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INTRODUCTION

This environmental toolkit is developed by Tesi Environmental Awareness Movement, a non-profit, non-governmental organisation set up with a vision to revive the ecological consciousness of the Tibetan people.

This toolkit has been developed for the purpose of environmental education for Tibetan high school students in the exiled Tibetan community in India. The toolkit deals with general environmental issues, but also focuses on more specific Tibetan environmental issues.

The Toolkit

The first set of topics focuses on global environmental issues. These include waste management, littering, water shortage and bio-diversity loss. These environmental issues are of concern to students all over the world. The goal of these chapters is to educate students about the environmental problems and their causes and suggest hands-on educational activities to learn to deal with these problems and their solutions at a local scale. Taking responsibility is highly stressed. We hope that students will learn to look at their own behavior and become aware of their own strength and possibilities to deal with these environmental issues.

The chapter on bio-diversity tries to make this difficult concept more accessible to students. As well as with the former topics 'a learning by doing' approach is adopted in order to make the students deal with the topic in a more active way.

The second set of topics deals specifically with Tibetan environmental issues. Tibet, the roof of the world, has been known for its pristine and beautiful environment. But, since Chinese occupation the Tibetan environment has severely deteriorated due to overexploitation and abusive development projects. One topic deals with endangered animals in Tibet and the second topic deals with the Tibetan environment and will try to teach the students about some environmental problems in their home country. Please, keep in mind that it is an overview of the problems in contemporary Tibet. Not all the environmental problems in Tibet have been covered due to the extensive and complex nature of the topic.

The third topic of Tibetan deals specifically with Buddhist ecology and will stimulate students to think about ecological and environmental issues from a more philosophical point of view. They are stimulated to form their own opinions and thoughts upon environmental issues while keeping their own cultural and religious heritage in mind.

Every topic tries to use different types of educational tools. By using the toolkit the students will therefore not only learn more about the environment, but they will also further develop skills like for example working in groups, discussing/debating, writing essays, exploring creative abilities, initiating and organizing campaigns and conducting research.

How to use it

Each topic can be dealt with individually so the lecturer is free to pick those topics that are of most interest to the students or that comply with the educational program. Every topic starts with a lecture that is meant to be a general introduction. This introduction will take about one hour. After this it is possible to take up the additional project(s) that are available for most of the topics. These projects will enable the students to study the topic in more depth. But they are not indispensable.

The toolkit is designed as a teacher's guide. Care is taken not to depend on facilities that will not be available in every place. This toolkit mostly tries to avoid the use of additional materials like audiovisual materials, pictures, posters etc. But of course any teachings will benefit from the availability of these kinds of materials. For some topics handouts are found in the toolkit that can be photocopied to use in class. If this is not possible to do, the information can be written on the blackboard or used as background information for a lecture.

Please use this toolkit as a reference or source of ideas for your teaching. Everyone has it's own style of teaching and will feel comfortable with a different way of handling the topics. Feel free to change things if you find out that they do not work out for you or for the students. This toolkit will certainly improve if it is updated with tips and adjustments that came up during the use of it. Please send any comments and suggestions regarding the use of this toolkit to TEAM.

Acknowledgements

TEAM would like to thank all the people who have made a valuable contribution to the development of this toolkit. Their comments and suggestions have surely improved the quality of this toolkit.

The Environment and Education Handbook for Teachers of WWF-India has proved to be a source of inspiration. Please note that the 'web of life' game in the bio-diversity chapter has been copied from this handbook.

We hope that students and teachers alike will enjoy working with the topics and projects suggested in this toolkit and that it will contribute to more awareness about environmental issues among high school students in the Tibetan community in India.

TEAM

June 2004

WASTE



Level: Class 6-12

Time Allotment: 40-60 minutes

Introduction: 10-15 minutes

The 3 R's: 20-30 minutes

Map it out: 10-15 minutes

Intro

Waste management is becoming a serious problem. What we throw away does not all just disappear. There is a real need for reducing, reusing and recycling of waste. To reduce waste, people and households can rethink their habits and change them accordingly. Reduce, reuse and recycle helps to conserve energy and natural resources and reduces the amount of municipal waste requiring disposal.

Objectives

The students will become familiar with the hazards of waste and popular attitudes regarding reducing, reusing and recycling waste.

Prior Preparation

Let the students bring a clean and empty container from their home. This can be a food container or a container of anything else they use in daily life (plastic wrapper, paper, a bottle, tube of toothpaste etc.). If they cannot bring anything, you can prepare cards with types of waste and distribute them among the students or have your own storage with packaging materials that you can reuse for this particular class.

WASTE - LECTURE

Introduction – Map it

Draw a map of the classroom on the blackboard. Pretend the class to be a small community and define different areas like a forest, a village, fields, roads and a river. Tell the students that they have to get rid of their packaging by dumping it in one of the areas. Ask them to stand there where they think it is most suitable to dump their waste. Give them one minute to do this. Put marks on the map in order to locate the

dumping sites of the different wastes. Ask the students in different areas why they would dump their garbage in that particular place. What are the advantages of the place and what could be the disadvantages? What will happen to the site if they would leave a similar package there every day? Where does the garbage go in their own communities?

The 3 R's

Explain the students that effective management of wastes nowadays promotes the three R's - reduce, reuse, and recycle. Ask the students for a definition of reducing (to use less). Ask the students for a definition of reusing (to put again into service without changing). Ask the students for a definition of recycling (to put again into service with changing).

Ask the students why they think it is important to reduce, reuse and recycle waste. Let them think of different reasons and write them down on the blackboard. Do they know that paper is made from trees and plastic from oil? What will happen to these resources if we use more and more of them?

Ask the students to give an example of a type of packaging that is excessive and that could be reduced? Ask the students if they know which materials can be recycled and where they will have to hand in the materials in order for them to be recycled. Ask the students if they ever reuse one of the materials that they have provided. How did they reuse?

Divide the students into group of 3 to 4 students. Let all groups list within 5 minutes as many ways to reduce, reuse or recycle waste. What kind of materials can be reused? What kind of materials can be recycled? How can they accomplish reduction, reusing and recycling?

Let one of the groups name the ways of reducing, reusing and recycling they have listed. Write these on the blackboard. Let the other groups complement the group's ideas with their own. Which ones would be easy to implement? Which ones are difficult or almost impossible? Why?

Below are some common ways to reduce, reuse and recycle waste:

Reduce

- Don't buy more that you really don't need
- Purchase goods with less packaging
- Bring a bag when you go shopping and refuse plastic bags
- Buy products that are durable and lasting
- Repair or reuse goods that no longer work
- Rent or borrow equipment you seldom use

Reuse

- Send used goods you no longer need to a local charity or social service agency
- Use rechargeable batteries
- Reuse materials like envelopes, old cardboard boxes, etc.

Recycle

- If possible, buy products that are packaged in recyclable or returnable containers.
- Set up bins or boxes for recyclables in classrooms.
- Purchase recycled materials (e.g. paper).

Map it out

Draw a similar map like before next to the old map. Draw a recycling center on the map of the classroom. Draw a 'reuse' area on the map. And draw a garbage collecting truck. Ask the students again to stand in that particular place where they are going to bring or dump their packaging. This will (hopefully) result in three different groups.

Garbage Group

Will all students bring their garbage to the garbage collecting truck? Do they do this in real life as well? If not, why? Do any materials that can be recycled end up in the garbage truck? If so, let the students swap to the recycling center. Mark a litter dumping area somewhere in the forest on the map of the classroom and mark the number of packages that will end up there.

Reuse Group

What kind of materials can be reused? How are the students going to reuse it? Is this realistic? (If not, they will have to swap places). How long will it take before the material will be thrown away anyway?

Recycle Group

What materials can be recycled? Do the students know where they have to hand in the recyclable materials in their own community? Who takes care of this in their school or their home?

If the students compare the two maps, what do they think is the most striking difference? Why do they think communities engage in waste management? When is waste management most effective?

