

J. ACTION

CENTER FOR JUSTICE GOVERNANCE AND ENVIRONMENTAL ACTION

MANUAL FOR SCHOOL ENVIRONMENTAL CLUBS



Miti Kwa Vitukuu Project

A GUIDE TO SCHOOLS ECO-AWARENESS PROGRAMME

PART 1 - CJGEA BACKGROUND

1.1 CJGEA Background / History

The Center for Justice Governance and Environmental Action (CJGEA) was founded in 2009 in response to challenges facing communities residing around Extractive industries in Kenya Coastal region. IT is registered as a Community Based Organization and its operations are guided by its constitution. It is overseen by its Board of Governors drawn from the civil society in Kenya and Internationally.

The CJGEA structure is made up of a number of key organs including its Board that consists of community members representatives and members of the larger civil society movement locally and internationally. The powers of the board are conferred through the articles of association that confers powers over the conduct of the organizations' day to day running.

1.2 Our Vision:

In the next decade through its programmes to raise a generation, that respects the environment and human rights

CJGEA's vision is to work through its key thematic areas to bring about positive change in the way communities perceive and interacts with the environment. CJGEA works with communities to push for solutions to environmental challenges. CJGEA's agenda is to build capacities among the communities to them enabled understand the environmental challenges and mitigations. We are achieving this through our education programmes especially through connecting with the youth on programmes that raise their awareness about environment conservation and protection.

1.3 Our Mission.

To amplify the voices of the poor communities residing around extractive industries, to courageously call for and enable access to environmental and socio-economic justice.

In line with our mission, the CJGEA's intentions to increase the eco-consciousness and social responsibility of communities towards attaining environmental safety and sustainability. This can be achieved through diverse collaborative partnerships with the community members at all levels. The involvement of youth becomes vital in underpinning the sustainability of such programmes as this ensures preparin and development of the next generation of leaders who will have the knowledge, passion and skills to promote a clean and safe environment for all. Through this curriculum, we intend to equip the youth by providing them access to experience and positively contribute to better the natural world through interactive and innovative educational programs.

1.4 Our Goals:

- Respect for the environment
- Respect for human rights
- Activism and Service through volunteerism
- Commitment to justice, Equality and the rule of Law for all
- Solidarity with the poor and pro poor individuals and agencies.

1.4 Our commitment to Clean and Safer Environment:

We believe that people can make a difference in their lives but may not have the power to make a real difference and to change the course of the world. The ecological destruction and environmental concerns around us are often discouraging

and overwhelming especially for those who do care and want to make a difference and be more responsible. For the youth making a difference seems to big, too expensive for them to feel that they can have a real and lasting impact. They have the passion and energy to change their environment and the world but they lack the capacity and the resources.

CJGEA believes that no matter what age, individuals can make a difference in their world.

CJGEA is driven to inspire, educate and empower youth to make decisions to support a safe, sustainable environment.

Our approach is focused on creating collaborative partnerships with national and international environmental and educational agencies to support implementing our Tree Gifting Programme.

PART 2: MITI KWA VITUKUU PROJECT

2.1 Definitions:

"Miti Kwa Vitukuu" means "Tree's A Heritage For Our Grand Children".

The Project's goal is to stop logging without mitigation and promote afforestation as climate change mitigation through:

1. Campaigns using lobbying, advocacy, education and awareness, capacity building of masses and involved parties;
2. Engaging the national and county environmental agencies to enforce law on environmental protection and conservation;
3. Involving the next generation through creation and establishment of 4K Environmental Clubs in Schools.
4. CJGEA is Implementing afforestation through enrolling of schools Environmental Clubs to participate in the "Miti Kwa Vitukuu" Initiative.

The key activities in this project will include:

1. Tree planting by the participating schools;
2. Trees gifting by the Participating students.
3. Eco-field trips;
4. Trainings/ conferences.

