CEE

Green Games

Centre for Environment Education, India

'Green Games' is a selection of Environmental Education games—old and new—which have proved to be effective and popular with both adults and children. Some of the games in this manual have been developed by CEE. Some others are adaptations of popular EE games, modified to suit the Indian context. Most games in the manual need little inputs in terms of materials. They are also flexible enough to be played with larger groups of players, like in a school or a college setting. An attempt has been made to cover a range of environmental concepts and issues.

Acknowledgements

Contents

Fun and Games

Most people—both children and adults—enjoy games.

Environmental Education games provide an innovative, educational, entertaining and participatory approach to making people sensitive to the environment, and ultimately encouraging them to take action. Games can help in creating awareness, knowledge, values and skills.

How to Choose a Game?

This manual has a collection of twenty-four Environmental Education games for you to choose from. You may use the games as they are, or may want to modify them to suit your requirements. Here are a few questions that will help to choose a game in an educational context.

- Do the objectives of the game fit in with the objectives of your Environmental Education programme?

- Is the game suitable for the level and interest of the participants?

- Is the game interesting?

- Does the game convey the desired concepts?

- What are the rules? Will the participants be able to follow them?

- What kind of discussion and debriefing is required to conclude the game?

The last question is very important in case of Environmental Education games. The discussion and debriefing which follows a game becomes an opportunity for exploring concepts that are demonstrated through the game, and is also an opportunity to draw out attitudes, experiences, and knowledge from the participants, and relate these to the theme or concept.

Tips for Conducting Games

- Overusing games may cause the participants to reach a point of saturation.

- The game will be more effective if it is used as a part of a larger learning unit. For example if the learning unit is about energy transfer in a food chain, "Prey-Predator" can be played to reinforce what the participants have learned through observation, lectures, etc.

- Feel free to adapt the games for the needs of your participants. You can change any game according to the subject/class you are teaching. For example if the class is on mathematics and you want to teach about the importance of resources in a system at upper primary level, then you can play the game "Oh Deer!" and interpret the results through discussions and calculations.

- While choosing or designing a game, try to make sure that the game can be played even by people who have not yet mastered the concepts it tries to convey. For example, in the game "Who am I?" the player gets to understand the basics of plant and animal classification. However it is not essential that to play this game the player needs to have prior knowledge of classification.

- It is desirable not to emphasize winning.

- Discussions after the game are helpful in enriching the educational impact of the game. The discussion should be centered around the main concepts the game tries to convey.

- To make the players feel comfortable, it is better not to correct the minor mistakes they may make.

- Let the players slightly change the rules of the game if they wish to.

- It is not necessary to keep perfect order. Games should be fun and noisy!

- Try not to restrain the moderate physical movement a game may require.

Adaptation/Interpretation

New games usually evolve from older ones! Feel free to adapt any of the games in this manual to suit your requirements. For example, if you feel that using the materials listed in this manual is not possible or appropriate in your situation, substitute them. If you feel that the same game can be modified to convey certain other concepts, modify it.

Based on 'Fun and Games' by Rahul Barkataky in 'The Green Teacher : Ideas, Experiences and Learnings in Educating for the Environment', published by Centre for Environment Education, Ahmedabad.

Green Gamble

Objective

To help players learn environmental terms.

Activity

Divide the group into teams.

Select a word or phrase. This should be an environment-related one like Pollution, Consumption, Biodiversity, Ozone Hole, Extinction, etc.

Draw a number of short lines on the blackboard to correspond to the number of letters in the word. For example, if the word is POLLUTION, the spaces on the board will be: _ _ _ _ _ _ _ _ _

A member of the first team throws the die and guesses a letter in the word. If the guessed letter appears in the word, write the letter in the correct blank or blanks, and the team wins points equal to the number on the dice.

When a team guesses a letter correctly in its turn, it also gets a chance to guess the word. If it is able to guess the whole word correctly, it wins 10 points. If the guess is incorrect, the game continues with the next team getting its chance.

If the letter is not in the word, the next team throws the die.

The team with the most points at the end of 20 rounds, wins.

Variation

The game can be played on specific themes, e.g.: names of animals, names of plants, names of rivers, etc.

A Sample List of Environment Related Terms

Biodegradation	Compost Pit	Biodiversity
Resources	National Park	Deforestation
Forests	Ozone Hole	Water Quality
Wildlife	Recycling	Wetland
Afforestation	Conservation	Rain Forest
Air Quality	Habitat	Pollution

Topic
Environment

Level
Elementary, Intermediate

Subject
Science, Language

Duration
15 - 30 minutes

Group Size
Up to 60 players

Location
Indoors

Skill
Vocabulary, Memory

Facilities
Blackboard, chalk, eraser, a die, list of environmental terms

2 Whose Garbage?

Topic
Environment

Level
Intermediate

Subject
Social Studies, Science

Duration
15 - 30 minutes

Group Size
Up to 60 players

Location
Outdoors or indoors in a large hall

Skill
Analytical thinking, Association

Facilities
2 boxes, 2 bags, miscellaneous items or cards with the names or pictures of items

Objective

To promote an awareness of the relationship between life-styles and the generation of waste.

Activity

Divide the players into two teams. Ask the teams to line up parallel to each other.

Place two large boxes labelled "150 years ago" and "Now" at one end of the room. In front of each team place a bag of miscellaneous household items, or cards with the names or pictures of items, representative of both these life-styles (see sample list below). At a signal, players run a relay race, with each team member choosing an object or a card from the bag and depositing it in the box where the object would more likely be found. For example, the item 'Cane basket' will fit in the category '150 years ago' rather than in the category 'Now'.

Discussion

Which box has more items in it? Why?

How many items in each box are reusable?

How many items in each box are biodegradable?

How many items in each box are recyclable?

Why are there differences in the nature of the items found in each box? Does it reflect different life-styles?

Which items might cause environmental problems?

What are some good substitutes for the items which are usually used only once?

Some items for use in the game

150 years ago	Now
Cane basket	Plastic bag
Mud pot	Soft drink bottle
Hand fan	Styrofoam glass
Wooden toy	Plastic toy
Oil lamp	Light bulb
Cow dung cakes	Sports shoes
Neem twig	Tooth brush
Cloth bag	Chocolate wrapper
Home made sweet	Battery
Cotton cloth	Synthetic Cloth
Coconut/grass broom stick	Perfume bottle

Forget Me Not!