If you are not using the brought along material for another class, the students will have to take it home again. Or let the groups discuss shortly how they are going to dispose off the material in a proper way.

WASTE - EXTRA ASSIGNMENTS

Natural Resources



Level: Class 6-12

Time Allotment:

Depends on the scope of the research and the level of the students

Let the students choose a product like glass, paper, plastic, metal, and let them find out more about it.

Questions

- From what raw material is the product made from originally?
- Do we have unlimited access to this material?
- How is it produced?
- Can the product be recycled?
- What happens to the material after the product has been thrown away?
- Are there any alternatives for the product that are more environmentally friendly (e.g. reusable or recyclable products)?

Reduce your Waste



Level: Class 6-12

Time Allotment: 2,5 hours

Audit: 1-2 hours

Discussion: 30 minutes

The students will conduct a waste audit in their home. Let them record for a week or a day what they throw away. Let them classify the waste. The waste audit should be given as a home assignment.

How to classify

Before starting off, you should decide on a classification of waste. A classification could look like this:

- Wet waste (organic material)
- Recyclable waste (paper, glass, certain types of plastic)
- Non-recyclable waste (food wrappers, some beverage containers)
- Reusable waste (paper that is used on one side only)

Questions

- How much waste do you (and your family or housemates) produce every week?
- Do you already try to reduce, reuse or recycle at home? If so, what do you do? If not, why not?
- Could your waste be reduced by implementing one of the reduce tips you have formulated in class?
- Could your waste be reduced by implementing one of the reuse tips you have formulated in class?
- Could your waste be reduced by implementing one of the recycle tips you have formulated in class?
- What arguments would you use to convince you family or housemates to use the 3 R's? Name at least two arguments.

Discuss the waste audits in class and try to stimulate the students to take up their ideas to reduce, reuse and recycle waste at home.

Don't WASTE time



Level: Class 11-12

Time Allotment: 3-4 days

Part I: 1-2 days

Part II: 1 day

Or the students can work on it for one or two hours a week during a couple of weeks.

The students will conduct research on three different topics. Every topic obliges the students to go out and do field work. They will have to make a report of their

findings. The three topics are community waste disposal, school policy regarding to waste disposal and attitudes among students and staff regarding to the 3 R's. Try to make three groups of students with the amount of students evenly distributed. The students work independently but will need extended supervision during the course of their work. Make sure to correct and guide their work along the way.

Let all groups have a presentation about their findings and their report. Discuss the outcomes. Let the students make notes about the research of the other groups.

You can make copies of the instructions (see below) and provide the students with these handouts. This could save you a lot of (explanatory) work.

Note that group 1. Will have to do their research outside the school premises. If this is not allowed, be sure to have the information readily available yourself.

Don't WASTE time

This project has two different parts. During part I, you will conduct research on three different topics and make a report of your findings. The three topics are:

- community waste disposal
- school policy regarding to waste disposal
- attitudes among students and staff regarding to the 3 R's.

In the second part, you will use the information to implement a new policy of some kind in your school. You will be told whether you are going to do both parts or whether you will just do the research.

Part I

Group 1 – Community Group

You will try to find out all details about local waste treatment practices.

You will have to find out by asking around. Try to obtain information from community groups and service organizations that deal with the waste in your local community. You can interview the people that work in these fields or pick up leaflets or brochures if they have them. Talking to an expert will be most fruitful since they will probably have a lot of the information you are looking for readily available.

If you have time you can even make a field trip to a waste disposal site that serves the community.

Write down all the information you have found in a report. Be as detailed as possible. Include the locations and/or time schedules of trucks that collect waste, write down addresses of shops and agencies where people can leave recyclable items.

Questions

- How is the waste in the community disposed off?
- Are there projects aimed to improve solid waste disposal in the community?
- Are there any recycling facilities in your community (recycling program, rag pickers, charities that take donations, etc.)?
- Are there any problems concerning waste disposal? How does the community try to solve them?
- Is the information about waste disposal in your community readily available for all the inhabitants?

Group 2 – Policy Group

You will try to find out all details about the current policy and actual practice on reducing, reusing and recycling in your school. (But of course you can also take a different site like a restaurant a governmental building or other).

1. What types of waste does the school produce?

Do a quick visual waste audit for a rough outline of what types of waste the school generates. Classify waste accordingly:

- Wet waste (organic material)
- Recyclable waste (paper, glass, certain types of plastic)
- Non-recyclable waste (food wrappers, some beverage containers)
- Reusable waste (paper that is used on one side only)

2. What does the school already do to reduce, reuse and recycle waste?

Find out who is responsible for waste disposal on the school premises and ask this person what is already undertaken regarding to waste management. Are these measures effective? Could they be improved? If yes, how? If no, why not?

Questions

- What waste in your school could be recycled? How?
- What waste in your school could be reused? How?
- What waste you found could be reduced or eliminated? How?
- What type of non-recyclable material currently in use could be substituted by recyclable or reusable materials? How?
- Could your school be part of the community's recycling program by functioning as a collection center? How could this be possible? (Think about the transportation of the recyclable items)

Write a report on the information you have found and the way you have done research. Make sure that all the above questions are answered. Give advice on what measures could be taken to implement the 3 R's at your school. Be sure to include if the measures could be taken rather easily or whether they will demand a lot (or maybe too much) effort.

Group 3 – Survey Group

Survey of school-wide attitudes towards Reducing, Reusing and Recycling waste.

You are going to do research on attitudes regarding the 3 R's. Are people aware of the need of reducing waste? Do they recycle and reuse? How do they do this? If you know how people feel about the 3 R's and why they act in certain ways, you will know what measures you could take to change people's habits.

How to do a survey:

- ❖ Brainstorm on a list of questions and set up your survey. Do not make your survey too long. About ten to fifteen objective questions will be enough. Try to make questions with fixed answers. In this way it will be easier to compare the results of the different interviews.

For example, to the question "Do you recycle?" you can make up the following fixed answers:

- Always
- Often
- Sometimes
- Never

The question "Why/Why not?" could have the answers:

- I think it is important to recycle.
- I earn some money by recycling.
- I have been taught to do so.
- Recycling takes too much effort.
- I do not know how to recycle.
- Recycling is not important
- Other answer, namely

- ❖ Think about how your survey can represent the whole school population and not just your class or group of friends.
- ❖ Find people that want to participate in your survey. Tell them how much time it will approximately take to participate. Do not forget to introduce yourself and to explain the goal of your survey. Write down their answers thoroughly. Thank them for their time when you have finished.
- ❖ After you have interviewed enough people you start working on the results. The results of questions with fixed answers can be added up. Try to unite and summarize the answers to questions that do not have fixed answers. Compile the results of the survey and develop percentages

Make a report of your survey and stress remarkable results. Do not forget to include charts of the results since they will make the report more readable. A summary of the report can be published in your school paper or local newspaper.

Be sure to include a chapter with recommendations. What can be done to improve the reduce, reuse and recycle habits of the school population?

Part II

Group 1 – Community Group

Develop a brochure with key information on how to handle waste in your community in a responsible way. Use the information you have found during your research. Make the brochure as attractive as possible. Keep in mind the outcomes and the advice of group 3. Do not try to press in too much information and design a tempting cover. Make sure that the brochure can be easily photocopied as to make it applicable for distribution. If you have access to a computer, you may try to use it to make the brochure more attractive.

Group 2 – Policy Group

Choose a way to reduce, reuse or recycle that can be successful. The information that group 1 has provided can be useful in order to make your plan workable and realistic because it can link up your school's waste management with existing facilities within the community. Group 3 can provide you with information why people do or do not engage in reducing, reusing and recycling. You will be informed on what practical obstructions still exist that could be dealt with. Do not focus on something that takes a lot of time to implement. Focus on something small like the reduction or recycling of paper used in school.

Group 3 – Survey Group

Link up with the plan of group 2 and take care of the promotional side of it. If you want to establish a change or create awareness about the 3 R's, you will have to engage in promotion. You can use your own research to take the right approach. Think about a slogan and ways to promote the new activities of group 2. Bring your message in an attractive manner. You can try to get something published in the local newspaper, you can make posters and leaflets for in the school, you can have a small talk in some other classes to directly inform the other students, etc.

