



CENTER FOR EDUCATION AND DEVELOPMENT

Environmental Justice Literacy

The Centre for Education and Development (CED) are currently working on a project to incorporate Environmental Justice and Conservation into the Vietnamese School Curriculum. This guide will be a starting point for teachers in Vietnam (including: tips for active learning, lesson plans and class trip schedules)

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About this Guide

A lack of Environmental Justice is one of the most serious issues faced by young people today. Many countries are at high risk from the consequences of climate change, our natural resources are being used up at an unsustainable rate and pollution is damaging our health.

Educators of today have a responsibility to communicate this message to the next generation, and give them the knowledge and skills they need to prepare for the future. This guide is designed to help teachers to introduce more outdoor activities into education with active and engaging lessons, giving all young people the opportunity to learn about the natural world, and how to protect it, in an enjoyable way.

The lessons and projects included here have been selected because they develop knowledge and skills in line with the current Vietnamese curriculum. This allows students to enjoy a novel learning experience without losing time that would otherwise be spent studying.

Active outdoor education is also an opportunity to develop skills that can be difficult to teach in a formal classroom environment, like teamwork, communication, leadership and observation; skills that will help them to thrive in the modern world.

Environmental Health & Justice

"Environmental justice is the right of all people to have equal access to their basic needs. This includes safe energy, healthy food, clean air and water, open space, non-toxic communities, and equitable access to educational and employment opportunities."



Purpose / Vision

- All children and young people participating in a range of progressive and creative outdoor learning which are clearly part of the Vietnamese curriculum.
- Schools and learning centres providing regular, frequent, enjoyable and challenging opportunities for all children and young people to learn outdoors throughout their school career and beyond.
- Teachers and educators to embed outdoor learning in the curriculum so that learning in this environment becomes a reality for all children and young people.
- Increase active learning for Vietnamese children of all ages to increase the capacity of education in Vietnam.
- Improved outdoor education in these areas will lead to a better understanding of conservation and environmental health in Vietnam and it's surrounding countries.

Ways to incorporate Active Learning

Why is Active Learning important?

- Students remember 10% of what they hear, 20% of what they read, 30% of what they see and **90% of what they do.**
- Active learning allows for character development. Taking part in active discussions and presentations will help to develop confidence in students.

How can you incorporate Active Learning into your lessons?

- Discussions between students
- Questioning the teacher/ debates with peers
- Small group work/ turning to your neighbor
- Presentations in groups on different topics or to recap on topics
- Role playing
- School trips/ activity days (e.g. trips to National Parks)



Additionally, in order to maintain concentration:

- Speak extemporaneously rather than read notes
- Give an overview with preliminary objectives, using headings
- Vary pitch, intensity, and timbre of voice
- Speak clearly, relate material to students' interests
- Move about, gesture.
- Pause for 2 min. every 15 min: students work in pairs to discuss and ask questions
- Give short tests and quizzes: Use essay questions rather than fill in the blank
- Demonstrate a concept or idea: Students participate in an active investigation, with questions such as "What will happen if we...?" asked regularly.

Feedback	-Two twenty minute presentations separated by small group work - In small groups, students discuss their questions about lecture
Guided	 Students told not to write during first 20 minutes of lecture Then, students given 5 minutes to summarize lecture Finally, students work in groups to reconstruct notes
Responsive	 One class per week devoted to student-generated questions All topics couched as questions Students submit questions early so that teachers prepare lectures

Lesson Plans

Animal and Habitats, Plants and Horticulture, Water quality and Pollution and Environmental Health and Justice.

Animals and Habitats:

• Definition of Habitat: the natural home or environment of an animal, plant, or other organism. Discuss/ brainstorm different types of habitats and start to put animals and habitats together, e.g. birds live in trees.

• What are the issues of animals losing their habitats? Discuss the forests and rainforests being chopped downdoes this have an effect on the animals that live in these habitats? Definition of extinction: the end of an organism or of a group of organisms (taxon), normally a species.

Middle childhood (9-11): Classify animals according to their group (birds, mammals, fish, insects). Adolescence (12-13): List the parts of plants and animals that help them to adapt and survive in their habitat.