Objective

To classify objects as biodegradable and non-biodegradable.

Activity

Collect ten biodegradable and ten non-biodegradable objects (see sample list below).

Jumble the objects and arrange them on a tray. Cover the tray with a cloth. Tell the players that you will show them a collection of different items for 30 seconds. After showing the items, cover the tray again with the cloth. Now, ask the players to list down on a paper, the items which they remember seeing on the tray. The players should then group the items into two categories—biodegradable and non-biodegradable.

After the players finish, ask each player how he/she has grouped the items. Write the items under the heads 'Biodegradable' and 'Non-biodegradable' on the board for every one to see and discuss.

Variation

The players can also play this game in groups.

Sample List

Biodegradable	Non-biodegradable
Banana skin	Styrofoam cup
Handkerchief	Plastic bag
Paper	Empty fruit juice pack
Dry leaves	Toothpaste tube
Dead insect	Broken plastic toy
Leather belt	Rexine bag
Flowers	Plastic bangle
Wooden ladle	Plastic spoon
Potato	Plastic pencil box
Rag doll	Plastic doll

Discussion

What do 'biodegradable' and 'non-biodegradable' mean?
Will the items listed be thrown away at some point in time?
What happens to them then?
How can we manage biodegradable and non-biodegradable wastes?

Topic
Environment

Level
Elementary

Subject
Science, Games

Duration
15 - 30 minutes

Group Size
Up to 30 players

Location
Indoors

Skill
Analytical thinking, Classification, Memory

Facilities
Different kinds of biodegradable and non-biodegradable objects (about 10 objects each), large tray, cloth to cover tray.

When will these things degrade?

Styrofoam
Eternity

Glass bottle
Unknown

Plastic bag
One million years

Dispensable diapers
500-600 years

Aluminium can
200-500 years

4 Linking Up!

Topic
Ecology

Level
Intermediate

Subject
Science

Duration
30 – 60 minutes

Group size
From 10 to 60 players

Location
Outdoors or indoors in a large hall

Skill
Analytical thinking, Association

Facilities
Cards with names of animals, U-pins for clipping cards on to clothes, any instrument to make some noise (as in musical chairs).
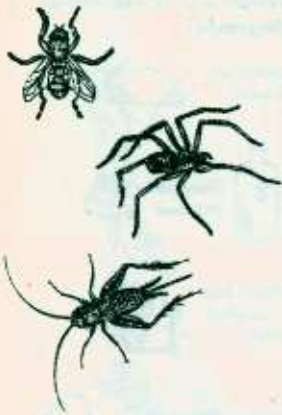
Objective

To identify some of the relationships between different species.

Activity

Choose a set of characters in a food chain. For example: Insect, Frog, Snake, Eagle.

Make five cards each for each of the characters. For example, write 'Insect' on five cards, 'Frog' on five cards, etc. There should be one card each for each player in the group. If the group has more than 20 players, then choose a longer food chain, for example: Grass, Grasshopper, Frog, Snake, Eagle. Alternately the game can be played in two groups, one after the other, or you can make more number of cards for each character depending on the size of the group. For example, for a group of 50 players you can have 10 cards each for each of the characters, in the Flower, Moth, Frog, Snake, Eagle food chain.

Distribute the cards to the players. Ask the players to stand in a large circle around you. The game proceeds as in musical chairs, with the players running in the circle as long as the music is on. Stop the music and call out a number.

The number you call out should not be more than the number of characters you have chosen. For example, for the food chain Flower, Moth, Frog, Snake, Eagle, which has five characters, you can call out the number five or a number less than five.

The players have to stop running when the music stops, and gather in groups having the same number of individuals as the number called out. For example, if you have called out the number three, the players gather in groups of three members each.

This grouping has to be on the basis of some relationship. For

example, animals of the same species can group together, or animals having a prey-predator relationship can group together.

For the number three, some examples of the possible groups are:

three frogs
one snake and two frogs
one frog, one snake and one eagle

After the players form their groups, ask each group to explain the relationship on the basis of which they have grouped.

It is possible that a few players who have not been able to find a group quickly will be left out. Tell the players that they can try for a group in the next round.

Have different rounds with different numbers.

Variation

After three or four rounds, you can tell the players that grouping on the basis of species is no longer valid. They must now group on the basis of predator-prey relationships.

Another variation may be that the group should have only one animal from each species. For example, two frogs or two snakes are not allowed. This variation will lead to making a food chain.

The same game can be played using the Web of Life cards (on the black and white side) as well. The players can be asked to group on the basis of 'families' i.e. insects group together, mammals group together, reptiles group together, etc.

Discussion

What is a population?
What is a food chain?
What other relationships exist between different species e.g.: Symbiosis, Parasitism
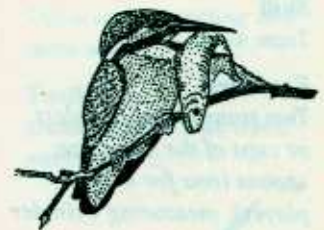
5 Energy Relay

Objective

To help players understand that energy is lost as it passes along the food chain.

Activity

Make the players stand in a line. The line should have about fifteen players. If there are more than fifteen players, make them stand in two or three lines of fifteen players each.

Take a cup of water. Call two or three players and ask them to measure the amount of water in the cup using the measuring cylinder. Let them take the cylinder around so that all the players can see and make a note of the amount of water that is put in the cup.

Give the cup of water and a spoon to the first player in the line. Give an empty cup and a spoon to the last player in the line. Give one spoon each to all the players in the line.

Ask the first player to take a spoonful of water from the cup and transfer it to the second player's spoon. The second player then transfers the water he/she received to the third player in the line. After this transfer, the second player gets another spoonful of water from the first player. Meanwhile, the third player passes the spoonful of water to the fourth player and so on. The last player receives water in his/her spoon and empties it into the cup that he/she holds.

After all the water has been emptied into the last player's cup, call a couple of players and ask them to measure, using the measuring cylinder, the amount of water.

Ask them to show the measuring cylinder to all the players so they can make a note of the amount of water in the last cup.

Variation

Each line of players can be a 'team'. The game can then be an 'Energy Relay Race' with each team trying to complete the transfer of water first with the minimum loss.