LITTER



Level: Class 6-12

Time Allotment: 55-70 minutes

Introduction: 5 minutes

Explanation: 10 minutes

Audit: 30-35 minutes

Questions: 15-20 minutes (homework)

Discussion: 15-20 minutes (follow-up)

Intro

Litter is a serious problem. It lies scattered around communities creating an environmental hazard and looking unattractively. Litter attracts rats and insects and creates an unhealthy environment. Some litter contains acids or metals that can contaminate groundwater. Some Animals consume litter (think about cows nibbling away on plastic bags), which is dangerous. Litter appears in places where people recklessly throw their garbage away. If humans are the source of the problem, they can also solve it.

Objectives

To introduce the idea that garbage doesn't just disappear once it is thrown on the ground. Create awareness among the students regarding littering and their own responsibility towards it.

Prior Preparation

Let the students bring a clean and empty container from their home. This can be a food container or a container of anything else they use in daily life (plastic wrapper, paper, a bottle, tube of toothpaste etc.). If they cannot bring anything, you can prepare cards with types of waste and distribute them among the students or have your own storage with packaging materials that you can reuse for this particular class.

You may choose to copy the questions they need to answer on handouts but you can also read them to students or write them on the blackboard.

The project activity may require materials (e.g. materials to make a bulletin board). This depends on the activities the students will come up with. Make students aware of the materials available so that they won't come up with too ambitious plans. Building a website will be impossible if there are no computers or internet connections.

Choose a spot where the litter audits can be conducted. This can be a park, the schoolyard, an area close to the school or a combination of these.

LITTER - LECTURE

Introduction

Ask the students for a definition of litter. Ask them at what places in the community litter can be found. What types of litter exist? What will happen to the litter if it stays on the ground?

Let the students guess how long it takes before different types of litter have disappeared.

1. A newspaper (a few days up to 6 months)
2. Chewing gum (20-25 years)
3. A can (50 years)
4. Plastic (never)

Litter Audit

Divide the students into groups. Tell them that each group will have to choose a spot of about 10 square meters to conduct a visual litter audit. The spots must preferably not be next to each other. This will produce different results and will make the final outcome of the audit much more interesting.

Ask the students what kind of litter they think they will find. Can they make a classification of types of litter according to the materials they are made from? Tell them that if everyone uses the same classification, their results can be easily compared.

Questions

- Describe the amount of waste you find.
- Classify the amount of waste you have found according to the classification you have made in class.
- Graph your results of the audit by making a pie chart.
- What kind of litter types did you encounter most frequently?

- How do you think the litter got there?
- Why do people litter?
- What measures could be taken to avoid littering? Try to think of more than just one thing.
- How could you educate people to stop littering?
- How would you reduce the litter in and around your school? Try to write down as many measures as possible.
- Would the measures be easy to implement? Why? Why not?

How to classify

A classification could look like this:

ww: wet waste (food, fruit peels, tea leaves, etc.)
 pa: paper (newspapers, cardboard, used paper, etc.)
 pl: plastic (wraps, carrybags, plastic bottles)
 bc: beverage cartons
 gl: glass (jars, bottles)
 ow: other waste (please specify if you find huge quantities of a certain type of waste)

Survey of results

Ask if the students encountered any problems doing the litter audit. What was the strangest thing they saw? Did the results surprise them or not?

Compare the results of the different litter audits. At which places most litter was found? What types of litter were found? Did different litter audit groups find different results? If so, what could be the reason?

Discuss the questions the students have answered.

LITTER - EXTRA ASSIGNMENT

Make it Real



Level: Class 6-12

Time Allotment: at least 60 minutes

Make plan: 10-20 minutes

Make it real: Depends on the students' ambitions

During the litter audit, the students have thought about measures that could be taken to avoid or reduce littering. Write down all these ideas on the blackboard

Questions

- What would make the measures successful? Why?
- Which plans would be easy to implement by the students themselves? Which plans could encounter problems? Why?
- Which plans or part of plans could be implemented keeping the available time and means in mind (the teacher should guide the students by briefing them on the time and means)?

Let the students choose the measure(s) they would like to implement. Together you can make a plan and a division of tasks that the students can work with. Let the students perform the tasks under your guidance.

How to make a division of tasks:

To get to a division of tasks, mark three columns on the blackboard. Use them to make a working plan with the suggestions of the students (give hints if you feel they are forgetting something).

1st column: write down the chosen measure(s).

2nd column: let the students make a subdivision of tasks that have to be done to implement the measure.

3rd column: estimate the time and number of people needed to perform the task.

WATER



Level: Class 6-12

Time Allotment: 30-40 minutes

Introduction: 5 minutes

Water scarcity: 15-20 minutes

Water tips: 10-15 minutes

Intro

Water is the source of life. Though, earth's water resources are now severely depleting. Moreover, a lot of resources are polluted by human activity. This endangers the access of safe drinking water and makes cropland in some parts of the world useless due to the lack of irrigation water. We have to be aware that with a growing population, fresh water is not as abundant as it was before. Water conservation is a measure that has to be taken up by everybody.

Objectives

Students will understand the importance of water and the working of the water cycle. They will learn to take responsibility and can name several ways to conserve water. Students will feel the importance of water conservation and take up some conservation measures themselves.

Prior Preparation

If possible, give the students an assignment the day before. Let them record how they use water both at home and at school.

WATER - LECTURE

Introduction

Tell the students you are going to talk about water. Ask the students if there is any water present in the classroom. Let them point out the water that can be found in the classroom. Do they know that their bodies contain a lot of water? What percentage of their bodies consists of water? (About 70%)

Most of our food is water too. Make the students guess the percentages of water in the following types of food.

1. tomatoes (95%)
2. milk (90%)
3. potatoes (80%).

Water Scarcity

Water Usage

Ask the students the following questions:

Who used water today?
What did you use it for?

Write down all the answers on the blackboard. Extend the range of answers by asking additional questions and by making suggestions like for example:

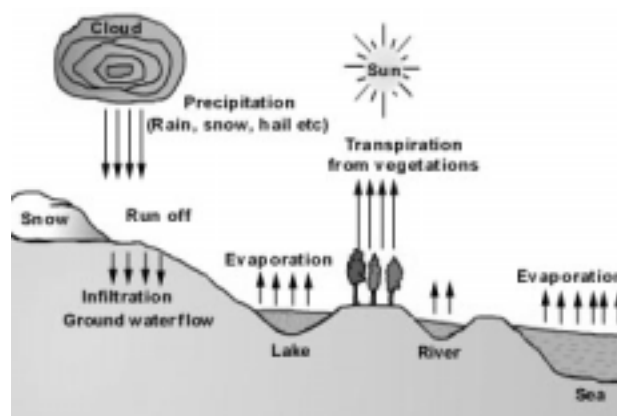
Can someone think of ways water is used outside your house?
How do farmers make use of water?
Etc.

If you have a lot of options written on the blackboard, you can draw the conclusion that comes forth out of them. Ask the students to explain why is water so important? Write down the answer on the blackboard.

Water cycle

Find out what the students already know about the water cycle. Do they know where the water they use is coming from?

Draw the water cycle on the blackboard while speaking about it or explain it by pointing it out on a big picture. Below you can find information on the water cycle.



Source: <http://edugreen.teri.res.in/explore/water/graphics/cycle.jpg>

Information on the Water Cycle:

The water that you drink and use is taken from groundwater or surface water like rivers and lakes. Groundwater trickles down through the soil. Rivers start as small streams in the mountains and flow downhill to the sea. Rivers and lakes are fed by melting ice and by rain. To have enough water to survive, wells, rivers and lakes always need a fresh water supply. The water cycle takes care for this continuous supply with fresh water.

Water goes around in this endless cycle and is used over and over again. In fact, the water that we use today is the same water that was used thousands of years ago by the species that lived on Earth.

