and explore:

- Sustainable waste handling practices, such as recycling, composting, and constructed wetlands as wastewater treatment.
- The topic of NIMBY
- How to find environmentally responsible sites for waste disposal and management.
- How pollution affects the animals.
- How pollution affects humans.
- The process of treating wastewater.

Suggested Activities:

1. Create hand-made surprises by recycling paper.
2. Understand the meaning of NIMBY – Not in My Backyard. Provide a presentation on the contents of the average garbage can, as well as its exponential growth over one year. Help participants understand the decomposing rate of certain elements. Explain where garbage is taken, and how it affects the environment and groundwater. Show an example of a proper dump site.
3. Assign homework as an art project, where students will go home and recycle or reuse materials to create art to bring back the next week and show the rest of the group.
4. The Garbage Game: Students will carry their own garbage around with them all day. At the end of the day, the garbage will be dumped out and sorted. Students will learn how they could have reduced their garbage, by recycling, reusing and composting some items. A discussion of NIMBY (Not in my Backyard) will follow, as well as the need to find environmentally responsible sites for waste disposal and management.

## Help the Earth Weekend (Composting and Recycling)

Students will build on everything they have learned so far by:

- Applying their values to various decisions regarding the environment
- Understanding the responsibility as an individual within a community.
- Understanding their direct relationship of humans with nature
- Engaging in teamwork activities that involve different attitudes, values and behaviors.
- Engaging in discussions and defending positions
- Learning how small individual actions can cause large environmental problems.
- Creating their own game plan for conservation and pollution prevention at home.

Suggested Activities:

1. All participants become a town hall meeting to address water management issues. Each student is a stakeholder and they will learn first-hand about citizenship, decision-making and differing values.
2. Participants stand under statements that best reflect their views on biodiversity, and then discuss why they chose that statement. People can challenge each other's reasoning. It will encourage critical thinking and how to defend a stance. It also encourages people to think differently about biodiversity and how it affects their daily lives.
3. Students will play the polluted river game, to understand how saving the environment is a very difficult task once the situation becomes nearly irreversible, and that it will depend on collective intelligence and cooperation to solve large problems like this.

## UNIT TWO: How the Earth Cares for You

*OBJECTIVE: Students will understand how the earth cares for them by learning about the contributions made by all creatures. They will learn about how the human race has survived the challenges of living, and of the harmony needed for ecological processes to take place. Through this, they will develop an idea about their individual purposes in the grand scheme of things.*

### AMAZING PROCESSES WEEKEND

Students will understand the role of plants in providing humans and animals with what they need, including:

- Food, shelter and medicine
- The means for art and cultural expression (dyes, fabrics, perfumes, chocolate, etc.)
- Using plants for aesthetic appeal
- The role of plants in preventing soil erosion and flooding
- Pollination and the role of bees

Suggested Activities:

1. Students will be grouped into teams of two or three, go out into the park with a digital camera, choose a flower, go back to the nature center and find information about that flower from the Eco Park Wildlife Guidebook, prepare a small presentation, and tell the others about that flower.
2. Students will apply their knowledge of soil profiles to select the best type of soil in which to plant a flower from a seedling which they will take home to care for and draw the stages of its growth over the next few weeks.
3. Students will plant a flower from a seedling, which they can take home to take care of and draw the stages of its growth.

# Don't Bug Me Weekend

Students will learn of the complex world of bugs, by:

- Understanding how bugs are different from each other.
- Realizing the importance of bugs in ecological processes.

Suggested Activities:

1. Students will use a magnifying glass and some containers to get a closer look at the world of insects. They will be assigned to catch at least two different types of insects. They will use a field notebook and a field guide to identify the type of insect, write down data about it, draw a picture, and compare the characteristics they have in common. They will release the insects back where they found them when they finish. When the group reconvenes, a discussion will be held about the bugs and possible reasons for the differences between them.

# *Birds of a Feather Weekend*

The Eco Park is a great place to observe birds because it is in the middle of a flyway of migratory birds. Students will learn about all kinds of birds found in the Eco Park and will:

- Learn about migratory patterns of birds found at the Eco Park
- Learn how to use a field guide and binoculars for bird identification
- Observe bird behavior and imitate bird calls and
- Understand the dynamics of beak structures and food gathering.
- Understanding the principles of aerodynamics
- Understand the threats to migratory birds, such as habitat loss, weather, pesticides, and hunting.