2.2 Benefits of involvement to Miti Kwa Vitukuu Project to Students, Educators & the Environment.

2.2.1 Kids will benefit by:

- * Expanding their eco-consciousness
- * Learning about environmental conservation;
- * Meeting and collaborating with other schools clubs from varying socio-economic background and cultures
- * Developing leadership skills;
- * Finding their voice
- * Stretching their expectations of self
- * Positively impacting their peers, families, schools, communities and planet;
- * Creating and building upon vision of a sustainable future;
- * Opportunities to engage politicians, leaders, peers and educators;
- * Participating in a grass root movement to sustain the planet; and,
- * Participating in field trips - a popular experiential form of learning that excites the imagination of students and actively involves teachers.

2.2.2 Educators will benefit by:

- Gaining access to a wide network in environmental conservation work;

- Participating in training, workshops, hands-on student teaching assistance, and guided field trips;
- Accessing monthly newsletters containing articles from CJGEA and their partners;
- Training on environmental issues from CJGEA; and
- Accessing Environmental Education Curriculum and related curriculum models from CJGEA

2.2.3 Benefits to the Environment

- Through starting and sustaining the CJGEA Environmental Club, this will lead to the formation of a grass root movement committed to maintaining a sustainable earth. studies indicate that people protect what they know and what they love.
- CJGEA will educate children in environmental sustainability and give them access to the natural world around them to create a lasting connection with the health of the planet.

PART 3: CURRICULUM FOR IMPLEMENTING THE MITI KWA VITUKUU PROJECT

3.1 Preamble

Serious concerns have been raised about the degradation of our environment.

However, environmental education has also been consistent to redress the impacts through dismally. Today's environmental education is best described by the following definitions;

"Environmental education is the process of recognizing values and clarifying concepts in order to develop the skills and attitudes necessary to understand and appreciate the interrelationship between man, his culture, and his biophysical surroundings." *(one of the first formal definitions of environmental education adopted in 1970, IUCN/UNESCO meeting, Nevada, USA)*

"Environmental education is defined as a process aimed at developing a world population that is aware of, and concerned about the total environmental and its associated problems, which has the knowledge, attitudes, skills, motivation, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones." *(Intergovernmental conference on Environmental Education with participation of 66 member states of UNESCO, Tbilisi, 1977)*

3.2 Environmental Education: A Global Definition

Environmental education is defined as a process aimed at developing a world population that is aware of, and concerned about the total environmental and its associated problems, which has the knowledge, attitudes, skills, motivation, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones [Tibilis, 1977]. In recent years environmental education has progressed from relative obscurity to being discussed as instrumental in achieving a sustainable world.

Environmental education now entails not only acquiring academic knowledge, but developing practical skills as well. It allows children to gain participatory experience in environmental issues, which gradually becomes a prerequisite for becoming responsible citizen. Today, the only way to develop a society of active citizens is by involving them in global problem-solving processes.

Environmental education has a very important characteristic feature - it does not limit itself within the boundaries of only one school subject or one field of science. As a matter of fact, environmental education is an interdisciplinary form of education based on the knowledge from multiple subjects and fields of science, as well as broad areas such as economics, health, information technology, and politics. Furthermore, it spreads beyond the boundaries of one country, state, or region, and concerns itself with the whole of the Planet Earth and even the Universe.

Environmental education also capitalizes on the heritage of various cultures and humanity in general. It is necessary to study and make every attempt to understand our ancestors' practices of relating to nature and living in harmony with it.

We can learn lessons from our own cultural traditions and reinstate traditions of caring for nature and appreciating it. Environmental education offers a wide array of approaches to rebuild the damage connections between human society and the natural environment.

Our "Miti Kwa Vitukuu" Project underpins CJGEA respect for cultural and belief that everyone in society has a responsibility towards a safe and sustainable environment. More so, we believe that with this curriculum we will be equipping the youth with the much required skills to enhance environment sustainability.

This manual offers teaching guidelines on Environmental Education that is based on following 3 aspects:

Discovery: This encourages children and teachers to use art and science to discover the natural wonders of the environment.