Seventy-five percent of Earth is covered by water. Water can be found in the air (or atmosphere), in rivers, oceans, groundwater, glaciers and ice caps. Most of the earth's water - 97 percent - is in the oceans, only 3% is fresh water. Less than one percent (0.01%) of all the world's water present in rivers, lakes, and groundwater, is accessible for human use.

Water can take different forms such as liquid, ice or vapor. Vapor is created by heating water. For example, if you boil water, it will escape the pan in a vaporized form as steam. Water vapor becomes liquid again as it cools. This is called condensation. This is very much like having a cold drink when it's hot. The vapor that is always present in the air, condenses on the cold glass, returning to its' liquid state. In the water cycle, water goes through these changes too.

The heat of the sun evaporates water from the oceans, lakes, rivers, trees and plants. The water vapor condenses on tiny particles of dust in the air as it rises up and reaches the cooler layers in the air. These particles coated in water then collect to form clouds. When it rains the water is returned to the earth. Most of it falls directly back into the seas. The rest of the clouds are blown over land where the rains and snow feed streams, lakes, trees and the ground. This water will vaporize again or is brought back to the oceans by rivers, streams, and run-off from glaciers and underground water. This makes the circle round.

Water scarcity

Ask whether the students know about any problems concerning water scarcity. Have they learned anything about it in school or did they read or hear about it somewhere? Do they know any causes of water scarcity? Write the key words of

their answers on the blackboard. Below is some information that you can use to supplement the knowledge of the students.

Information on the Water Scarcity:

There seems to be no problem with running out of water. But on the other hand there is a problem with running out of fresh water. Within 25 years, half the world's population could have trouble finding enough freshwater for drinking and irrigation. Among the countries likely to run short of water in the next 25 years are Ethiopia, India, Kenya, Nigeria and Peru. Currently, one in six people still has no regular access to safe drinking water.

The reasons for water scarcity are:

- (1) Population growth. We have to share the same amount of water with more and more people.
- (2) The increasing popularity of a western life style. The richer people get, the more resources they consume. For example in the USA the average person uses about 275 litres of water a day for drinking, cooking, bathing and watering the yard. The average person in the African nation of Gambia uses only 4.5 litres of water per day.
- (3) Human activities in the natural environment that disturb the balanced water cycle. E.g. the building of dams, deforestation, pollution.
- (4) Water pollution. Rivers are used as a waste dump. Toxic substances used in agriculture and industry leak into rivers and groundwater. This polluted water becomes useless.

Some people already claim that wars in the future will not be fought because of oil or land but because of water. Fresh water will become one of the most precious resources on earth.

Currently, on a global basis, 69 per cent of all water withdrawn for human use on an annual basis is soaked up by agriculture (mostly in the form of irrigation); industry accounts for 23 per cent and domestic use (household, drinking water, sanitation) accounts for about 8 per cent. These global averages vary a great deal between regions.

Water Conservation

Water is used by agriculture, industry, business, and households. Unfortunately a lot of water is lost due to ignorance and waste. All sectors should engage in water conservation.

Discuss water conservation. What is water conservation? Why should we conserve water? Remind the students that they should not waste water just because it is free or because others are not doing their part. Ask the students to think about ways they themselves could conserve water in, for example, the kitchen or in the bathroom? Give hints and add tips yourself. Below is a list of practical tips for water conservation. Maybe some of the tips are also useful for your students. Maybe the students have great ideas that are not listed yet.

General

- Try to use less water for cleaning your house.
- Verify that your home is leak free. Repair dripping taps. If a tap is leaking at a rate of 10 drops per minute, you can expect to waste 1100 liters a year.
- Check for toilet tank leaks.
- Consider using water for something else before you pour it down the drain. E.g. use the water for cleaning vegetables for watering a plant or garden.

Kitchen

- Wash your vegetables and fruits in the sink or a pan that is partially filled with water instead of running water from the tap.
- Cook food in as little water as possible.
- When washing dishes by hand, don't let the water run while rinsing. Fill one sink or bucket with wash water and the other with rinse water.

Bathroom and toilet

- Take shorter showers.
- Don't let water run while shaving or washing your face. Fill a basin.
- Turn off the water while you brush your teeth.
- Avoid flushing the toilet unnecessarily. Dispose of waste in the trash rather than the toilet.
- Install a toilet dam or displacement device such as a bag or bottle to cut down on the amount of water needed for each flush. Be sure installation does not interfere with the operating parts.

Community

- Encourage your classmates and family to take up water conservation.
- Promote water conservation in community newsletters and on bulletin boards.
- Report all significant water losses (broken and leaking pipes) to the property owner or local authorities.
- Support or initiate efforts that create a concern for water conservation among visitors to your community. Make sure your visitors understand the need for, and benefits of, water conservation.

Pollution

- Do not dump waste in rivers, streams, ponds on the streets or anywhere else where they do not belong. The waste will pollute the (ground)water. Secondly it looks unattractive.
- Reduce the use of non-biodegradable items (plastic bags, plastic bottles, etc.).
- Recycle waste as much as possible.

Ask the students what tips they think are difficult to carry out. Ask them which tips would be easy to implement in their own lives. Ask them to try to do one thing each day that will result in saving water. They should not worry if the savings are minimal. Every drop counts. They can make a difference!

WATER - EXTRA ASSIGNMENTS

Check your water



Level: Class 6-12

Time Allotment: 2 - 3,5 hours

Research: 40-60 minutes

Discuss results: 15-25 minutes

Implementation: 60-120 minutes

Divide the students into groups. Let them record ways water is used in different surroundings. This can be their school, their house, a restaurant, a hotel, an office, a monastery, etc. The students can use different techniques to do this like experience, observation and interviews. Let them make a list of the ways water is used.

Questions

- Is it possible to conserve water in the place they have been looking at?
- What would be difficult to get done, what would be rather easy? Why?
- How much water will they approximately save per year? How have they calculated this?
- How could they implement water conservation measures and communicate their water conservation advice?

The results can be discussed in class afterwards so that the students can learn from each other's experiences

Let the students try to implement at least one of their ideas to conserve water. (E.g.: make notices that can be put up in the bathroom, repair a tap, etc.)

A Guided Water Tour



Level: Class 6-12

Time Allotment:

Depends on the tour guide, distance to the center, etc.

Organize a guided tour to a water clearance and distribution center. The students will find out where the water in their community comes from (river, well, mountain), how the water is cleared, how it reaches the taps and where it goes to after it has been used.

Let the students make a map of the local water cycle. Where does their water come from and where does it end! Let them make a big schedule or drawing (like the water cycle picture) with textual explanation. Put the schedule up in class or somewhere else in the school for everyone to see.

Leaking about leaks



Level: Class 10-12

Time Allotment:

Depends largely on the scale of the project. Decide beforehand on how much time you have for this project and instruct the students accordingly.

For this assignment some preparation is necessary. Find out the local community's policy on the maintenance of water pipes. Who is responsible? Will broken pipes be fixed if leaks are reported? To whom do you have to report and how? Is the local authority positive about letting students make reports on leaking pipes? If so, you can do this assignment with the students.

Divide the students into groups of about 4 to 5 persons. Let the students choose an area in/road along which they will check the water pipes for leaks. Maybe they have already come across leaking pipes often and maybe they'll easily know to locate areas that they can successfully investigate. Let them describe the place of the leak

and the severity of it. The description will be more accurate if a map accompanies the description.

Let the groups make a fair copy of their findings for the local authority. Let them also write an accompanying letter. Send their work to the local authorities.

BIOLOGICAL DIVERSITY



Level: Class 6-9

Time Allotment: 25-40 minutes

Web of Life: 20-30 minutes

Biodiversity: 5-10 minutes

Intro

The available evidence indicates that human activities are eroding biological resources and greatly reducing the planet's biological diversity. The loss of biological diversity can have serious consequences since it will affect ecosystems and life webs.

Objectives

To give students an introduction to the concept of bio-diversity and make them aware of the importance of bio-diversity.