The game can also be played in two rounds, the players can take care to minimize loss in transfer the second time.

Discussion

What happened to the missing spoons of water?

Explain that each spoon of water represents a quantity of energy and loss of energy takes place with every transfer.

Pick and Sort

Objective

To help players observe differences and similarities amongst natural objects of different sizes.

Activity

Ask the players to wander around individually in the area and come back with a leaf each. Instruct the players that they can only bring fallen leaves and must not pluck any. They are given a time of 15 seconds to find and get back the leaf of their choice.

After the players come back, group them randomly into teams. Each team can have about 20 players. All the teams should have the same number of players.

Ask each team to arrange the leaves they have in an ascending order, according to size, on the ground. After a team finishes making the arrangement, ask them to count how many different types of leaves they have in their arrangement. After all the teams have arranged their leaves and declared their 'variety score', they can go around and see the arrangement of the other teams. The team having the biggest 'variety score', that is, the most variety of leaves, wins.

After the game, return the leaves to where they were found.

Variation

The game can be played with other natural objects as well, e.g.: twigs, pebbles, etc.

By playing the same game at different locations and by comparing the 'variety scores' of different locations, the players can compare the biodiversity at different locations.

Discussion

How do the leaves differ from each other? Discuss size, shape, colour, etc.

What kinds of places are likely to have a larger 'variety score'? Why?

What places are likely to have a smaller 'variety score'? Why?

Why is it important to return the natural objects to the places from where they were picked up?

Topic
Environment

Level
Elementary

Subject
Maths, Science, Games

Duration
30 minutes

Group Size
Up to 60 players

Location
Outdoors

Skill
Observation, sorting and team work

Facilities
Outdoor area with trees, pebbles, etc.

7 Tiger Hunt

Objective

To help the players understand the concept of carrying capacity.

Activity

Prepare 50 cups/cards marked with 'S' on the bottom (to represent Squirrels of weight 1/4 kg each).
25 cups/cards marked 'H' (to represent Hares of weight 2 kg each).
15 cups/cards marked 'M' (to represent Mongooses of weight 10 kg each).
9 cups/cards marked 'L' (to represent Langurs of weight 20 kg each).
1 cup/card marked 'D' (to represent Deer of weight 75 kg each).

Place cups/cards representing food on the ground in such a way that the animal names face the ground. Tell the players that each one of them is a tiger and to survive must gather 70 kgs of meat. The cups/cards represent different prey animals which the tigers are to hunt.

Divide the players into three groups.

The first group of tigers have been injured in a fight with an elephant and have broken legs. Tell these players to hop while they are hunting.

The second group of tigers will be blind from an injury caused by a porcupine. Blindfold these players.

The third group of tigers are females with four cubs each. Each cub needs 25 kg of food to live. So these tigers must gather food both for themselves and for their cubs.

On a signal, each one of them must start collecting the cups/cards. Pushing and shoving is not allowed.

When all the cups have been gathered, the players calculate the quantity of food they have gathered.

Discussion

How many kilograms did each tiger gather?
How many tigers can survive in this habitat?
How many kilograms did the blind tigers gather?
How many kilograms did the lame tigers gather?
How many kilograms did the mother tigers gather?
What are the chances of their cubs surviving in this habitat?
What would happen to the tiger population if all the deer died as a result of a disease?

Go and Touch

Objective

To help players observe and identify different natural objects.

Activity

Divide the group into teams of about 15 players each. There can be 5-6 teams in all.

Line up the teams parallel to each other, with enough space for movement in between.

Call out the name of a natural object that is available in the surrounding area (See sample list below).

The player standing first in each team has to run, touch the object whose name you called out. After touching, the player has to run back and join the end of his/her line.

The team whose member reaches back first gets a point. No one is allowed to prompt, guide or advise their team members. Points may be deducted for any breach of rules.

The game continues with a different object called out every time and a different player running to touch it.

Sample list

A living thing	Something green
Something brown	Grass
Something wet	A flower
A fruit	A feather
A smooth bark	A fallen twig

Variation

One way to sharpen observation is to call out a name and point out in the wrong direction.

Discussion

What are the natural objects that we often miss noticing? Why?

Topic
Environment

Level
Elementary

Subject
Science, Games

Duration
20 minutes

Group Size
Up to 90 players

Location
Outdoors

Skill
Observation and Team work

Facilities
Outdoor area with trees, shrubs, rocks, etc.

9 Treasure Hunt

Topic
Environment

Level
Elementary

Subject
Science, Games

Duration
60 minutes

Group Size
Up to 50 players

Location
Outdoors in a natural environment

Skill
Observation, Team work

Facilities
Cyclostyled or photocopied sheets of paper with illustrations of the natural objects, on which the treasure hunt is based.

Objective

To help players observe and identify different natural objects.

Activity

Select an area that is well wooded. It should have at least 6-10 different kinds of plants (trees, shrubs, creepers, potted plants, etc.), each with a noticeably different kind of seed, pod, or leaf.

Make a survey of the area and choose a theme for the treasure hunt— for example, you may choose to focus on 'seeds and pods' or on 'leaves'.

Collect samples of different kinds of seeds, pods or leaves, depending on the theme selected. You will need up to ten different varieties.

Make or collect illustrations of the samples. Most text books of Botany give illustrations of common trees and plants, their leaves, seeds, etc.

Arrange and glue the illustrations neatly on to a sheet of paper, so that you have a sheet containing illustrations of about ten varieties of seeds/ pods/leaves found in the area. Do not write the names of the trees/ plants on the sheet.

Now make enough copies of this sheet to give each group of 4-5 players one sheet (so, if you wish to organize the trail for a group of 30 players, you will require 6 copies of the sheet, as the players will be working in groups of five each). The sheets are the 'clue sheets' for your trail.

Divide the players into groups of 4-5 each. There can be up to ten teams in the treasure hunt. Give a name to each team. Distribute one 'clue sheet' to each team.

Explain to the teams that the sheets of paper given to them have illustrations of different kinds of seeds/pods/leaves found in the area.

The task for the teams is to find and get one sample each of the seeds/ pods/ leaves featured in the clue sheet.

Instruct the teams that an important rule of the treasure hunt is that they should not pluck anything from a plant. They are to collect only those objects that lie on the ground.