• Food chains: Animal food chains will help the students to understand certain habitats and wildlife. More simple/ elaborate ones appropriate to the age of the students (for the older students teachers can go onto primary and secondary consumers in the food chain - use BBC bitesize). Drawing the diagrams is interactive fun for the students.



Plants and Horticulture:

- More of a Science based lesson- They need to have a basic understanding of different types and structures of plants (detail of the science can depend on the age/ ability of the student). Get the students themselves to draw a diagram of a leaf (maybe for homework get the students to bring a leaf in and personally label it and explain why it is that colour/shape etc.).
- Leaves are adapted in several ways to help them perform their function.

Adaptation	Purpose
Large Surface Area	To absorb more light
Thin	Short distance for the carbon dioxide to diffuse into leaf cells
Chlorophyll	Absorbs sunlight to transfer energy into chemicals
Network of veins	To support the leaf and transport water and carbohydrates
Stomata	Allow carbon dioxide to diffuse into the leaf

- Possibly brainstorm different types of leaves/ trees/ plants (which ones are common in Vietnam, the tropical rainforests and different climates?). Which plants bloom all year? Which change through the seasons?
- Definition of Horticulture: the art or practice of garden cultivation and management. Examples of horticulture: growing your own food (fruit/vegetables), planting a garden of flowers, farming (rice fields in Vietnam).
- Could do the same with a tree (its structure, colour, seasons etc.) Children can 'build the tree' in groups using their bodies, using the information they have just learnt.



Water Quality and Pollution:

- More scientific again- the students should have a basic understanding of what water's typical qualities are, for example: clean water should have a PH of 7 (neutral) and should contain species such as stone flies and fresh water shrimp.
- Polluted water will cause problems for animals that live in that particular habit, e.g. if the water is acidic (PH of 3 or 4) fish will not be able to reproduce and many will die, and species such as bloodworms and sludge worms will be present.

Questions:

- What is pollution?
- What are examples of Pollution?
- What types of Pollution occur in Vietnam?
- What are some solutions to Pollution?



Use http://www.bbc.co.uk/schools/gcsebitesize/science

(English revision site) for simple explanations of each topic, some of it will be too complicated for the younger grades, but will be perfect for the older students (13/14 year olds).

Environmental Health and Justice:

- <u>http://www.hc-sc.gc.ca/fn-an/securit/chem-chim/environ/index-eng.php</u>
- "Environmental justice is the right of all people to have equal access to their basic needs. This includes safe energy, healthy food, clean air and water, open space, non-toxic communities, and equitable access to educational and employment opportunities."
- Discuss the types of environmental injustice in Hanoi/ Vietnam and concentrate on the theory side of it rather than the active side (as the active elements will be dealt with on the day trips).
- Use simple images as the main point for discussion. Contrasting images (e.g. a forested and a deforested area, a well-nourished child and a starving child) will allow the students to actively see the importance of Environmental Health and justice. Word associations for the younger students (9-11 years old) will help with their basic understanding: malnourished child = poverty, and this is environmentally unjust.

2 hour Specific Plan to Prepare students for the Outdoor trips:

- <u>0-30 minutes</u>: As it's an introduction for both the Students and the Teachers, the first part of the introduction lesson should be around explaining the 4 main parts of the subject and defining any new words for the students.
- Definition of 'Habitats' (Animals and Habitats) as well as explaining the need for different habitats and why different species need different habitats (discuss examples and how certain animals adapt to these habitats).
- Definition of 'Horticulture' (Plants and Horticulture) and brainstorm types of Horticulture (rice fields in Vietnam for example).
- Definition of 'Pollution' and discuss what is meant by the term 'Water Quality'. What are some forms of Pollution?
- Define 'Environmental Justice and Health' and discuss examples of Environmental Injustice.
- **<u>30-90 minutes</u>**: Use slides 6-9 to add more detail on each subject in order for the students to be able complete their tasks on their outdoor trips. More time may need to be spent on Water Quality and Plants as it's heavily focused on science. The students must have a simple understanding of the PH scale (only theory is needed) and the basic structure of a leaf.
- 90- 120 minutes: The students should put together a mini 'Trip Pack' that they can bring along to the National Park. The pack should include notes from this lesson (definitions, explanations, diagrams etc.) as well as an evaluation they have filled out before the trip and an evaluation to fill out after the trip:

What would you like to see on the outdoor trip?	
What subject are you most keen to learn more about on the trip?	
What activity are you most excited about on the trip?	
Is there anything you have learnt today you don't understand? Do you think you will understand it more after your trip?	