Prior Preparation

For the game you will need a ball of string about 250 m in length and cards with names of animals and elements. Find a spot (close to the school) that is suitable to do the bio-diversity research.

BIOLOGICAL DIVERSITY - LECTURE

A complex topic like bio-diversity is explained by a game. After this the students will make their own bio-diversity map of an area near their school.

Introduction: Web of Life

(This game is taken from WWF Environment Education)

Ask students to sit in a circle. Distribute a card labeled with an assumed identity to each student. The identity should be clear enough for everyone to see. Thereby, each student identifies him/herself with one aspect of Nature. Make sure to include and distribute cards depicting the four main elements of nature, sun, soil, air and water.

Take a ball of string about 250 m in length and give it to the Sun. Ask the Sun to wind one end of the string on his/her finger and pass the ball to any aspect of nature he/she feels related to him. For example, the Sun passes the ball of string to the tree as it gives energy to the tree. The tree then winds the string around his/her finger and passes it to another aspect he feels related to and the line of relationship continues as the string unwinds and begins to form a pattern which the students hold together. While each student is passing the ball of string to another, he/she should explain how they are related or interdependent.

Ask the students to see the web-like effect of the string, Then ask them to raise the web to chest height, holding it tight.

Ask them what would happen if some of these elements did not exist. Tell the student representing these elements to drop the string. Now press the web down. It would probably touch the ground because it is loose.

Ask the students what would happen if the sun or the other three major elements of nature did not exist. Conclude the game by explaining to the students how inter-relationships exist and their importance.

List of names for web life:

Sun * Butterfly * Air * Ant * Water * Man * Soil * Grass
Tree * Earthworm * Fruit * Root * Parrot * Shrub * Algae
Poacher * Fish * Industry * Eagle * Snake * Turtle *
Mongoose * Insect * Monkey * Frog * Honey * Mosquito
Bee * Lizard * Plastics * Leaf * Tiger * Flower

Bio-diversity

Tell the students that the web of life is like an ecosystem. Plants and living creatures in a particular area all together form an ecosystem. This is a balanced system in which every part is interconnected. The variation in plants and animals (species) is called biological diversity (bio-diversity).

These Earth's species and ecosystems are the product of over 3 billion years of evolution. We do not know how many species there exactly are but estimations range from 8 to 12.5 million. Most of these species are plants. There are an estimated 4300 mammals and 10,500 amphibians and reptiles.

Ask the students why they think bio-diversity is considered to be important. Bio-diversity is valuable because our understanding of ecosystems is insufficient to be certain of the impact of removing any component. We do not know which species are really important and which not. (Refer to the web of life). Secondly, variety is interesting and more attractive. And lastly, we have no knowledge about future

practical uses and values of species. Maybe the cure for certain diseases can be found in herbs or plants that are endangered.

Scientists and politicians have agreed that the loss of bio-diversity should be stopped. This means that human has to treat the environment with care and has to assure the long-term supply of valuable resources. This means that development has to occur without endangering the means of survival for future generations. This is called sustainable development.

Ask the students if they can give examples of sustainable development.

Common examples are organic farming, planting new trees where they have been logged, protection of endangered species, using alternative sources of energy, etc.

BIOLOGICAL DIVERSITY - EXTRA ASSIGNMENT

Bio-research



Level: Class 6-9

Time Allotment: 30-60 minutes

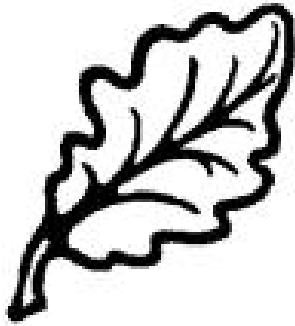
(excluding the time it takes to get to the spot)

Make a field trip to an area where students can identify the different components of the environment. Decide on the kind of place to study – a grassy field, a forest, a coastal area, etc.

Divide the class into small groups. Mark off several plots of about one square meter. Ask the students to make an inventory of the different plants and animals in it. Allow them to study closely the characteristics of these organisms. Make them describe and draw the different species they find.

If you have books or other information about indigenous species, take them with you so the students can compare their findings with the information in the books.

ENDANGERED SPECIES IN TIBET



Level: Class 6-9

Time Allotment: 20-30 minutes

Intro

Tibet's biological diversity is under serious pressure. Many species are threatened by overexploitation of Tibet's natural resources and population pressures.

Objectives

To make students aware of the bio-diversity situation in Tibet with a focus on endangered animals.

Prior Preparation

Bring information and pictures of endangered species in Tibet.

ENDANGERED SPECIES IN TIBET - LECTURE

Introduction

Choose an endangered Tibetan animal (you can find a list below). Tell the students that they have to guess which one it is by asking you questions that you are only allowed to answer by 'yes' or 'no'. They can ask questions like: 'Is it a mammal?', 'Does it have sharp claws?', etc.

If they have guessed right, you can ask them what they know about the animal.

Repeat this game as many times as you like.

Tibet

Ask the students if they know why so many animals are endangered in Tibet. Use the blackboard to write down key reasons.

If you have them, show pictures of killed animals, deforestation, etc.

Information on Endangered Species in Tibet:

Tibet has some of the world's rare plant and animal species. The last 50 years the Tibetan environment and like wise it's bio-diversity has suffered a great deal. Animals are threatened because of the following reasons:

(Illegal) hunting and poaching of wildlife

The survival of various wildlife species is threatened because of hunting and poaching of wildlife. Animals are killed because of their skins and other valuable parts.

The Tibetan antelope is for example massively killed for its wool that is illegally traded to India where they use it to make shahtoosh shawls. Snow leopards, gazelles, lynxes, blue sheep and a lot of other animals are shot for their skins. Musk deer are killed for the musk that some people consider as very valuable. A whole range of animals are caught and sold all over the world. Most of this is illegal.

Endangered species are officially protected, but the Chinese government does not effectively enforce the law. Even worse, they allow trophy hunting of wildlife by foreigners and cash in on this severe exploitation of Tibet's environment.

Massive deforestation

Many animals live in the forest regions of Tibet. Unfortunately, almost half of Tibet's forests have been cut for timber. At least 300 trucks with timber leave Tibet every day for China. Many animals have lost their homes due to China's deforestation policy. These animals cannot go anywhere else.

The building of big hydro-power dams

Not only do animals lose their home by deforestation. The building of dams has the same effect. Dams make for huge barriers in rivers. Fish that are used to migrate up and down the river cannot do so any longer because of this barrier. Furthermore, the water that will gather behind the dam, will flood land and will not only chase away the people and animals that live there.

Looking towards the future

Ask the students to imagine that they are the boss in Tibet. What would they do to save the endangered animals? Let them fantasize about this. Guide them by pointing out the reasons for threat again.

ENDANGERED SPECIES IN TIBET - EXTRA ASSIGNMENT

Exhibition on endangered species



Level: Class 6-12

Time Allotment: 4-6 hours

(depending on the time it takes to finish the paintings)

Bring along information and pictures on endangered animals in Tibet. Let the students choose an animal and read the information on it. Make sure that not too many people choose the same animal. They will draw or paint the animal and use the bottom of their own work to write down the name of the animal and the reason the animal is endangered. They can write down more information if they like. Exhibit their work in the class or in the school hallway.