Observation: This helps develop research skills while expanding the classroom to the local neighborhood environment.

Analysis: This develops observational and analytical skills by having children monitor plant and community to assess the health of the environment.

3.3 Changes in Environmental Education: Inside and Outside the Classroom

Traditionally, environmental education was taught in a subject-based and teacher-led manner. Originally the purpose of teaching was the transmission of knowledge, but over time this has evolved into personal and social transformation as well.

Teachers lead a direct student, but environmental education classes become increasingly participatory and experiential.

environmental education includes wide range of teaching and learning styles and uses unusual teaching environments outside classroom. Environmental education can offer teachers a fresh method that encourages students to actively engage in the learning process by doing projects that allow them to use their imagination and lessons learned in real environmental problem solving for our society. Importantly, this can be done with low cost for teacher and students.

Environmental education encourages students and teachers to recognize political and economical influences on environmental issues from the local to the global level and apply lessons learned in their own backyards.

By getting outside the classroom in good weather conditions, teachers can combine classroom study with an educational walk in a local park, a visit to a botanical garden, or nearby mountain slopes.

Each site, urban and rural, offers ways to touch and feel how trees are important to the environmental health of the community and our everyday lives. This process also helps students make direct connections between scientific information and the beauty of Kenyan landscape and develop skills for solving environmental problems.

“Learning by doing” helps students slowly develop confidence in their abilities to observe phenomena, engage in scientific inquiry, and explore creative solutions.

The three aspects of environmental education: **Discovery**, **Observation**, and **Analysis** are key skills in the development of lesson plan as they lead students to increase environmental awareness and responsibility.

**DISCOVERY + OBSERVATION + ANALYSIS =
AWARENESS AND
ENVIRONMENTAL RESPONSIBILITY**

The manual incorporates environmental education lesson plans that apply interactive methods, with strategies chosen according to lesson, topics and objectives. In the course of teaching, those strategies can be modified according to the children’s age and their baseline level of knowledge.

3.4 Checklist for Effective Practices of Environmental Education in Schools.

Traditionally, environmental education was taught in a subject-based and teacher-led manner. Originally the purpose of teaching was the transmission of knowledge, but over time this has evolved into personal and social transformation as well.

Following are some of the practices / actions that can be done at school:

1. The potential of the school grounds is developed for environmental education, helping to balance “in school” and “out of school” learning opportunities.
2. The use of resources is kept to a minimum, with staff and students taking responsibility for reuse and recycling.
3. The senior teacher and school management take the lead in environmental initiatives and promote awareness among staff.
4. The school has an environmental education coordinator with full support of management, time, and resources for development.
5. Opportunities for staff development in environmental education are promoted with targets to achieve basic knowledge and understanding
6. A School policy which outlines the aims of different stages.
7. There is evidence of cross-curricular planning for environmental education including short courses and practical activities, which involves inter-departmental collaboration.
8. Teaching and learning approaches promote environmentally responsible attitudes, values, and behavior.
9. There are opportunities for students to demonstrate commitment to the environment.
10. The school promotes itself as an environmentally responsible community, for example through campaigns and newsletters.
11. Providing students with environmental decision-making

skills in the ultimate goal.

12. The school development plan reviews and develops environmental education.
13. Partnerships are arranged with local environmental groups/ NGOs to support curriculum initiatives.
14. Links between school and the homes are developed, in order to raise awareness and ensure the cooperation and involvement of the home in the process of environmental educations.

3.5 Characteristics of and Effective Environmental Education Lesson Plan

Instructional Goals and Objectives

Instructional goals and objectives are clearly stated. Learners have a clear understanding of what is expected of them. Learners can determine what they should know and be able to do as a result of learning and instruction.

Instructional Strategies

Instructional strategies are appropriate for learning outcome(s). Strategy is based on a combination of practical experience, theory, research and documented best practice.