The illustrations on the clue sheet may not be to scale, and the teams must be informed about this also.

Give the teams a time limit of 30 minutes. Tell the groups that they must assemble back at a pre-decided spot at the designated time.

After the teams come back, ask each team to match what they have found with the illustrations on the clue sheet.

The team which comes back in time and has found the maximum number of correct seeds/pods/leaves wins.

Discussion

If any team has brought 'wrong' specimens, point out the differences in the specimen and the illustration to them. e.g.: Is the shape different?

Ask the teams if they know the names of the plants to which the seeds/pods/leaves belong.

Give interesting information about the seeds/pods/leaves and the plants. For example, the mode of dispersal of the seeds, their medicinal value, etc. This information is usually available in any college botany book.

Variation

Try the same exercise with the same group of teams in different seasons. Discuss the changes in the seeds/pods/leaves over time.
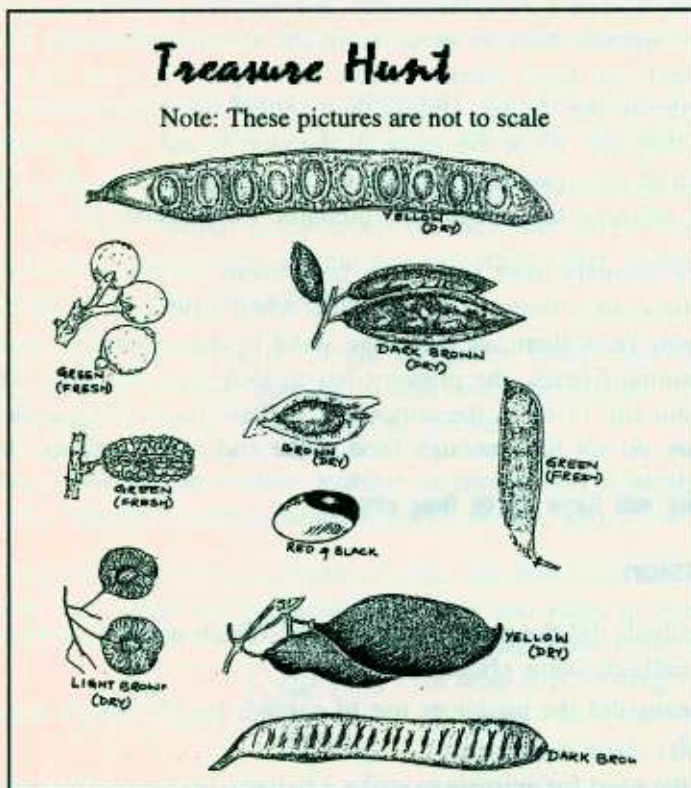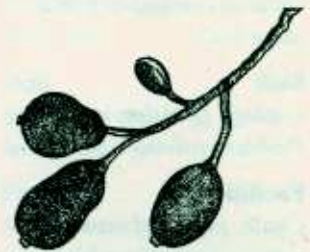
Treasure Hunt

Note: These pictures are not to scale

10 Prey-predator

Objective

To discuss predator-prey relationships and the importance of adaptations in predator-prey relationships.

Activity

Divide the players into two groups. One group represents the 'prey', the other group are 'predators'. There should be approximately one predator for every four to six prey animals.

Tell the players that one end of the playing area has the food and the other end is the shelter for the prey. Mark (with chalk powder or stick) four or five circles (about half a metre in diameter) between the 'shelter' and the 'food' ends. These circles represent temporary shelters for the prey.

Place the food tokens at the 'food' end of the playing area. The prey animals have to stand at the 'shelter' end. The predators stand anywhere between the food and shelter ends, except in the temporary shelters.

At a whistle or clap, each round of the game begins.

The prey animals have to move from the shelter end to the food end, and collect two food tokens. After collecting the food tokens, they must return to the shelter. Unless they collect two food tokens they die (that is, they are out of the game in the next round). The predators try and catch at least two prey animals each. Otherwise they die. Captured prey are taken to the side by the predator who catches them.

The prey animals have two ways to prevent themselves from being caught: they may 'freeze' i.e. stand still when a predator is about half a metre away from them, or they may stand in the temporary shelters. If a prey animal freezes, the predator has to look for other prey. The prey can remain still or be in the temporary shelters for as long as they like, but if they do not have enough food at the end of the activity, they die.

The game can have up to four rounds.

Discussion

What methods did the prey use to escape? Which methods were easiest? Which methods were effective?

What means did the predators use to capture prey? Which ways were the best?

Discuss the need for animals to strike a balance between safety and food.

Oh Deer!

Objective

To enable players to understand that food, water, and shelter are three essential components of habitat; understand the concept of 'limiting factors' and recognize that some fluctuations in wildlife populations are natural as ecological systems undergo constant change.

Activity

Divide the players into four groups. All the groups should have nearly equal numbers of players. Give one of the following names to each group:

Deer
Food
Water
Shelter

Mark two long parallel lines on the ground or floor. The lines should be 3-5 metres apart. Have the 'deer' line up behind one line; the others (food, water and shelter) should line up behind the other line.

Tell the players that the essential components of a habitat are food, water and shelter. Deer need good habitat in order to survive.

Decide different hand gestures to symbolize the three basic needs — food, water and shelter. Ask the players to remember the gestures.

The activity starts with all players lined up behind their respective lines (deer on one side, habitat components on the other side). The 'deer' and the 'habitat components' should not face each other. Instead, they should stand with their backs to each other.

Begin the round by asking all of the players to make their symbols. Each player (both the deer and the habitat components) has to choose one of the three symbols: food, water or shelter.

If a deer is making the 'water' symbol, it means that it needs water. Making the 'shelter' symbol means it needs shelter, and so on.

At the count of three or at a whistle or clap, the deer must run towards the habitat line, select the component it needs and stand in front of it.

Each deer must make the sign of what it is looking for, until it gets to the habitat component with the same sign.

Each deer that reaches the correct habitat component takes the 'food', 'water', or 'shelter' back to the 'deer' side of the line. This represents the fact that the deer has successfully reproduced as a result of finding what it needs.

A deer that fails to find its food, water, or shelter partner dies and becomes one of the habitat components. So, in the next round, the deer that died is a habitat component and is available as food, water, or shelter to the deer that are still alive.