Name:	Class:
What is your favourite subject within the environmental curriculum?	
What is one interesting fact you have learnt that you didn't previously know?	
Did you enjoy the outdoor trip? What was your favourite activity?	
Do you think you will try to be more active in your community and protecting the environment now?	
Do you want to add any other comments?	

Outdoor Trip Schedules

Ba Vi National Park, Tam Dao National Park and Me Linh Station for Biodiversity

Ba Vi National Park:

7:00/7.30 am: Students will meet CED staff to travel to Ba Vi National Park.

8:00/8:30 am: Arrive at location and a quick introduction from the organizers to explain what activities the students will be taking part in and the importance of the subject. Possibly a quick tour of some of the sights in the parks for the students.

9:00 am: Plants and Horticulture/ Climate and Weather:

• Ba Vi has a large focus on the plants and climate of the park rather than animals. There are over 1,200 vascular plants in Ba Vi National Park, thus the students could start to link their science and biological studies with these outdoor activities, for example, students could go and hunt for many different leaves and then inspect them (similar to an activity they would have done in class):

-What is this particular leaf's structure? (Veins, colour, shape)

-Why does it hold this structure?

-Will the weather/seasons change this particular leaf/ plant?

(Detail and depth of inspection/description of the leaf can depend on the age of the student).

- They can also link insects they find to certain plants- what insects are present in Ba Vi's monsoon climate?
- Discussion and debates about the weather: its monsoons, the humidity, heat (tends to be a warm location- this attracts tourists) etc. Is it significantly different to Hanoi's weather?

11:00 am: Group can come together and sit down for around an hour of interactive **English** songs, poems and games.

- Word Association game: pick a subject, e.g. animals (maybe specific types- mammals etc.), plants or trees, and go around the group with each student naming a plant/tree or animal that fits into the subject group. For example, if the subject is animals that live in the sea: sharks, whales, dolphins, etc. You carry on until no one can think of another animal from that group. The winner is the person that can come up with a new word every time it is their go. You are out if you repeat a word or cannot think of one.
- Eye Spy game: (English game). "Eye Spy with my little eye something beginning with B" ... "bird". The group has to guess what animal the person can see.
- Learn/ understand (and sing) the conservation songs and poems (will improve their English vocabulary on the subject).

11.30/12:00pm: Lunch

1:00 pm: Water Quality Activities (strong emphasis on water as Ba Vi has vast lakes and water supplies):

- Visit the small rivers or lakes in the parks and inspect the water (colour, smell, living things in the water), with the water kits provided by CED. Collection of different water samples could be brought back to the classroom and the students could carry out small tests on them, e.g. where did they find algae? Lakes, rivers or the sea? If Litmus paper was available during science lessons, a small experiment could be done to judge the PH of the water (make tables to show their results).
- What Amphibians are present in the water? Do these forms of wildlife indicate the state of the water?
- Would the PH of the water change due to pollution levels of each different water source? What PH is safe for drinking? How can water be kept clean in Hanoi? The students should brainstorm together with the knowledge from their previous lessons on water quality.
- **3:30/4:00 pm**: Final brief from the organizers and recap for the students on all the important educational activities they have taken part in. (Possibly gain feedback from the children on what they thought of the day and which activities they enjoyed the most. Did they learn something new?)

4:00/4:30 pm: Take transport back to Hanoi.

5:00/6:00 pm: Arrive back in Hanoi- End of trip.

Tam Dao National Park:

7:00/7.30 am: Students will meet CED staff to travel to Tam Dao National Parks.

8:00/8:30 am: Arrive at location and a quick introduction from the organizers to explain what activities the students will be taking part in and the importance of the subject. Possibly a quick tour of some of the sights in the parks for the students

9:00 am: Animals and Habitats:

- Animal/ Insect Bingo: Small groups have to go around the parks and find all the insects and/or other animals, tick them off once they've found them and provide a small description of where they found them, e.g. bird = tree, Beetle = on the path, spider = in the grass. This will help them understand habitats and certain animals in their natural environments.
- The older students could also go into detail about why a certain animal they have found lives in a certain habitat.
- As Tam Dao has many species (840), the children could focus quite heavily on the animals and habitats section of the curriculum at Tam Dao, even walking around and experiencing the sounds and sights of the wildlife Tam Dao has to offer.