Assessment

Method for assessing student learning and evaluating instruction is clearly delineated and authentic. Can be readily used for expert, peer, and/ or self-evaluation.

Materials Needed

All materials necessary for student and teacher to complete lesson are clearly listed.

Organizational and Presentation

Complete packages is presented in a well organized and professional fashion.

Lessons

Lesson provide an exploration of nationally/ local culture and its connection to the changing our environment. We emphasize equally the significance of cultural and healthy ecosystem in a small nation-state

The Lesson Guide is divided in to three thematic units: Discovery, Observation, and Analysis. Each unit contains classroom lessons with hands-on activities that can be done n a local park or nearby forest in rural areas. Each lesson is divided in to an introduction, background information, and step-by-step procedures for activities.

3.6 Teaching Guide and Modules

This section offers lessons designed to use in support of teaching environmental topics.

The lessons can be used in classrooms, during field trips, or classes held in out-of-classroom settings such as science clubs or eco-camps. Classes address global environmental issues as well as problems of local significance for our country.

Measures are discussed for prevention and mitigation of those problems. The role of the students in the development of such measures is emphasized.

Each lesson can be adapted to reflect the natural conditions and environmental problems of the given community, and implemented through hands-on-practice.

The Teaching Modules are designed on the three aspects of environmental education :

Discovery, Observation and Analysis:

3.6.1 DISCOVERY

3.6.1.1 Module A: Exploring the Environment.

Lesson 1: The Environment and its Components

Lesson 11

Duration: 45 minutes

Objectives:

Students will become aware of their surrounding environment and its components (e.g., flora, fauna, atmosphere, soil, ocean, and groundwater). Each component is made up of various elements (e.g. plant or animal species, chemical compound, or soil type).

what do you need?

- * The teacher begins the lesson by explaining the word "environment" and writes it on the center of the chalkboard.
- * Children come up with words related to it and the teacher writes them down on the board.
- * With the help of the class, the teacher identifies the words that denote something not created by humans and underlines them.
- * The teacher splits the class into group of four and gives a copy of the blank table to each group. The groups copy the underlined words from the board placing them in the appropriate boxes of the table.
- * A delegate from each group presents the group's work to the class.

The Teacher facilitates the discussion based on the following questions:

- Can you tell whether these components are connected to each other?
- Give reasons why?
- What roles do those components play in our lives?

Lesson 1.2

Duration: 45 minutes

Objective:

Children will recognize the importance the environment play in human life; they will learn to respect the environment and take responsibility for it conditions.

What do you need?

- * Text: "A Tale about the Naughty Princess"

What do you do?

- * The teacher generates discussion on possible consequences for human life, in the event that one of the environmental components disappears.
- * The teacher introduces the text, "A Tale about the Naughty Princess," by guided reading.
- * The text is split into sections.
- * Prior to moving to the next section the teacher asks the class what they think would happen next.

After reading the text, the class splits into groups of three or four; each group discusses the following questions:

- ¿What was the story about?
- ¿What noises did you hear while listening to the story? What colors did you see?
- ¿What did the story remind you of?

¿Offer a new title for the story?

The activity ends with some individual presentations. If more students volunteer to present their responses, the teacher should give them an opportunity.

Conclusion

What did you learn from the story? By asking questions, guide the class to the conclusion that cutting down a forest will take a few days, whereas growing a new forest will take decades. This is just a tale, but in real life, too, people carelessly kill animals, contaminate water, and cut down trees. The environment is devastated and needs our help. The teacher directs the following questions to the class: what can each of us do in this case?"

Components of the Environment

Environmental Components	Elements
Animals	
Plants	
Soil	
Air	
Water	

Guided Reading: "A Tale about the Naughty Princess"

Once upon a time there was a powerful king. He had an amazing beautiful daughter. The king loved his daughter very much and did everything she wanted. The king spoils her so much that she grows into a very bad girl. She keeps making fun of the people in the palace and bothers the little animals in the nearby forest. One morning the princess wakes up and screams, "I am tired of the birds chirping. I see the same view from my windows everyday. I am bored of seeing the same trees, chasing the same animals. I want you to build a large swimming pool in place of the forest." "The king immediately orders his wood cutters to cut down all the trees. In place of the forest they build a very large very beautiful swimming pool so the Princess can swim and sunbathe every day. Some time later famine strikes in that kingdom; people begin to starve.