List of some endangered species in Tibet:

- | | |
|---|--|
| <ul style="list-style-type: none">▪ Asiatic black bear (Thom)▪ Assamese macaque (Tay)▪ Blue sheep or bharal (Naa)▪ Black-necked Crane (Trung trung kenag)▪ Blyth's Tragopan▪ Clouded Leopard (Goong-zig)▪ Golden or snub-nosed Monkey (Ser-tral)▪ Himalayan Tahr (Ra-goth)▪ Ibex (King)▪ Kalij Pheasant▪ Tibetan Wild Ass (Kyang) | <ul style="list-style-type: none">▪ Musk Deer (Lawa)▪ Panda (Thomtra)▪ Pere David's Deer (Shawa)▪ Siberian Tiger (Siberia Taag)▪ Snow Leopard (Saa)▪ Sumatra Serow (Gyara)▪ Takin (Bamen)▪ Tibetan Antelope (Chiru)▪ Tibetan Macaque (Tay)▪ White-lipped Deer (Shawa chukar)▪ Wild Yak (Bamen) |
|---|--|

BUDDHIST ECOLOGY



Level: Class 6-12

Time Allotment: 45-60 minutes

The Poem: 10-15 minutes

Discussion: 30-40 minutes

A Final Thought: 2- 5 minutes

Intro

The Buddhist attitude toward the natural environment is one of compassion and universal responsibility. The philosophical idea behind it will receive extra attention by addressing it in a discussion. Students are encouraged to actively think and discuss the subject themselves with the guidance of a teacher.

Objectives

Students will be able to discuss and formulate their views on ecological responsibility.

Prior Preparation

Prepare handout copies of the Dalai Lama's Poem. 'The Sheltering Tree of Interdependence: A Buddhist Monk's Reflections on Ecological Responsibility'. Or write the strophes you will use on the blackboard.

BUDDHIST ECOLOGY - LECTURE

The Poem

Tell the students you are going to read a poem together. Tell them that you are interested in what they think about the poem and what kind of feeling it arouses with them. What do they think is special about the poem or particularly interesting? What kind of questions does the poem raise? And what do they think about these questions?

After reading the poem, the students will for about 5 minutes share their ideas on the poem with their neighbor. They can discuss the theme that is addressed in the poem and give their own opinion on it.

Note that this is a very long poem. You can choose to just work with the first 10 strophes because there is a great risk that the students will lose their attention.

Discussion

Discuss the poem with the children. Ask them if they have any questions.

What was the poem about?

What is the Dalai Lama's view on the environment and ecological responsibility?

Do they agree or disagree? Why?

Can they add something to the view of the Dalai Lama?

Invite some of the students to talk about what came out of the discussion they had with their neighbor. Write down some keywords of their remarks on the blackboard. This talk can gradually evolve into a discussion about the environment and ecological responsibility.

Try to guide the discussion along the lines of four Buddhist principles that are commonly regarded as relating to ideas of environmental awareness and a protective stand towards nature. These are interdependence, universal responsibility, compassion and non-violence. Try to explain these ideas to the students along the way. The older the students are, the better they will be able to understand them.

Some examples of questions that you could use to start a discussion are included. Please feel free to formulate your own questions.

Interdependence (between the natural environment and sentient beings)

- How is nature interdependent?
- Can humans live in a technological world without having to rely on natural resources?
- Will nature still exist in 1000 years?

Universal responsibility

- Are humans allowed to use natural resources without any constraints?
- Are humans egocentric regarding nature and the environment?
- Do humans have a responsibility towards nature and the environment?

- Why do humans pollute the environment?
- Do we needlessly pollute?
- Who is responsible for the pollution?

Compassion towards all sentient beings

- Is a clean environment a human right?
- Do humans have more rights than animals?
- Must humans try to control nature?

Non-violence

- Can you apply principles of non-violence on nature?
- Is violence towards animals acceptable?
- Is environmental pollution a form of violence?

How to guide a philosophical discussion:

Start asking 'philosophical' kind of questions. React on the answers by asking another question. You can address the question to the same student who gave the answer or to the whole class. You can also invite students to react on the answers of their classmates. What do they think? Do they agree? Guide them with your questions but do not put suggestions in your questions. Take care that there will be no repetition of the same questions and answers. Keep on going until you cannot go any further. Then start a new round of questions.

Don't start giving the students a lot of data, give things to think about. There is no right or wrong. Let them struggle with the questions themselves, to let them determine their own stand. The most important thing is that students are motivated to search for an answer and to formulate it in a clear way. They are encouraged to develop their own insight regarding a specific topic.

You need to be prepared for unsuspected answers and you will need to come up with interesting questions to stimulate students and to make this fun. This is not an easy task. Adjust the questions to the age of the students and their level of abstract thinking.

Sometimes the student will be irritated because you confront them with their own answers. Don't be discouraged by this.

A Final Thought

Let the students give examples of how they can integrate the four above-mentioned Buddhist principles into their own lives (e.g. water conservation, not littering, planting trees).

Ask the students if they have learned something today that they will remember for a long time. This could be something that they read in the poem or that was mentioned by one of the other students.

Q: Do humans have a responsibility towards nature?
A: I guess they have.
Q: Why do you think so?
A: Because they like nature.
Q: Why do they like nature?
A: It is beautiful and we eat the fruits from trees and the vegetables from the land.
Q: But how can you act on your responsibility?
A: By planting trees.
Q: Why do you think planting a tree would make any sense?
A: There will be more trees.

Q: Would you like to live in nature?
A: No.
Q: Why not?
A: It's dirty, there is a lot of garbage and it smells.
Q: How can we avoid garbage thrown into nature?
A: Simply by not throwing it there.
Q: But people produce garbage and that has to go somewhere, hasn't it?
A: Not if I would be king.
Q: And what would you do if you saw someone littering?
A: I'd put them in jail for two days.

BUDDHIST ECOLOGY - EXTRA ASSIGNMENT

Write a Poem



Level: Class 6-12

Time Allotment: 30-60 minutes (homework)

Let the students write their own poem about the environment.

**The Sheltering Tree of Interdependence:
A Buddhist Monk's Reflections on Ecological Responsibility.**

- | | | | |
|---|---|---|--|
| 1 | <p>O Lord Tathagata
Born of the Iksvakus tree
Peerless One
Who, seeing the all-pervasive nature
Of interdependence
Between the Environment and sentient beings
Samsara and Nirvana
Moving and unmoving
Teaches the world out of compassion
Bestow thy benevolence on us</p> | 5 | <p>Perennial snow mountains
resplendent in their glory
Bow down and melt into water
The majestic oceans lose their ageless equilibrium
And inundate islands</p> |
| 2 | <p>O the Savior
The one called Avalokitesvara
Personifying the body of compassion
Of all Buddhas
We beseech thee to make our spirits ripen
And fructify to observe reality
Bereft of illusion</p> | 6 | <p>The dangers of fire, water and wind are limitless
Sweltering heat dries up our lush forests
Lashing our world with unprecedented storms
And the oceans surrender their salt to the elements</p> |
| 3 | <p>Our obdurate egocentricity
Ingrained in our minds
Since beginningless time
Contaminates, defiles and pollutes
The environment
Created by the common karma
Of all sentient beings</p> | 7 | <p>Though people lack not wealth
They cannot afford to breathe clean air
Rains and streams cleanse not
But remain inert and powerless liquids</p> |
| 4 | <p>Lakes and ponds have lost
Their clarity, their coolness
The atmosphere is poisoned
Nature's celestial canopy in the fiery firmament
Has burst asunder
And sentient beings suffer diseases
Unknown before</p> | 8 | <p>Human beings
And countless beings
That inhabits water and land
Reel under the yoke of physical pain
Caused by malevolent diseases
Their minds are dulled
With sloth, stupor and ignorance
The joys of the body and spirit
Are far, far away</p> |
| | | 9 | <p>We needlessly pollute
The fair bosom of our mother earth
Rip out her trees to feed our short-sighted greed
Turning our fertile earth into a sterile desert</p> |