Class	Number of orders	Number of families	Number of genus	Number of species
Mammal	8	25	48	64
Bird	16	50	140	239
Reptile	3	14	46	75
Amphibian	3	7	11	28
Insect	8	48	271	434
Total	38	144	516	840

10:30 am: Plants and Horticulture:

Tam Dao has over 2000 plant species and 904 species are considered useful to humans. The students could start to link their science and biological studies with these outdoor activities, and see if they can find any of the 'useful' species (e.g., fruit, vegetable, woods etc.).

They will also experience a new kind of forest (tropical rainforest) thus advancing their knowledge on different ecosystems across the globe (different species of animals, types of habitats and species of plant). They could possibly compare leaves from a more tropical environment to more common leaves in Vietnam.

-What is this particular leaf's structure? (Veins, colour, shape)
-Why does it hold this structure?
-Will the weather/seasons change this particular leaf/ plant?

Detail and depth of inspection/description of the leaf can depend on the age of the student.

11:30 am: Group can come together and sit down for around an hour of interactive **English** songs, poems and games.

- Word Association game: pick a subject, e.g. animals (maybe specific types- mammals etc.), plants or trees, and go around the group with each student naming a plant/tree or animal that fits into the subject group. For example, if the subject is animals that live in the sea: sharks, whales, dolphins, etc. You carry on until no one can think of another animal from that group. The winner is the person that can come up with a new word every time it is their go. You are out if you repeat a word or cannot think of one.
- Eye Spy game: (English game). "Eye Spy with my little eye something beginning with B" ... "bird". The group has to guess what animal the person can see.
- Learn/ understand (and sing) the conservation songs and poems (will improve their English vocabulary on the subject).

12:00pm: Lunch

1:00 pm: 2 hour organised tour around Animal Asia's Bear Sanctuary.

• Animal Asia's sanctuaries also hold wonderful natural grounds with streams and rivers. The students can utilise these grounds for their education:

-Testing the water in the streams and collecting samples for studying (is the water clean, fresh, polluted, green, etc.?)

-Inspecting the wildlife present in the water

-Learning about a Bear's natural habitat

-Spotting other natural wildlife in their habitats

-Linking animal cruelty to environmental injustice - solutions like Animal Asia to fix these problems

- **3:00 pm**: Either at the Bear Sanctuary (or possibly at the Red Diva River) the students can collect some water samples and inspect the amphibian species Tam Dao has to offer.
- Litmus paper PH tests
- What kind of water? (Fresh, polluted, salty etc.)
- **4:00 pm**: Final brief from the organizers and recap for the students on all the important educational activities they have taken part in. (Possibly gain feedback from the children on what they thought of the day and which activities they enjoyed the most. Did they learn something new?)

4:30 pm: Take transport back to Hanoi.

5:30/6:00 pm: Arrive back in Hanoi- End of trip.

Me Linh Station for Biodiversity:

7:00/7.30 am: Students will meet CED staff to travel to Me Linh.

8:00/8:30 am: Arrive at location and a quick introduction from the organizers to explain what activities the students will be taking part in and the importance of the subject. Possibly a quick tour of some of the sights in the parks for the students.

9:00 am: Animals and Habitats:

• Me Linh is home to many species of Amphibians (frogs in particular) so it will give the children a chance to study these species in great detail. Me Linh focuses on the protection of all the native amphibian species and their habitat through reforestation and improved protected area demarcation and enforcement, thus the students can learn the importance of conservation for both animals and plants in Vietnam.

-List the diversity of Amphibians they come across

-Describe the habitat they thrive in

-Draw diagrams and pictures

10:00 am: Plants and Horticulture:

• There are over 1,200 vascular plants in Me Linh, thus the students could start to link their science and biological studies with these outdoor activities (Tao Dao National Park will be the same, just with different species from tropical rainforest). For example, students could go and hunt for many different leaves and then inspect them (similar to an activity they would have done in class):

-What is this particular leaf's structure? (Veins, colour, shape)

-Why does it hold this structure?