- Pause 1 -

The teacher asks the class, "What were the causes of famine in the kingdom?"

People in the kingdom were deprived of the daily food they would get from the forest by hunting animals, gathering berries, fruits, and mushrooms. In the winter they could not keep their houses warm because there was no wood in the forest.

Meanwhile, the Princess was enjoying herself swimming in the pool. When the winter came, a thick layer of ice covered the swimming pool. Now the Princess is skating and having fun.

In the spring the Princess gets ill. The once cheerful girl becomes feeble, gloomy, and indifferent. She loses her interest in the swimming pool and in the merry games. The king, recommends fresh air for the Princess and food rich in vitamins. She has been deprived of all those things because the forest was destroyed. There is no way doctors can help the Princess. They cannot prepare medicine for her, as they cannot get the necessary herbs that usually grow in the forest. All the wise men of the kingdom get together and decided...

- Pause 1 -

The teacher asks the following question to the class: "Children, if you were the wise men, what decision would you make?"

The wise men decided that the forest should be restored, and people should be sent to the neighboring kingdom to ask for seedlings. Sadly it was going to take a very long time for the seedlings to grow into trees and bear fruits, and for the forest to

fill with animals and birds again. Fortunately, the neighboring kings were very kind and generous, so they agreed to extend a helping hand to the kingdom facing disaster, whereas evil kings would have taken advantage, and attacked the declining, starving kingdom and conquered it. Like all other fairy tales, this one also has a happy end; the Princess and all the people are saved due to their neighbor's help.

3.6.2. OBSERVATION

3.6.2.1 Module A: The Amazing Transformations of Water

Lesson 2: Local Water Resources

Lesson 2.1: Drinking water and Its Significance

Objectives

Students should learn about water resources on the planet, learn how to save water, and appreciate the role of water in nature and in human life.

Warm Up Riddles

- ≡ It flows from under the ground but faces the sky (Answer: spring)
- ≡ They can fly without wings, walk without feet, and navigate without sails (Answer: clouds)
- ≡ You can see it when nothing else is visible (Answer: mist)

Stimulation

The teacher asks, "what association do you make when you hear the word water?" and writes the students' responses on the chalkboard. Students write the word "water" at the top of the prism and a string of sequentially associated words on the levels below as the chart fans out.

The teacher then asks students to refocus their associations for fewer words, so that the final word is closely related to "water," for example "life." Finally, students are asked to explain the association of the words - especially "water" - to the last word by making up sentences using those words

Guided Reading: Freshwater Supplies

Undoubtedly there is no life without water.

When searching for evidence of life on other planets, researchers firstly try to find out if there is water. By absorbing and releasing heat, water moderates the Earth's climate. Water molecules, scattered in the atmosphere, protect us from cosmic frost. Water vapor, creating a temperature buffer in the atmosphere, causes the greenhouse effect.

Pause 1

Questions

1. Is water an unlimited resource?
2. What are the causes of fresh water scarcity?

The volume of water on the whole planet is 1,390 million cubic kilometers. If the Earth were covered with an even layer of water, it would be for kilometers high. As a result of human activities, water quantities lessen substantially each day or become unusable after being contaminated with harmful substances. Fresh water is the most essential component of all kinds of living organisms. The volume of Fresh water on our planet is 20 million cubic kilometers. Almost all the fresh water supplies (97 percent) are found in the ice fields of the Arctic Ocean and Antarctica. Thus, only three percent of fresh water supplies - distributed unevenly - are available for human use. This is the reason why most countries of the world lack access to safe drinking water and live in unhealthy and hazardous conditions.