Suggested Activities:

1. Students will spend three minutes in silence listening to the various sounds of birds as they communicate around the Eco Park. They will pick one sound that is most distinct to them and the group will come back together and imitate those sounds they heard. From this song symphony, students will learn that the bird kingdom is very complex.
2. This is a great place to observe birds. Learn how to identify birds using a field guide, binoculars, and your own field notes. Go on hikes to observe bird behavior and songs. Experiment to test aerodynamic principles. Try to become a bird expert.
3. Learn why birds have so many different shaped beaks. Use tools to imitate different types of beaks and hands-on experimentation to discover the best beak to use for different food sources.
4. Giant Game Board. Participants become life-sized game pieces. They must migrate from the Gulf south to the North successful while avoiding obstacles in the form of habitat loss, foul weather, pesticide use, and more. The game becomes more difficult and participants will understand migratory patterns.
5. Learn about the advantages and disadvantages of being top predator birds. Learn why falcons are efficient hunters and how others become extinct. Focus on how each individual can make a positive difference in the world by avoiding hunting.

# Wildlife and Habitat Weekend

Students will learn of the biodiversity and habitats around them by:

- Learning how to track down animals and where they live
- Learning about and identifying local plants and wildlife
- Understanding hazards to wildlife and endangered species
- Learning about adaptations and “survival of the fittest.”

Suggested Activities:

1. Explore a study site in the Eco Park to identify local plants and wildlife. Students will participate in a discussion on wildlife hazards and will evaluate their own “at home” practices to see what they can do to help.
2. Students will learn about the food chain and successions. They will collect data to create their own visual food chain.
3. Students will learn what makes animals special with their adaptations. They will take a closer look at some of the Eco Park animals, explore their homes and discover how they have adapted over thousands of years. Students will go for a hike using a scavenger hunt card, and based on their senses and information, they will have to identify at least one habitat.

# Myself and Others Weekend

Students will learn about their roles as individuals and as communities on this planet and how the planet satisfies their needs, by learning:

- How to survive in the wilderness and fare against the elements.
- How humans have survived in various climates around the world, introducing new cultures that they have not seen before.
- The importance of exercise and movement
- How humans need food and water to survive.

Suggested Activities:

1. Students will learn the basics of orienteering, how to use a map and compass, and how to pace around the Eco Park.
2. Knots and lashings: Teach the skill and art of tying knots and lashings. Have participants work with partners to try to construct a shelter. This will teach the importance of reasoning and visualization, build self-confidence, and test the ability to follow directions.
3. Students will learn about what is in the food we eat, how it is processed, and how it affects our bodies, minds and overall wellbeing. This can also tie into the types of food animals eat and how their bodies have adapted to fit their need. The topic of food will be connected to the amount of water used to create it.
4. Students will discover the ancient secrets of survival in the desert. They will participate in a challenge of collecting water, creating shelters, and adapting to the heat.

## PAST, PRESENT AND FUTURE WEEKEND

Students will learn how humans have adapted and built societies to survive on this planet through:

- Understanding how artistic expressions tell stories about a culture and a people
- Learn how artistic expression has changed
- Understand how beautiful things in nature have influenced people.
- Learn the art of storytelling.
- Listen to stories told from elders about how life used to be in the Valley.
- Understand the impact of folklore and cultural traditions on human societies.

Suggested Activities:

1. As the last weekend, students will be put in groups have to creatively express some element from the past weeks they found interesting. This can be in the form of a play, a poem, a song, or anything the group decides. Parents will be invited to see what their children have learned and how they have interpreted it.
2. Students will be challenged to get in groups and create their own stories based on an animal, an idea, or anything they found surprising in the last few weeks.
3. Give out cameras to the students and have them go around the park and photograph various things they consider “beautiful.” Then have them draw those pictures using dyes and tools from the past. They will learn how to mix their own dyes from plants.
4. Invite elders to tell stories around a campfire and make an open stage for questions on how life was in the past.

# Programs for Adults

Our vision is to provide educational materials and programs to meet the needs of every park visitor. The following table shows the types of educational materials and programs we look forward to creating in the near future. If you would like to contribute your skills on a volunteer basis to help make our vision a reality, contact us at [info@foeme.org](mailto:info@foeme.org).