Record how many deer there are at the beginning of the activity, and at the end of each round. Continue the activity for four or five rounds.

Discussion

What did the players experience and observe? For example, at the start, there is a small herd of deer that could meet its needs in the habitat. As the population of the deer expanded over two to three rounds of the activity, the habitat becomes depleted. As a result, there is not sufficient food, water and shelter to satisfy needs of all the members of the herd. At that point, some deer starve or die of thirst or lack of shelter, and they became part of the habitat. Explain that such things happen in nature also.

Using a blackboard, display the data recorded during the activity. The number of deer at the beginning of the activity and end of each round represent the number of deer in a series of years. That is, the beginning of the activity is year one and each round is an additional year.

The data can also be displayed as a graph. The graph will act as a visual reminder of what happened during the activity i.e. the deer population fluctuating over a period of years. This is a natural process. Wildlife populations will tend to peak, decline, and rebuild—as long as there is good habitat and sufficient numbers of animals to successfully reproduce.

Ask the players to summarize some of the things they have learned from this activity. What do animals need to survive? What are some of the "limiting factors" that affect their survival? Are wildlife populations static, or do they tend to fluctuate, as part of an overall "balance of nature"? Are ecological systems involved in a process of constant change?

Who Am I?

Objective

To help players use deductive logic in identifying diverse elements of nature and gain an insight into the characteristics of a particular element of nature.

Activity

Make the players stand or sit in a circle. Ask one player to volunteer. Affix a card (with the black and white side showing) on the back of the player. The participant is not told what the card is. Now ask the player to walk around the circle, so the other players can see what the card represents.

The task for the player is to identify who he/she represents by asking relevant questions. The others must answer questions only with either a 'yes' or a 'no'. The player can ask up to a maximum of 20 questions.

As the number of questions is limited, the player should be very careful in the choice of questions and should frame them logically, e.g. based on classification of animals and plants. For example, they may ask:

Am I a mammal?
Am I a bird?
Do I eat meat?
Am I domestic?

As the game progresses, one can bring down the number of questions to ten to make it more competitive.

Play the game in 10-15 rounds with different players as volunteers.

Discussion

How did the players arrive at the answers?
Which classification principles did they use?

Vulture	**Monkey**
Sun	**Tree**
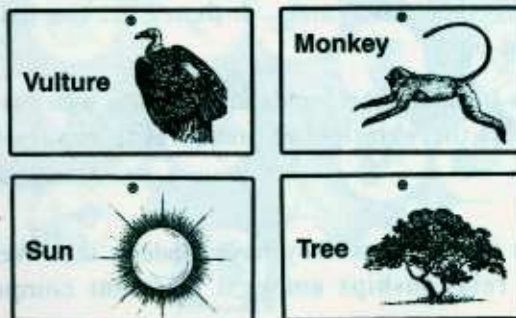
Topic
Environment

Level
Elementary

Subject
Science

Duration
30 minutes

Group size
Up to 60 players

Location
Indoors or outdoors

Skill
Classification, Identification

Facilities
Web of Life cards (black and white side), paper clips or safety pins. If cards are not available, the teacher may prepare the cards including biotic and abiotic components of the environment.

13 Web of Life

Topic
Environment

Level
Intermediate

Subject
Science

Duration
40 minutes

Group Size
Up to 36 players

Location
Outdoors or indoors in a large hall

Skill
Analytical thinking, Association

Facilities
Web of Life cards (black and white side), a ball of string (about 250 metres long), paper pins. If cards are not available, the teacher may prepare the cards including biotic and abiotic components of the environment.

Objective

To help players identify linkages between different components in the ecosystem.

Activity

Ask the players to sit in a circle.

Distribute one card each to all the players. Make sure to include and distribute cards depicting the four main elements of nature: Sun, Soil, Air and Water. Also distribute a paper clip each.

Ask the players to pin their cards (with the black and white side showing) on their dresses so that every one in the group is able to see who they are. The players can take turns to tell the group who he/she represents.

After this, ask the players from whom the game should start.

There may be a variety of suggestions from the players. Prompt the players by asking them whose energy makes life possible on earth. It is appropriate to begin with the Sun because it is the primary source of all energy that makes life possible on earth.

Take the ball of string and give it to the 'Sun'. Ask the 'Sun' to wind one end of the string on his/her finger.

The task for the Sun is to throw the ball to any component of nature with whom he/she has a relation. For example, the Sun gives energy to plants. So the Sun can throw the ball to the player having a 'Tree' card. But before throwing the ball, the Sun has to explain the relation it has with the Tree.

The 'Tree' then winds the string firmly once or twice around his/her finger and then passes it to another component he/she feels related to, e.g., Fruit.

'Fruit' can throw the string to 'Monkey', and the line of relationships continues as the string unwinds and begins to form a pattern which the players hold together. The game continues till the ball of string is completely used up.

Ask the players to raise their hands and see the web they have made. They have to hold the web tight to prevent it from sagging.

Discussion

Tell the players that the web they have made is the 'Web of Life'. It represents the relationships amongst different components in an ecosystem.

An ecosystem may be subject to a variety of pressures, such as 'Drought'. Press the Web down with your hand to illustrate this pressure.

What happens then? Because the Web is held firmly, it bounces back after you release the pressure. Ask the players to note this. A healthy ecosystem, in which all the elements are in a viable state, bounces back to health even if an external pressure is applied.

Now, ask the players what would happen if some elements of the ecosystem are destroyed, for example, if all the trees are cut down. To illustrate this, ask the player with the 'Tree' card to let go of the string. All the players linked to the 'Tree' card will naturally experience a loosening in their strings. Ask the players who are immediately related to the tree card, e.g. fruit, leaf, roots, monkey, parrot, etc. to let go of their strings too. Now, there will be a noticeable sag in the Web.

What happens when external pressure is exerted on the ecosystem now? Press down the Web and see. The Web will not bounce back with as much vigour as before.