Pause 2

Questions

1. Which are the main water basins in Kenya?
2. Where does our drinking water come from?

In Kenya there are for main clean water sources: the River Tana, Athi, Lake Nakuru, Turukana, Victoria, Baringo... There are over 215 streams with a length of 10 kilometers or more. Armenia's other major rivers are Athi, Tana...

Pause 3

Question:

1. What important role does fresh water supplies have in human and animal life?

Answer: Every cell in the human organism contain water. People can survive without water only for a few days. Water is part of every kind of bodily activity; it gets nutritious substances and oxygen to move, releases decomposed substances, functions as part of the breathing process, has a thermostatic effect, etc.

Lesson 2.1 Forms of Water Contamination

Objective

Students should learn about causes of water contamination and understand that clean water is essential.

What do you do?

Take two glasses full of water - one is filled with tap water and the other with water from a nearby stream. Ask students to describe both clean and contaminated water and guess how the stream water is contaminated and what the causes are.

Read "The Causes and Consequences of Water Contamination" and ask students to write four questions they are concerned about in the sections of the grid called "Diary with Double Notes." In the first column there should be a quote from the text; in the second column they should write their own opinion about it.

Group work assignment.

In groups of two - three students, collect information on:

1. The sources of the tap water in their homes (well, rivers, lakes?)
2. The causes of water pollution in the nearby rivers or reservoirs in the area

Reading: The Causes and Consequences of Water Contamination

We learned from the previous lesson how important water is. However, today humanity is threatened by scarcity of clean, safe water because for centuries people have been dumping household and industrial waste in to rivers, lakes, and seas. Fresh water supplies are of strategic significance for any country.

Fresh water is classified three groups according to the degree of contamination:

1. High degree of contamination
2. Medium degree of contamination
3. Almost clean

Water contamination is caused by harmful substance found in industrial waste water. Passing through the food chain, water pollutants affect flora and fauna and eventually humans.

Today over a billion people lack access to safe drinking water and about one billion people live without basic sanitation. Contaminated water kills millions of people each year. Waste water from oils treatment, cellulose, paper, chemical industries are particularly dangerous for water quality. Water contamination has become a critical issue worldwide.

Contaminations with household/ municipal water discharge Water bodies are largely contaminated with untreated water discharge from bathrooms, hospitals, canteens, and other public institutions. Today the Mediterranean, North Sea, and Baltic Sea are severely contaminated.

Contamination with heavy metals.

Living organisms are seriously affected by large quantities of heavy metals (mercury, copper, and lead) found in water. Certain algae, due to their specific properties, can absorb these metals in large quantities. Fish, crustaceans, and gastropods, which feed on these algae, accumulate heavy metals in their bodies. Then people may eat these sea creatures.

Oil Contamination

As a result of oil drilling, the bottom of the sea becomes polluted. While being transported by sea, thousands of tons of oil are

released into the water, which causes contamination. Layers of oil cover the surface of the water, which affects the energy, temperature, humidity, and gas exchange between the atmosphere and the hydrosphere.

This phenomenon greatly affects water plants and large and small creatures. A ton of oil creates a layer as large as 12 square kilometers. Each year about 6,000 ships transport 3.5 billion tones of oil. In the last decade more than 750 ships had accidents in the oceans.

Contamination with toxic chemicals.

The world oceans are polluted with pesticides also. They get into the soil and reach the sea through run-off water. These toxic chemicals often cause massive destruction of fish.

Contamination with nuclear waste

Nuclear waste, which generated as a result of nuclear power production, various accidents, leakages, as well as testing nuclear arms, causes water contamination.

Fresh water supplies are scarce all over the world in the Caucasus in particular.

Before reaching us, water undergoes a number of processes. Developed industrial countries have built water treatment stations. They also have improved production technologies to minimize water pollution. In addition, they may use closed water production technologies to minimize water pollution. In addition, they may use closed water supply systems which allow basins may clean itself - this can be an effective but slow process.