10	<p>The interdependent nature Of the external environment And people's inward nature Described in tantras Works on Medicine, and astronomy Has verily been vindicated By our present experience</p>	<p>Lama Tson Khapa's body bloomed forth Is marked by a sandal tree Bearing a hundred thousand images of the Buddha</p>
11	<p>The earth is home to living beings; Equal and impartial to the moving and unmoving Thus spoke the Buddha in truthful voice With the great earth for witness</p>	<p>16 Is it not well known That some transcendental deities Eminent local deities and spirits Make their adobe in tree?</p>
12	<p>As a noble being recognizes the kindness Of a sentient mother And makes recompense for it So the earth, the universal mother Which nurtures equally Should be regarded with affection and care</p>	<p>17 Flourishing trees clean the wind Help us breathe the sustaining air of life They please the eye and sooth the mind Their shade makes a welcome resting-place</p>
13	<p>Forsake wastage Pollution not the clean, clear nature Of the four elements And destroy the well being of people But absorb yourself in actions That are beneficial to all</p>	<p>18 In Vinaya, the Buddha taught monks To care for tender trees From this, we learn the virtue Of planting, of nurturing trees</p>
14	<p>Under a tree was the great Saga Buddha born Under a tree, he overcame passion And attained enlightenment Under two trees did he pass in Nirvana Verily, the Buddha held the tree in great esteem</p>	<p>19 The Buddha forbade monks to cut Cause others to cut living plants Destroy seeds or defile the fresh green grass Should this not inspire us To love and protect our environment?</p>
15	<p>Here, where Manjusri's emanation</p>	<p>20 They say, in the celestial realms The trees emanate The Buddha's blessings And echo the sound Of basic Buddhist doctrines Like impermanence</p>
		<p>21 It is tree that brings rain Trees that hold the essence of the soil Kalpa-Taru, the tree of wishes fulfillment Virtually resides on earth</p>

	To serve all purposes		And, during designated periods, even construction
22	In times of yore Our forbears ate the fruits of trees Wore their leaves Discovered fire by the attrition of wood Took refuge amidst the foliage of trees When they encountered danger		These traditions are noble For they preserve and cherish The lives of humble, helpless, defenseless creatures
		27	Playing with the lives of other beings Without sensitivity or hesitation As in the act of heedless, needless violence A violation of the solemn rights Of all living beings
23	Even in this age of science of technology Trees provide us shelter The chairs we sit in The beds we lie on When the heart is ablaze With the fire of anger Fueled by wrangling Trees bring refreshing, welcome coolness	28	Being attentive to the nature Of interdependence of all creatures Both animate and inanimate One should never slacken in one's efforts To preserve and conserve nature's energy
24	In the trees lie the roots Of all life on earth When it vanishes The land exemplified by the name Of the Jambu tree Will remain no more than a dreary, desolate desert	29	On a certain day, month and year One should observe the ceremony Of tree planting Thus, one fulfills one's responsibilities Serves one's fellow beings Which not only brings one happiness But benefits all
25	Nothing is dearer to the living than life Recognizing this, in the Vinaya rules The Buddha lays down prohibitions Like the use of water with living creatures	30	May the force of observing that which is right And abstinence from wrong practices and evil deeds Nourish and augment the prosperity of the world May it invigorate living beings and help them blossom May sylvan joy and pristine happiness Ever increase, ever spread and encompass all that is
26	In the remoteness of the Himalayas In the days of yore, the land of Tibet Observed a ban on hunting, on fishing		

TIBET'S ENVIRONMENT



Level: Class 10-12

Time Allotment:

Most assignments do not take a lot of time and can be done in class or given as homework.

Intro

Tibet's environment is under serious pressure. In The last fifty years the country has suffered from overexploitation of it's natural resources.

Objectives

To create awareness about environmental problems in Tibet. To teach students to draw conclusions from various sources of information and to understand and set up arguments in the discussion about the Tibetan environment.

Prior Preparation

Make copies of the student handout.

TIBET'S ENVIRONMENT - LECTURE

Students will work with the handout. They will answer the questions either by themselves or in small groups (2 or 3 students). This could be a homework assignment. It is possible to just pick one or a couple of the assignments. The topics can be dealt with independently. The questions should be discussed in class afterwards.

It is possible to turn this topic into a lecture by discussing the questions orally or using them as a lead.

Water

Answers

1. Machu/Yellow River
Drichu/Yangtze
Zachu/Mekong

- Gyalmo Ngulchu/Salween
Yarlung Tsangpo/Brahmaputra
2. Machu/Yellow River: Tibet, China, Inner Mongolia
Drichu/Yangtze: Tibet, China
Zachu/Mekong: Tibet, China, Vietnam, Laos, Cambodia, Thailand
Gyalmo Ngulchu/Salween: Tibet, China, Burma, Thailand
Yarlung Tsangpo/Brahmaputra: Tibet, India, Bangladesh
 3. Drinking, cooking, cleaning, irrigation of crops, etc.
 4. Water is the source of life. If water is polluted, the health of people is in danger. People will drink dirty water and vegetables that contain pollution.
 5. People in the watershed regions of the river will get less water? This will especially be a problem for the growing of crops since they require a lot of water.

Degradation of Rangelands

Answers

1. yak: 64%, sheep: 37%
2. The overgrazing of pastures has had negative consequences on livestock. They have difficulty finding nutritious pasture and consequently have lost weight.
3. Livestock will lose more weight and/or less livestock can be kept on the pastures depriving Tibetan nomads of their livelihood.
4. The first could be an official Chinese statement. They blame degeneration of lands on the Tibetans. The second statement is the opinion held by the Central Tibetan Administration.

Deforestation

Answers

1. Soil erosion.
2. A renewable resource because trees can keep growing and providing us with wood.
3.
 - a) Reforestation by directly planting seedlings by hand
Every seed can be sown and taken care of properly but it takes a lot of labor and a long time to reforest all of Tibet.
 - b) Reforestation by aerial sowing
Large proportions of land can be treated with a minimum of effort. It is therefore a cheap method. But the seeds are spread randomly so only a small quantity of the seeds will turn into trees. This method is therefore inefficient and not very effective.
 - c) Forest tending
New forests will develop faster because humans take care of a healthy and proper growth of trees.
 - d) Forest protection

Like forest tending it is a way to fasten the process of the regeneration of forest. Besides that it will protect existing forests of anything that threatens its existence.

There can be a danger involved if unsustainable chemicals or methods are used. This can endanger the environment and/or bio-diversity

e) Mountain closure

Forests will regenerate faster, but people who are dependent on the land for their livelihood are robbed from their means of subsistence.

Tibetan Law

Answers

1. To protect animals.
2. Buddhism has played a role in this respect because it resulted in a general taboo against exploiting the environment. Buddhists know that all plants animals and non-living elements of nature (sunshine, mountains, and rivers) are interdependent and accordingly respect this balance.
3. For example, Tibetan nomads had a regulated way of keeping their livestock that protected pastures from overgrazing.
Tibetans did not engage in extensive mining (even when they knew about the resources in Tibet).
Tibetans did not fell trees and only used dead wood.
Tibetans regarded many lakes and mountains as sacred and did not extract its resources.
4. Personal answer.

TIBET'S ENVIRONMENT - EXTRA ASSIGNMENT

Essay Writing



Level: Class 10-12

Time Allotment: - (homework)

Let the students write an article of 200-250 words about the Tibetan environment. Let them search for additional information about the topic in books, magazines and - if possible – on the internet. They can take the information to class and write the essay during the lecture. They can also write it at home. Ask them to write down all the sources they have used so you can get an overview of the materials they have studied.

TIBET'S ENVIRONMENT

A Tibetan Minister wrote the following text in 2000.

" The Tibetan Plateau is the highest and largest plateau on earth and towers over the continent of Eurasia. It is home to over 5,000 higher plant species and over 12,000 species of vascular plants, 532 different species of birds, 126 identified minerals and has rich old grown forests. It is also the source of many of Asia's major rivers whose tributaries are the lifeblood of millions of people in the Asian continent.

Ever since the Chinese occupation of Tibet, widespread environmental destruction has taken place due to logging of virgin forests, uncontrolled mining, water pollution and nuclear waste dumping, which has resulted in the degradation of grasslands, extinction of wildlife, desertification, floods, soil erosion and landslides.