Conclude the game by explaining to the players the interrelationships in an ecosystem and their importance.
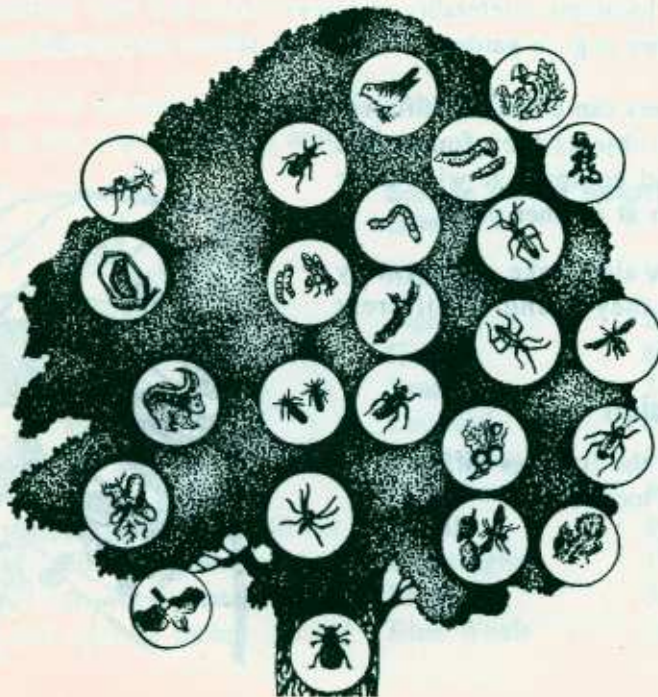
14 Nature Matchbox
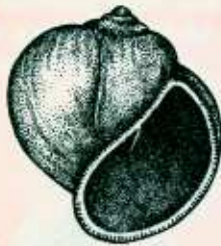
Objective

To draw the players attention to the range of small natural objects that exist around them.

Activity

Give one match box to each player.

Tell the players to wander about and collect as many different natural objects as they can to fill their matchbox.

Every object must be different. For example, the players cannot fill their matchbox with seeds of the same kind.

The time given is 10 minutes.

Tell the players not to put anything live in the matchbox (or anything they have killed!).

The winner is the person who has the most different natural objects in his/her matchbox.

Variation

Conduct this activity with the same group of players at two (or more) different locations, preferably at places which are very different from one another, e.g.: a garden, a beach, the school playground, etc.

The players can count the different kinds of objects they found at a place and compare it with their collection at another place.

They can also make an inventory of what they found at different places.

Discussion

Why are the findings different for different locations?

Heavy Weight Champions

Objective

The players will be able to appreciate the weights of different animals in relation to themselves.

Activity

Get all the players to tell their weights. If some players do not know their weights, ask them to say whose weight is approximately the same as theirs and use that. The players can write their weight on a small card and pin it up so that the other players can see it.

Divide the group into two teams. Each team can have about 25 players. Ask the teams to stand at one end of the playing area. Mark the other end as the target.

Ask players to guess the weight of a large animal, for example, a tiger. Then tell them the correct weight. (See sample list of weights below).

The players in each team should group up together till they add up to the weight of that animal. The players in the group should form a closed chain holding hands and run to the target.

The team which reaches the target first wins. Play different rounds with different animals. The group can be asked to make the sound of that animal while running.

Discussion

What are the advantages of being large/small?
Which is the largest/smallest animal?
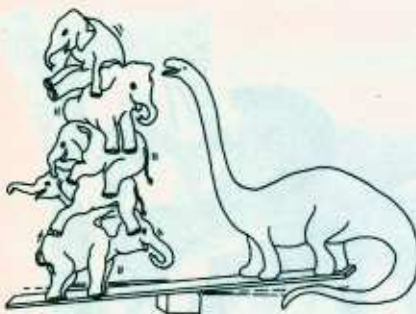
* The players in one team will not be able to add up to these weights, but call them out nevertheless to amaze and confuse them!

Sample list of weights of animals

Animal	Weight
Tiger	200 kg
Gaur	800 kg
Sambar	250 kg
Leopard	60 kg
Sloth Bear	140 kg
Blackbuck	40 kg
Chital	80 kg
Barasingha	170 kg
Elephant	5000 kg*
Blue Whale	135000 kg*

Topic
Environment

Level
Elementary

Subject
Maths

Duration
30 minutes

Group Size
From 10 to 40 players

Location
Outdoors

Skill
Team work

Facilities
Table of correct weights of different animals, weight cards for each player and paper clips/pins (weight cards and clips/pins optional)

16 Living Labels

Objective

To help players recognize the characteristics of different natural elements.

Activity

Divide the players into two teams.

Ask one volunteer from the first team to come up. The team can choose the volunteer. Show a 'Web of Life' card (on the black and white side) to the volunteer. Do not let the other players see what is on the card.

The task of the volunteer is to give to his/her team 'clues' to enable them to guess the natural element. He/she is given ten chances to do this. In each chance, the volunteer has to give his/her team one word which describes the natural element. For example, for 'Tree' the volunteer can say 'Green' as a clue.

The team tries to guess the name of the natural element from the clue. If they are not able to guess correctly, the volunteer gives the team another word, e.g.: 'Big'.

If the team manages to guess within the first three chances, they score 10 points. If they guess between the fourth and the seventh chance, they get five points. If they guess between the eighth and the tenth chance, they get three points. If the team is unable to guess even after ten clues are given, the other group gets a chance. If the other group gives the correct answer they score two points.

The game proceeds by calling a volunteer from the second team.

The team with the highest score wins.

Variation

Instead of giving the clue words, the volunteers can be asked to act out the 'natural element'.

Instead of cards, small natural objects such as leaves, twigs, pebbles, etc. can be used.

What is This?

Objective

To enable players to identify a natural object by feeling it.

Activity

A day before this activity, ask the players to bring different natural objects to the class the next day. Each player has to bring at least one natural object. They can bring pebbles, leaves, flowers, twigs, shells, vegetables, fruits, seeds, pods, etc. Instruct the players that these objects have to be collected without harming any living being.

Collect all the objects that the players have brought and put them in a bag or cupboard where the players cannot see them.

Take a clean, empty box. Place a natural object in the box without the players seeing what you are putting in. Call one player at a time. Blindfold the player and place his/her hands in the box. Ask the player to feel the object in the box and guess what it is. If the player guesses the object correctly, you may choose to give the object to the player to keep. If the player is not able to make a correct guess, give clues to help.

Variation

Before the game, the players can go around and collect natural objects for use in the game.

Discussion

How did each one manage to identify the object? (Shape, texture, size, etc.).