At present industries waste water undergoes physical and biological purification process. Water treatment is conducted by ozone, chlorination, aeration, and ultrasound. In biological treatment, water organisms such as amoebas, infusorians, mollusks, or worms are used.

if drinking water contains pathogen microorganisms, then it undergoes chlorination and ozone treatment. Drinking water must be free from pollutants and be safe for human health. You have the right to know that you drink clean and safe water.

Diary with Double Notes

	Quote from the text	What you think of it
1		
2		
3		
4		

Module B: Our Environment

Lesson 1: Trees in Our Neighborhood

Objective

To help students develop basic observational skills through community map-making and conducting a survey of trees in their local schoolyard or neighborhood.

The lesson will also assist students in turning their field notes into reports. Creative essays encourages use of their imagination to explore the life of tree. It is hoped that these creative activities will lead to a greater emotional attachment to nature and the services nature provides.

Our final lesson in this section emphasizes how this connection can be used to create a healthier environment in Kenya, beginning by planting a tree.

Lesson 1.1: Community Map-Making

Keywords: Community map, map, area plan

What do you need?

A large sheet of paper, colored pencils or crayons, and a sample of finished community map if available.

What do you do?

This activity may require two to three class periods. Provide a sample map as a guide. Students may work on different sections of a single large map. Assist students with spatial relations as needed.

Instructions to the students:

Draw your school block in the center of a map.

Write the names of streets around the block turning your paper as you write.

➤ Walk around your block and identify the locations of important landmarks and green spaces. Draw squares on your map for houses and rectangles for larger buildings like stores and apartments. Using a pencil, mark where trees and open spaces are located.

➤ How many trees are there? Can you tell the difference in species? label them on your map. Can you identify where water drains are?

➤ Make a map key. A map key is important as it indicates to others what each sign means. Use different colors to show houses where you know people. Indicate the four cardinal directions to orient people reading your map.

Lesson 1.2 Field Notes and Creative Expression: "The Life of a Tree"

What do you do?

Ask students to write the life story of a tree. Take students to particular tree you have identified near the school. You will need to identify it ahead of class to observe a tree with interesting characteristics for discussion.

Look for a tree that may have been shaped by the wind, branches that may have been cut off, birds nests in branches, holes where insects may have eaten part of the outer or inner bark, or scars where couples may ave carved their initials. Is there scarring at

the base of the tree from possible fires? All of these or none at all tells us about the life of the tree.

➤ Ask students to list the various land use patterns this tree would have witnessed. List som of the human impacts on the condition of this tree affects its forest neighbors (animals and other plants)?

➤ List the human impacts on the soil around the tree. Is there concrete or pavement around the tree? How does the soil look? What animals could be connected to this tree?

Conclusion

Fifteen minutes before the end of the class ask students to share their observations. Before students leave, ask them to prepare to discuss this question for the next class: Do you think local, state, and national governments should take and active role in tree management?

(A) ANALYSIS

Module A: Going Beyond the Environment: Ecological and Cultural Heritage

Lesson 1: Planting a Sacred Learning Grove, a "Chemaran"; Planting Seeds of Responsibility

Objective:

To provide a means for students to put their lessons learned into action by creating a special place for study and reflection in environmental studies and to gain practical life-skills in the care of trees in the schoolyard or an adopted area.

Background information

In ancient Greece lectures were held in special groves specified for this purpose. Th philosopher Plato used to read this lectures in the one of these groves called "academia" Other countries world over also adopted this tradition, thus the word "Chemaran" which originally meant a "Lecturing grove" is used in Modern World as Learning Institution.

Lesson 1.1: World Without Trees

Objective

Students will decide why trees are important in their own lives.

What do you do?

➤ Imagine you are in the desert where here is no tree. You need to stay and work there for a certain period of time.

➤ How would your lives be different?