Type of Park Visitor	Educational Materials and Programs
<p style="text-align: center;"><b>All Park Visitors</b></p>	<p><b><u>Information about the Park:</u></b></p> <ul style="list-style-type: none"> <li>• Background and history</li> <li>• Natural and cultural aspects</li> <li>• Future Design Plans</li> <li>• Policies and Procedures</li> <li>• Guided and self-guided tours</li> <li>• How to take care of the park</li> </ul> <p><b><u>Information for Visitors:</u></b></p> <ul style="list-style-type: none"> <li>• Job and volunteer opportunities</li> <li>• Seminars</li> <li>• Workshops</li> <li>• Fact Sheets</li> <li>• Online resources/virtual tours</li> <li>• Children/Youth Education Programs</li> <li>• Adult Education Programs</li> </ul>
<p style="text-align: center;"><b>FoEME Staff/Education Volunteers</b></p>	<ul style="list-style-type: none"> <li>• Job Descriptions</li> <li>• Policies and Procedures</li> <li>• Emergency Procedures</li> <li>• Communication Channels</li> <li>• Record Keeping</li> <li>• Hospitality and Cultural Awareness</li> <li>• Staff and Online Training</li> <li>• Staff Mentoring</li> <li>• Team Building Exercises</li> </ul>

<p><b>Visiting Researchers/University Students</b></p>	<ul style="list-style-type: none"> <li>• Park Manual</li> <li>• Future Model/Map</li> <li>• Biodiversity Guidebook <ul style="list-style-type: none"> <li>○ Physical features</li> <li>○ Biological features</li> </ul> </li> <li>• Sustainable Practices Handbook</li> <li>• Eco Park website online research tools</li> </ul>
<p><b>Local Residents</b></p>	<ul style="list-style-type: none"> <li>• How to Make it YOUR Park</li> <li>• How you can help the park</li> <li>• How the park can help you</li> <li>• Volunteer / Employment Opportunities</li> <li>• Meetings</li> <li>• Weekend workshops</li> <li>• Email Newsletters</li> <li>• Flyers found in Mayor's office</li> <li>• "Clean Communities" Program</li> <li>• Community campfire/dinner</li> <li>• Community Job Board</li> <li>• Online Job Board</li> <li>• Door to door marketing</li> <li>• Community Involvement Representatives</li> </ul>
<p><b>Families of Local Students</b></p>	<ul style="list-style-type: none"> <li>• Youth Education Supplements</li> <li>• Connecting with other families</li> <li>• Role Modeling for future generations</li> <li>• Flyers distributed to schools</li> </ul>
<p><b>Teachers</b></p>	<ul style="list-style-type: none"> <li>• Lesson Supplements</li> <li>• Discovery Kits</li> <li>• Sustainable Practices</li> <li>• Teacher Networking</li> <li>• Lesson Plan Exchange</li> <li>• Quarterly teacher meetings</li> <li>• Teacher's Lounge (online private area of the web site w login)</li> <li>• Field Trips</li> <li>• In-class presentations</li> <li>• Virtual Field Trips</li> <li>• Discovery Kits</li> <li>• Teacher Field Trip getaway weekends</li> </ul>

<p style="text-align: center;"><b>Scout Leaders</b></p>	<ul style="list-style-type: none"> <li>• How to use the park with your troop</li> <li>• Supplemental badge programs</li> <li>• Sustainable Practices Guidebook</li> <li>• Scout Leader Weekends</li> <li>• Online Scout Leader Forum</li> <li>• Discovery Kits</li> </ul>
<p style="text-align: center;"><b>Eco-Tourism/“Green” Entrepreneurs</b></p>	<ul style="list-style-type: none"> <li>• Ecological Interpretation of the Eco Park and surrounding Valley</li> <li>• Eco Lodges</li> <li>• Guided and Virtual Tours</li> <li>• Green souvenirs and regalia</li> <li>• Café</li> <li>• Employment Opportunities <ul style="list-style-type: none"> <li>- Café</li> <li>- Local Fair Trade Program</li> <li>- Green micro-loans</li> <li>- Souvenir collection and sales system</li> <li>- Handicraft schools showcases</li> </ul> </li> <li>• Resource and idea Exchange</li> <li>• Ecopreneur Idea Springboard</li> <li>• Materials shed</li> <li>• Training forums and seminars</li> <li>• Networking</li> <li>• Online resources</li> </ul>
<p style="text-align: center;"><b>Bedouin Involvement Program</b></p>	<ul style="list-style-type: none"> <li>• Habitat preservation information</li> <li>• Eco-tourism benefits to the Bedouin (tents for visitors, dinner and dancing and /or storytelling under the stars)</li> <li>• Cultural heritage preservation relating to local flora and fauna</li> <li>• The Wisdom Program (Elders Oral History)</li> <li>• Storytelling Evenings</li> <li>• Employment Opportunity Seminars</li> <li>• Bedouin Park Policing Training</li> <li>• Bedouin recycling and park cleanup program</li> </ul>