-Will the weather/seasons change this particular leaf/ plant?

(Detail and depth of inspection/description of the leaf can depend on the age of the student.)

[This activity can carry on throughout the day and every section of Me Linh]

11:00 am: Group can come together and sit down for around an hour of interactive **English** songs, poems and games.

- Word Association game: pick a subject, e.g. animals (maybe specific types- mammals etc.), plants or trees, and go around the group with each student naming a plant/tree or animal that fits into the subject group. For example, if the subject is animals that live in the sea: sharks, whales, dolphins, etc. You carry on until no one can think of another animal from that group. The winner is the person that can come up with a new word every time it is their go. You are out if you repeat a word or cannot think of one.
- Eye Spy game: (English game). "Eye Spy with my little eye something beginning with B" ... "bird". The group has to guess what animal the person can see.
- Learn/ understand (and sing) the conservation songs and poems (will improve their English vocabulary on the subject).

11.30/12:00pm: Lunch

- **1:00 pm**: Walk down to the small stream, exploring the wildlife and plants. The students can then take water samples from the stream:
- -Test the PH of the water
- -What organisms are present?
- -What type of water is it?
- -Is it polluted or clean?
- 2:00pm: The students can be shown all the reptiles, turtles and birds Me Linh has to offer around the park. The students can learn about the different species, for example: what they eat, the climates they are found in, etc.
- **3:30/4:00 pm**: Final brief from the organizers and recap for the students on all the important educational activities they have taken part in. Possibly gain feedback from the children on what they thought of the day and which activities they enjoyed the most. Did they learn something new?

4:00/4:30 pm: Take transport back to Hanoi.

5:00/6:00 pm: Arrive back in Hanoi- End of trip.

Lesson plan for after the day trip (2 hours)

Analysis of the starter lessons and the outdoor trip: review of what the students have learnt as well as an evaluation of the trip. This is a characteristic of Active Learning which will allow for: better absorption of information, increased engagement in higher thinking such as analysis, synthesis and evaluation and it helps to evaluate the attitudes and values of the students.

Evaluation: The students should fill out an evaluation (created by CED or the Teachers) to give feedback on the trip and the lesson plans/ curriculum. Evaluation should include whether it was: enjoyable, too hard, too easy, interesting, boring, etc.

Name:	Class:
What is your favourite subject within the environmental curriculum?	
What is one interesting fact you have learnt that you didn't previously know?	
Did you enjoy the outdoors trip? What was your favourite activity?	
Do you think you will try to be more active in your community and protecting the environment now?	
Do you want to add any other comments?	

Group Discussions/Presentation: the students should be put into groups of about 5 people in order to discuss the trip and the lessons. The group should tell one another about their personal experiences during the trip and what was their favourite part.

The Groups should then create a presentation to the rest of the class. The presentation should include:

- What they have learnt about: animals and habitat, water quality and pollution, plants and horticulture and environmental health and justice.
- Any results they have concluded (e.g., what the water samples showed could they tell whether the water was fresh/polluted/salty/etc? What living organisms were present in the different water sources and species of plants.)
- They could possibly create a simple educational activity to teach to younger students about the environment (age 6/7/8 for example) using the knowledge and information they have gathered. It may help them to organise their information and simplify the concepts.

Each member of the group should also do a short personal recap of one thing they learnt, one thing they enjoyed and how they could contribute to their local community to improve current environmental issues. This will build on the solutions the students have previously had to come up with as well as enhancing the links between schools and their local communities.

Web of Life

Aim: to get students thinking about how an ecosystem is connected while learning about the local wildlife by building a "web of life", with each student representing a different plant, animal or habitat at the edge of the web.

All students stand in a circle around the instructor, who asks the group if they can name a local plant or animal. When a student replies they are handed the end of the string. The instructor will then ask a follow up question, e.g. what does it eat? Where does it live? Etc. The next student who replies is given the next part of the string by the instructor. This continues until every student has named a plant, animal or habitat so they are connected by the string, creating a web.

Forest Art/Map Making

Aim: to make students think creatively with limited resources and explore the environment for interesting/attractive natural objects.