How do different animals identify their food?

Topic
Wildlife

Level
Elementary

Subject
Science, Games

Duration
40 minutes

Group Size
Up to 60 players

Location
Indoors

Skill
Observation, Identification

Facilities
Empty box, cloth to blindfold, different natural objects (pebbles, leaves, flowers, twigs, shells, vegetables, fruits, seeds, pods, etc.) all of which have been collected without harming any living being.

18 Who Belongs Where?

Topic
Environment

Level
Elementary, Intermediate

Subject
Science, Games

Duration
30 minutes

Group Size
About 20 players

Location
Indoors or outdoors

Skill
Association

Facilities
Web of Life cards (on the black and white side), music making instrument (a bell, spoon and glass, etc.). If cards are not available, the teacher may prepare the cards including biotic and abiotic components of the environment.

Objective

To help players to learn about different habitats.

Activity

Ask the players to stand in a circle.

At four corners outside the circle, mark different habitats—for example, Wetland, Soil, Forest, City.

The habitats can be marked on the ground with chalk, or they can be simply pointed out to the players.

Distribute the Web of Life cards to the players, at random. Tell them to use only the black and white side. Each player should get one card.

Start playing the music. The players should pass the cards around in the circle, i.e., give their card to the player on the right and take the card from the player on the left, for as long as there is music.

When the music stops, the players look at the card they have in their hand, and run to the habitat where they think they belong.

Go to each habitat and discuss why each student thinks he/she belongs there.

Variation

Instead of giving the players a card each, you may try putting all the cards in the centre of the circle which the players form (either on the ground or in a box).

When the music stops, the players run to the centre of the circle, pick up a card each and then run to the respective habitat.

Discussion

Are all the animals and plants in their correct habitat?

Why do animals live in a particular habitat? What does the habitat offer the animal or plant?

What are the interrelationships among the species represented in each habitat?

What happens to each species when a particular habitat is destroyed?

Chemical Run

Objective

To help players to become familiar with the names of chemicals and gases associated with the ozone issue.

Activity

Make a list of the different chemicals and gases that one comes across while learning about the ozone issue (see sample list below). Make labels of the names on this list so that there are at least three labels for each name. Distribute the labels to the players. At least three players should get labels with the same name. Leave one player without a label. He/she will be the leader for the first round.

Arrange in a circle as many chairs as there are players with chemical names. Chairs should face inwards. In the place of chairs, you can also use bricks, one for each player. Ask the players to sit on the chairs/bricks. Make sure that the players with the same name labels are not sitting next to each other. Let the leader stand at the centre, with the list in his/her hand.

The leader calls out the name of any one chemical or gas from the list, e.g., ozone. The players with the name 'ozone' must get up from their places and exchange places amongst themselves. The leader has to try to get one of the places that has been vacated. Thus, there will be four players competing for three places.

The player who does not get a place becomes the leader in the next round. If the leader of the previous round manages to get a place, he/she takes the name label, e.g., 'ozone', of the player who becomes the new leader.

Variation

This game can also be played with the Web of Life cards (black and white side). Some instructions the leader can give are:

All plants/plant parts change places
All insects change places
All tree dwellers change places
All herbivores change places

Sample list of chemicals

Ozone	Chlorine	Halons
Oxygen	Methyl bromide	Carbon tetrachloride
Carbon	Bromine	Chloroflurocarbons
Methane	Methyl chloroform	
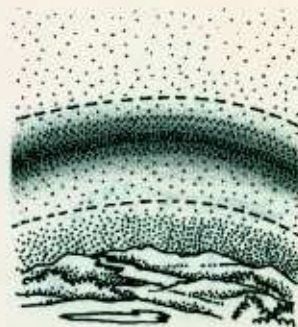
20 Good Riddance?

Objective

To enable the players to appreciate the process of decision-making in a group situation.

Activity

Divide the group into teams of 5-6 players each.

Tell the players that they are an expert team appointed to select people who will represent the country in an international conference to be held nine months from now. The conference is very important as all countries are to make plans for saving the earth from environmental crisis.

Each team has to choose five people to go to the conference, from a list of ten people. The time given for making this decision is 15 minutes.

After this time, ask each team to read out their choices and say why that person has been chosen. The other teams can question the decisions.

The list of people

A young man, crazy about new fashions and fads. His latest fad is to be 'green'. He has now shifted to a strict vegetarian diet and never touches plastic. He is a college dropout and a chain smoker.

A world-renowned social worker. He is nearly 90 years old and suffers from a serious disease. Doctors predict that he will live only for about one year more.

A farmer. He has recently converted his paddy fields into prawn farms. His new business has brought him big money and this power has made him the President of the local environment protection committee. But his neighbours complain that the water in their wells is getting salty and unfit to drink due to seepage from the prawn farms.

A lawyer. He has fought many cases that led to the closure of a number of polluting industries. He is respected by some environmentalists, but hated by trade union leaders who believe his efforts have made many poor workers lose their jobs.

A politician. She has been instrumental in getting many laws on forest protection passed in the Parliament. But the villagers living around the forest areas are angry with the laws as they are now not allowed to gather fuel wood from the forest. There are also rumours that the politician has taken bribes from a logging company and that now logging goes on in the forest areas under cover.

A cricketer. He is very popular with young students. He has recently started appearing on the TV in a campaign supporting tiger conservation in the country. He also appears in a number of commercial advertisements including one for a canned soft drink.

An industrialist. She was the first industrialist to adopt clean technology and now pollution levels from her factory are down. But the sad part of the story is that the same machines displaced a number of workers from their jobs.

A housewife. She saves water, electricity, and fuel because her household cannot afford to spend more. She dreams of the day when she will be able to spend lavishly like some of her richer friends do.

A journalist. Her reports on controversial environmental issues have brought many environmental issues to public attention. But critics accuse her of presenting only one side of the story.

A scientist. He has a doctorate in biology and heads a natural history museum. His knowledge about wild animals is amazing. But there are rumours that he bribes forest officials and employs poachers to get endangered species of animals for the museum collection.

Discussion

Is it easy to make choices? Why?

What was the basis on which each team made its choices?

In the place of people, if there were countries, will it be equally difficult to say which country is environmentally more friendly?

21 Care and Share

Objective

To help players realise the importance of sharing and working together for achieving a common goal.