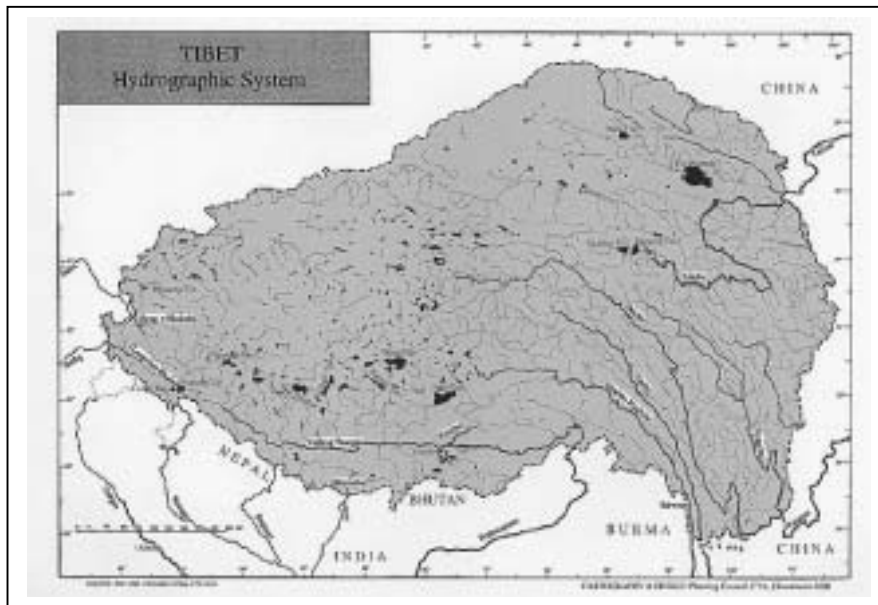
The damaged caused to the environment and the fragile mountain ecosystem is becoming irreversible. This is a cause of great concern not only for the Tibetan people."

The following assignments deal with Tibet's environment. You will learn more about the causes of environmental problems and the consequences for the people depending on the natural resources. Your teacher will tell you which ones you will have to do.

Water

Water is the source of life and is therefore indispensable to our daily existence. Tibet is the water tower of Asia. It is the source of many of Asia's major rivers whose tributaries are the lifeblood of millions of people. Rivers originating in Tibet sustain the lives of 47% of the world's population.

- 1. Look at the water-map at the next page. Name 5 major rivers that originate in Tibet?**
- 2. Which countries depend on the water of these rivers? Find out through which countries the rivers flow.**
- 3. What do people and farmers use water for?**



Tibetan rivers get more and more polluted. The sources are among others mining activities that pollute rivers with heavy metals, plastic and oil waste dumped on river banks by mechanical workshops, and increasing levels of untreated sewage that towns pour in to the rivers.

4. What do you think would happen if the water in the Tibetans rivers gets polluted?

Not only get rivers polluted. The Chinese have also built several dams along the watersheds of several rivers. Large water reservoirs are created in order to generate hydro-power.

5. What do you think would happen to lower areas if a big hydro-power dam in a river holds back the water?

Degradation of Rangelands

The Tibetan pastures are degraded in many areas. In healthy rangeland between 79% and 94% of grass is edible by yaks and sheep, but when grassland degrades only 24% to 56% is edible, the rest being weeds and poisonous species.

1. Use the figures from table 1. What was the weight decrease of yak between 1965 and 1981? What was the weight decrease in the same period for sheep?

Table 1.

Average Animal Carcass Weight In Amdo 1965-1981 (in kgs)			
	1965	1977	1981
Yak	112	50	40
Sheep	22.5	15	14

(Quoted from Tibet 2000 report)

- 2. Compare tables 1 and 2. What connection do you see between the figures of table 1 and those of table 2?**

Table 2.

Quantity and Distribution of Degraded Rangelands (x 10,000 hectares)			
Region	Available Range	Percentage of Degraded Ranges	
		1980s	1990s
TAR ¹	6,636.12	18.12	30
Amdo	3,161.03	28.29	31.82
NW Sichuan	1,416.04	27.31	33
Gansu	1,607.16	44.36	49
Total	12,820.35		

(Quoted from Tibet 2000 report)

- 3. What do you think will happen if the degradation of rangelands is not stopped?**
- 4. Read the following two statements:**

Statement 1.

The degradation of rangelands is due to the grazing traditions of the nomads. Because of their backwardness and lack of knowledge the nomads keep too many animals on the pastures. This results in overgrazing.

Statement 2.

For ages Tibetan nomads have moved with their herds allowing land to recover and retain its fertility. Chinese policy has curbed the freedom to move and has forced the nomads to increase the number of animals they keep.

- Who could have made the first statement? Who could have made the second? With which one do you agree? Why?**

Deforestation

*Dorjee Tsering, an escapee from Tibet, reported extensive clearcutting of forests being carried out in Thewo county, Amdo region by the Chinese government. Every day about 500 logging trucks loaded with Tibetan timber travel from Thewo county to the Chinese city of Kachu and some trucks go directly to Lanzhou city in Gansu. This mass transfer of logs to China has been taking place ceaselessly since the Chinese arrival. He said that Thewo county has lost about 80% of its forest cover. The logging is haphazard; even young trees are cut down. Most of the impenetrable forest regions seen during Dorjee's childhood have become bald and barren.
(Dekhang quoted in Tibet 2000)*

The Tibetan plateau has a fragile vegetation cover. The high altitude and steep mountain valleys accelerate potential destruction that results from deforestation. Trees often function as an anchor, helping the soil to store rainwater and holding and supporting the earth that may otherwise be washed into rivers. With the mass extraction of trees follows a corresponding loss of soil. With no roots to hold the soil together, and no needles and leaves to fertilize the ground cover, deforestation provides inevitable, and in the medium term, irreversible soil erosion.

- 1. What is the danger of extensive logging?**
- 2. Is timber a renewable resource or a non-renewable resource?**

The Chinese government has realized that the deforestation of Tibet has gone too far leading to erosion and floods (e.g. Yangtze flood in 1998). The Chinese have therefore changed their logging policy and are engaged in reforestation projects. The policy has different components.

- Reforestation by directly planting seedlings by hand
- Reforestation by aerial sowing
- Forest tending (the cutting of shrubs and grass affecting tree growth to facilitate the development of young trees)
- Forest protection (from fire, plant diseases, insects and other pests, and people and animals)
- Mountain closure (the closing off of forestland to avoid interference from people and animals as the forest naturally regenerates)

- 3. Can you think of advantages and disadvantages of each of the above-mentioned methods? Describe why a certain method could be effective and what negative side effects it could have.**

Tibetan Law

In the Horse Water Year (1642) His Holiness the Great Fifth Dalai Lama, Ngawang Lobsang Gyatso, became the spiritual and political mentor of Tibet. From this date, in the tenth month of every year a Decree for the Protection of Animals and the Environment was issued in the name of the Dalai Lama. These decrees or Tatsig were spread throughout Tibet by public meeting held in all villages. Governors had to enforce the decrees. Those who continued to violate the law were punished.

This is an example of such a decree:

From the first month of the Tibetan calendar to the 30th of the seventh month, with the exception of tigers, leopards, bears, hyenas, rats and Rishu no body will hurt, let alone kill the different birds of the air, animals of the hills and forests, fish and otter of the water. In fact no body, noble or humble, should do violence to or harm any animal or the land or water or air, no matter how big or small.

- 1. Why do you think this decree was issued?**
- 2. How do you think the Buddhist nature has influenced the issuance of this decree?**
- 3. Do you know about any other practices of Tibetans that respected the environment?**
- 4. What environmental laws would you make if you would govern Tibet?**

Essay Writing

Write an article of 200-250 words about the Tibetan environment. Choose a topic you think is interesting. This can be one of the above topics, but you can also choose a different topic (e.g. overgrazing, hunting and poaching, mining)

Search for additional information about the topic in books and magazines. If you have access to the internet, the following sites offer some interesting information:

- www.tibet.net/eng/diir/enviro/
- www.tew.org
- www.earthisland.org/tpp

You can also conduct a small interview with someone who can tell you more about the Tibetan environment. For example, someone who used to live in Tibet and who can tell you about his/her own experiences with deforestation or animals living in Tibet.

Write down all the sources you have used at the end of your essay: book titles, website addresses, names of people you have interviewed, etc.