Using just found materials from the natural environment, like sticks, stones, leaves, soil, etc. students create a piece of art. This could be a picture or a sculpture. The instructor could let the students decide on the subject, or they could ask for art focused on a specific topic e.g. local animals, conservation, geography, etc.

Alternatively, students could create a map of the area in the same way. This has the advantage of giving the instructor an opportunity to explain different geological features and identify points of interest.

Build a Shelter

Aim: by building a shelter as part of an outdoor lesson, students will learn some practical skills, creative problem solving and the properties of the natural materials around them.

Students work together or compete to build simple shelters. When completed, the instructor can ask the students questions about their shelters that will get the students thinking about the natural environment, e.g. why did you chose these materials? Why did you build it here? Etc.

The instructor can go then go into detail explaining why the environment is this way, covering plant/tree structures, adaptation, seasonality, and other factors.

Sensory Discovery Walk

Aim: this exercise is designed to give students a different experience of nature without the use of their sight. The walk will help the students to develop skills is cooperation, leadership, sensory awareness and memory.

Students are put into pairs with one leader and one blindfolded follower. The blindfolded students are guided around using their other senses to pick up clues about the environment. The leader should try to safely guide their partner to points of interest to make it easier for the follower to recognize their surroundings.

When the walk is finished, the follower (no longer blindfolded) will try to draw a map of where they think they have been, identifying landmarks that stick out in their memory. They can then follow this map, checking off the landmarks as they go, to see how different the experience is when they are able to see.

Flora Identification

Aim: students learn about the different trees in an ecosystem while developing skills in observation and identification.

Have the students walk around and collect at least 5 different leaves from a variety of plants and trees. Ask them to make notes about the defining characteristics of the leaves and where they came from. The more information they can gather, the more they will get out of the exercise, so ask them to look carefully at small details and record as much information as they can.

Once the students are done, throw their collected leaves in a large pile. Mix up this pile and ask the students to use their notes to find their own leaves again.

When they have finished this task give the students field guides and ask them to find what species the leaves come from.

Songs & Poems

http://www.songsforteaching.com/jeffsch roeder/habitat.htm

Habitat, Habitat, Have to Have a Habitat Habitat, Habitat, Have to Have a Habitat Habitat, Habitat, Have to Have a Habitat You have to have a Habitat to carry on! The ocean is a habitat, a very special habitat It's where the deepest water's at It's where the biggest mammal's at It's where out future food is at It keeps the atmosphere intact The ocean is a habitat we depend on! The forest is a habitat, a very special habitat It's where the tallest trees are at It's where a bear can scratch her back (ch-ch-ch-ch-ch-ch) It keeps the ground from rolling back Renews the oxygen, in fact The forest is a habitat we depend on! The river is a habitat, a very special habitat It's where the freshest water's at For people, fish, and muskrat But when people dump their trash Rivers take the biggest rap The river is a habitat we depend on! People are different than foxes and rabbits Affect the whole world with their bad habits Better to love it while we still have it Or rat ta-tat-tat, our habitat's gone! (Chorus) http://www.familyfriendpoems. com/poem/mother-nature

Our world is always changing, Constantly re-arranging. From ocean depths to mountain peaks,

Mother Nature moves and speaks. While telling stories of our past She tries to teach us how to last. Mankind, so smart, sometimes blind

Leaves common sense far behind. We're moving fast and living large, Forgetting she's the one in charge. Amazed when she rings our bell, Sending us through living hell. She can twist our steel, shake any city,

If her wrath you feel, we shall pity. Yet some who speak on her behalf, I fear just seek the golden calf. It's true, we must treat her right. Or we will incur a deadly plight. Treat her with distinction Or surely face extinction! http://education.scholastic.co.uk/r esources/8595

Water, Water Everywhere:

We wash in it And splash in it, but that's not all-We pour it on our plans and crops To make them strong and tall,

We boil it up, We cool it down, to make ourselves a drink, But there's so much more water, Than you would ever think,

Water rushes, runs and trickles, And it can even freeze, It can seep and soak and creep, To almost any place you please,

And without it,

Your poor body would be a mess. If there was no such thing as water, You would weigh two thirds less!