Activity

Divide the group into teams of about 10-15 players each. There is no limit to the number of teams that you can have, but all the teams should have equal numbers of players (as far as possible).

The players should not carry any object other than what they already have on themselves, e.g.: they are not allowed to carry books, but they are allowed to keep on their watches, ribbons and other things they have on them.

After the players are ready, tell them that each team represents a country.

The task for each team is to make a 'line'. The length of the line represents the distance covered by the country along the path to Sustainable Development. They cannot draw a line in the real sense, but they are to make a line using the objects they have with them. The time given for making the 'time line' is 60 seconds.

The country which has the longest line wins.

Discussion

What is the significance of participating in a common cause.

Do individual contributions make a difference?

Are team work and collaboration important? Why?

Can the environmental crisis be resolved through cooperation within and amongst nations?

Count Down

Objective

Players will be able to distinguish between needs and wants.

Activity

Divide the group into teams of 5-6 players each. There can be about ten such teams. Ask each team to be ready with a paper and a pencil.

Tell the players that they are refugees escaping from their home town. Each team represents a family. Each family has time enough for taking just 20 things from their homes before their town is bombed. Which are the twenty things the family will choose to take? Give the players 5 minutes to discuss and make a list.

After the players have made the list, give the next instruction. Tell them that the truck which is to take them out of the town is already overloaded, and so they have to drop any 5 of the 20 things they have with them. Which five will they choose to drop? Ask the players to strike off from their list, the five things. On their way out of the town, the truck has a break down and everyone has to walk. They cannot carry 15 things, as the walk is too long. Which five things will they discard now? Ask the players to strike out five more items from the list. On their way out, they meet a rebel team, who demand that they part with any five items out of the ten they carry. Which five items will they give up? Ask the players to strike out five more items from the list.

Finally each team will have a list of five items. Ask them to read out their original list and their final list of five. If there are only a few teams (up to five) you may be able to write these on the board.

Variation

The players may be asked to make a list of the things they own which they can easily do without. They can also discuss the environmental impacts of each of such things.

Discussion

Are the five things the team came down to, the things that they need the most?

What other things did the first list of twenty contain?

What is the difference between needs and wants?

What is consumerism?

Topic
Sustainable Development

Level
Intermediate

Subject
Social Studies

Duration
30 minutes

Group Size
Up to 60 players

Location
Indoors

Skill
Prioritizing, Group skills

Facilities
Black board, chalk, papers, pencils

23 For the Common Good

Objective

To help the players determine short-term consumption strategies that will preserve a long-term supply of a common, renewable resource.

Activity

Make 100 paper tokens. Ask the players to sit in a circle. In the center of the circle, at least three metres away from the players, place one-fourth of the tokens (25).

Explain the following rules to the players:

1. The tokens belong to all of you.
2. Music will be played for 30 seconds, and while it is playing, everybody may take the tokens from the center.
3. You can later exchange 10 tokens for a present
4. As soon as the music stops, I will double the number of tokens left in the pool at that time, and then continue the game.
5. There will never be more tokens in the pool than there are at the start of the game. This is the maximum number of tokens the pool can hold.
6. You may not talk to anyone during the game.

The number of tokens after doubling should not exceed the initial number in the pool. In all likelihood, the pool will be depleted before the music stops.

Repeat the game two times, without allowing the players time to communicate with one another in between.

Then give the players time to discuss and ask them to develop cooperative strategies that will allow more players to accumulate 10 tokens. Play again allowing the players to use the strategies developed.

Discussion

What happened in the game in the first round? How did you feel?

What happened in the second round? How did you feel then?

Did the discussion amongst you help?

What are the common resources we have in reality?

How do we use them? Do we leave enough for the resource to naturally renew itself? You could discuss the example of forests.

How can we ensure sustainable use of common property resources?

Small World

Objective

To help players recognize the linkages between people, institutions, sectors, environment and development issues.

Activity

Ask the players to sit in a circle. Distribute one Web of Life card and one paper clip each to all the players. Ask the players to pin their cards (with the brown and white side showing) on their dresses. The players can take turns to tell the group what they represent.

Take the ball of string and give it to any player, for example to the player representing 'Protecting and Managing Fresh Water'. Ask the player to wind one end of the string on his/her finger. This player has to throw the ball to any aspect with whom he/she has a relation. For example, to the player having the 'Protecting and Promoting Human Health' card. But before throwing the ball the player has to explain the relation her/his card has with the other card.

'Human Health' then winds the string firmly once or twice around his/her finger and then passes it to another aspect he/she feels related to, e.g., 'Managing Solid Wastes and Sewage'. Now the string can go on to 'Role of Local Authorities', and the line of relationships continues as the string unwinds and begins to form a pattern which the players hold. The game continues till the ball of string is completely used up.

Ask the players to raise their hands and see the web they have made. They have to hold the web tight to prevent it from sagging.

Discussion

Tell the players that the web represents the relationships amongst people, institutions, sectors, environment and development issues.

Now, ask the players what would happen if these inter-linkages are not understood? To illustrate this, ask the player with the 'Fresh Water' card to let go of the string. All the players linked to the 'Fresh Water' card will experience a loosening in their strings. Ask these players to let go of their strings. Now, there will be a noticeable sag in the Web.

What happens when we ignore these linkages? Our solutions will be weak, like the sagging web.

Conclude the game by explaining to the players the interrelationships, the need for working together and having a holistic perspective for solving environmental problems.

Topic
Environment

Level
Advanced

Subject
Science

Duration
40 minutes

Group Size
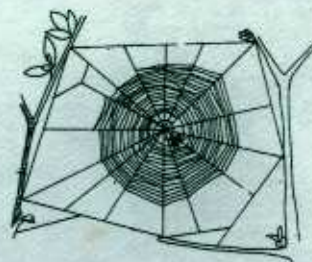*Up to 36 players*

Location
Outdoors or Indoors in a large hall

Skill
Analytical thinking, Association

Facilities
Web of Life cards (brown and white side), a ball of string (about 250 metres long), paper pins

"All boys and girls have inside them an aching void which demands interesting and exciting play. And if you do not fill it with something that is interesting and exciting and good for them they are going to fill it with something that is interesting and exciting and is not good for them."

— *Theodore Roosevelt*