Tips for the teacher:

- Give students a couple of minutes to think and to write one statement about how life will be different for them without trees.
- Ask students to write statements on the chalkboard (not repeated ones)
- Review the list on the chalkboard and ask students to make any additions
- Combine the statements in to a story about why forests are important in our lives and explain the word "forest" in its broadest sense.

What is a Forest?

A forest is made up of trees, of course, but it is also the fungi, the plants - including lichen, moss, and fern - that grows under and around trees. It is the birds and animals; the bugs and micro-organisms; the air; the streams, rivers and lakes; the rain, fog and snow; the soil, the rocks, the mountains, and minerals. It is the products of the forest: the fresh air, clean water, protected soil, recreation, fish, game, edible seeds and nuts, and of course fiber, both timber and pulp. The forest creates less tangible products as well, which are rarely valued and can be hard to quantify. These include wilderness and wildness, solitude, emotional and physical restoration, etc.

- Tips for the teacher
- Divided the class into two teams that will compete with each other to come up with the longest list of what trees can be used for. Declare the team winner.
- Ask the class to vote on which use they feel is most important. When they reach a decision ask for their reasons.
- Ask students if they know any songs or poems about trees?
- Ask students if they would like to plant trees. Tell them that they will learn how to do that at the next lesson.

Follow-up activities:

Ask students to prepare a story from their life, connected with trees, gardens, forests, or to draw a picture.

Lesson 1.2: How We Plant a Tree

Objective:

Students will learn the procedure for three planting

Introduction

What do you do?

Each of you has a yard near the house. What tree would you like to plant and take care of?

Tips for the Teacher

- Give students a couple of minutes to say what kind of fruit and decorative trees grow and which of them are most popular.
- Ask students to recite a poem or sing a song about trees.
- Ask students if any of them has ever planted a tree and how he/she did it.

Combine the stories into one and explain how a tree is planted: To plant a tree you need to choose the appropriate species for the climate. The tree should be planted on a secure territory where no body can step on it or break it. The site must have a good watering system.

Decorative trees are planted more easily than fruits

Step1: Dig the hole. The hole for the tree must not be too big or too little, so make approximately 50cm deep and 50cm wide.

Step2: Before planting the tree check the soil and if it is poor add manure into the soil of the tree bed

Step3: Before planting check the quality of the seedlings - remove damaged or dry parts of the roots. The roots of deciduous saplings should only be trimmed in two situations. if there is obvious diseases associated with a particular section of a tree's root system; or if the size of the tree's root system exceeds the size of the planting hole that can be reasonably dug. The root of the tree must be comfortable in the hole and it must not be damaged.

Step4: Put the tree in the hole in such a way that the grafted part faces to the East It is done to keep the grafted part warm as the

sun rises from the East.

Step5: Pour a half bucket of water in the hole and then add soil from the top layer of the ground as it is more fertile than the soil from deeper in the hole. Press the soil with your feet so the roots are covered with soil.

Step 6: After pressing the soil slightly pull the seedling upwards to make sure the roots are firmly covered with soil

Step 7: Water the tree.

Tips for the teacher

- Ask students to repeat the procedure
- Tell students about tree care; you can compare tree care with child care
- Keep the students informed of the tree planting date.

Follow-up activities.

- Organize a tree planting event in the school backyard where the students can plant a few trees. What would they like to do in their sacred grove?
- In addition to trees you should consider planting pretty flowering plants and placing items such as feeders to attract small birds to the sacred grove.
- With students write the rules of behavior in the sacred grove on the chalkboard. These should include respect for nature, no littering, and no loud activity or running. Most importantly, I should stress that in the sacred grove, everyone has the right to speak and be heard. This is a safe place for everyone to share ideas without fear or feeling foolish or silly.
- As a teacher it will be your responsibility to promote this safe environment for communication at all times. The sacred grove may eventually become a focal point for school activities with parents and celebrations for the school in general

Adopted from:

- Plant an idea, Plant a Tree Manual for Science Teachers, Armenia Tree Project (Second Edition, Yerevan, 2010)
- KEC Manual for Schools Environmental Clubs.

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