<p><b>Civil Society Groups and NGO's</b></p>	<ul style="list-style-type: none"> <li>• Workshop, meeting and seminar space</li> <li>• Local catering for groups up to 100</li> <li>• Eco lodges</li> <li>• Evening education programs</li> <li>• Guided Tours of the Park</li> <li>• Self-tours with optional interpretive headset</li> <li>• Standard and tailored programs</li> <li>• Team-building exercises</li> </ul>
<p><b>Donors/Supporters/Partnering Organizatons</b></p>	<ul style="list-style-type: none"> <li>• Park overview and progress</li> <li>• Future design plans</li> <li>• Partnership networking</li> <li>• Joint conservation activities</li> <li>• Reporting</li> <li>• E-Newsletters</li> <li>• Tailored updates</li> <li>• Opportunities for future involvement</li> </ul>
<p><b>Local Government</b></p>	<ul style="list-style-type: none"> <li>• Local Community Involvement Opportunities</li> <li>• “Clean Communities” Program Guidebook</li> <li>• Regional Networking Program</li> <li>• Practical training/tools for green urban development</li> <li>• Green entrepreneurship training</li> <li>• Replicable urban waste reduction and resource conservation programs</li> <li>• Bi-monthly Mayors’ Meetings</li> <li>• Flyers to be distributed to the community</li> <li>• Community Message Boards</li> <li>• Community Involvement Representatives</li> </ul>
<p><b>Cross-Border Partners</b></p>	<ul style="list-style-type: none"> <li>• Eco-tourism benefits</li> <li>• Regional networking</li> <li>• Mutually beneficial sustainable practices</li> <li>• Online resources</li> </ul>

## Part 2: Environmental Education for Everyone

In addition to programs for specific types of visitors, the Eco Park will provide a general education program for everyone. The types of topics to be covered are listed below.

If you are a current, retired, or aspiring educator who would like to share in creating the environmental education program on a volunteer basis, contact us at [info@foeme.org](mailto:info@foeme.org).

# WATER

## Why water is important

- Every living thing needs water
- We can only live 3 days without water
- Water=Life, Health, Wealth

## Earth's Water

- How much of the Earth is covered with water?
- How much of Earth's water is drinkable?

## Jordan's water

- Overview of Jordan's water situation
- How much water does Jordan have?
  - Past and future water supply and demand
  - Where could Jordan get more water:
    - Desalination
    - Water reclamation and recycling
- What will happen if we don't conserve water?

## Your water

- Where does your water come from?
- Where does your water go?
- Water and the Nitrogen Cycle
- How much do we need every day?
- How can you save water?
- What can YOU do to help save and protect water

Water at the Eco Park: The Jordan River

# EARTH

- How many people are on Earth today?
- How many in 25 years?
- Garbage
- Recycling
- Vegetation
- Living things: plants/animals
- Overgrazing
- Desertification
- The Earth and the Nitrogen Cycle

# Fire

- Fire safety
- Camp fires
- Energy:
- Solar energy:
- How the sun provides all the energy on Earth
- Solar Power
- The carbon cycle
- Biomass
- Lightning and the Nitrogen Cycle

# AIR

- Air quality/air pollution
- Global warming
- Photosynthesis
- The carbon cycle
- Air and The Nitrogen Cycle

# LIFE

- Biodiversity in the Eco Park
  - Insects
  - Plants
  - Birds
  - Reptiles and amphibians
  - Mammals
- Wildlife and Habitat
- Humans (yes, you!)
  - How we affect our environment
  - How our environment affects us
  - How we can protect the Eco Park
  - How we can make the Eco Park a great place for everyone to enjoy!