



Environmental Education  
Awareness Raising



# Know how!

## Integrating Environmental Education

in Secondary and High School



Thực thi bởi

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (giz) GmbH





Integrating environmental education in lesson plans demands two essential preconditions: sound information that can be integrated and somebody that is doing it.

The experiences that led to the best practice found in this document had been taken from the pilot Province Bac Lieu in the Mekong Delta of Vietnam.

Supported by the German Government the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) conducted the project “Adaptation to Climate Change through the promotion of Biodiversity in Bac Lieu Province”. The project consists of different components of which one is working on environmental education. Over a period of 2 years teachers were supported to integrate environmental education in lesson plans of Secondary and High Schools, covering the subjects biology, geography and civic education.

After conducting and evaluating the pilot phase, the content of the materials had been adjusted in order to meet the need of the Mekong Delta in general. This additional effort was supported by the Vietnamese, German and Australian Governments via the overall Coastal Protection Program „Climate Change and Coastal Ecosystem Program/Integrated Coastal Management Program“.

The approach can be applied by other interested teachers. The developed materials can be used and adjusted to meet the specific needs of other school forms and regions.

In close collaboration with the responsible provincial Department of Education a group of teachers had been chosen to work with the project. They were assigned and had the mandate to serve as multipliers and focal points between the activities in the project and the schools of the Province.

## THE APPROACH

During regular get-together meetings of so called teacher working groups, TWGs, environmental information of the area was compiled (step one), lesson plans were analyzed in order to find entry points for „greening“ the content (Step two) and the adjustment of the identified lesson content was undertaken (Step three).

### Step one: Collecting environmental information

The first step of the integration of environmental education in lesson plans is the collection of information on the topic suitable for the area. Even though general knowledge about environmental protection and Climate Change is essential, the specific information of the area is essential to meet the needs on site. This specific information is partly available in the Internet but mostly to be found in local universities and departments like the Forest Departments and Natural Resource Departments. The first activity of the assigned teachers was therefore the collection of available material on the topics nature, environment, environmental protection and Climate Change in their area. The Coastal Protection Program dealt with related contents in the areas livelihood and coastal protection as part of the overall challenge to establish measures for Climate Change adaptation. The final set of information and knowledge is accordingly fed by multiple sources.

Due to the fact that the selected teachers are equally distributed between the subjects biology, geography and civic education the collected information is chosen in relation to the needs of the subject related content.

**Lesson learnt:** even though the teachers showed a high level of professionalism and motivation, it is a necessary step to include a final proof reading as well as a harmonization of the written by a professional service provider. That helps with ensuring the quality of the elaborated and gives the involved teachers security through an additional final checking.



## Step two: Analyzing lesson plans

Once all relevant or rather all available data on nature and environment is collected, the teachers are asked to analyze their lesson plans in order to find appropriate entry points for the additional information.

In Vietnam a guideline by the Ministerial of Education and Training on the integration of Environmental Education is in place already since 2008. This document is listing all lessons in which the new content can be integrated. Back in the TWGs, based on this list, the teachers can chose their selection of lessons in which they are going to perform the next step of the actual integration for the use in class.

Example:

[Ministerial guideline](#)

Geography, Secondary School

Grade 9, Lesson 36: The Mekong Delta

Integrated environmental education content requested by the ministerial guideline:

- Knowledge:
  - + To know the Mekong Delta has a good condition for on land and underwater economic development.
  - + Some problems arise in the region: salt soil, acid sulfate soil rehabilitation; forest firing prevention; biodiversity and ecological environment protection.
- Skill:
  - + To use the natural map for analyzing potentials.
- Attitude, Behavior:
  - + To have awareness of biodiversity protections; to pro-

### [Abstract of results of the TWG](#)

#### TEACHER AND STUDENTS' ACTIVITIES

ACTIVITY 1: Item IV. Economic development (group/pair) 30'

\* Step 1: Agriculture (group/pair) 15'

- Teacher asks students to observe the picture 36.1, table 36.1, read themselves the Item 1 - Textbook. Answer the questions:
  - + Based on Table 36.1, calculate the percentage of area and the yield of rice in Mekong River Delta in comparison with the whole country. Give the meaning of the food production in this region?
  - + What province is rice mainly grown? Food per capita?
  - + In addition to growing rice, what other strengths in agriculture does the region have?
  - + Why does duck farming, aquaculture, in the region develop strongly?
  - + What role the forestry play in economic development in the Mekong River Delta.
  - + [To protect biodiversity and environment, what solutions should we have?](#)
- [Teacher refer to Bac Lieu Province: Emphasize on the planting and protection of mangrove forests along the sea, Bac Lieu Bird conservation, protection of land, water, air environment, sanitation \(garbage collection, etc.\), environmental education in the community ...](#)
- A representative group presents, others give comments.
- Teacher revises knowledge and moves to Item 2.
- ...

#### CONTENT

IV. Economic development:

1. Agriculture:

- To be the biggest food-foodstuffs producing area of the country.
- To play a leading role in ensuring food security as well as the country's food exports.
- Paddy area accounts for 51.1%, food products accounts for 51.4% of the country. (2002)
- Average food per capita is 1066.3 kg (2002).
- Mekong river delta is the largest fruit growing country with a variety of tropical fruits. (Text-book)
- Duck farming, aquaculture is growing (50% of total seafood production in the country).
- Forestry plays an important role, especially growing mangroves.

tect, plant actively the mangrove forest in Bac Lieu Sea.

**Lesson learnt:** The simple identification and incorporation of additional information about the environment, even though they are related to the conditions on site, are not enough to call it a successful integration of environmental education.

**Especially with the actual act of implementing the new content in class the teachers shouldn't be left alone. Therefore an iterative group process of integrating the content on paper - quality check - try out in class - reality check - adjustment is needed.**



Alongside with the work on the lesson plan content the group was identifying needs in visual supplements. A number of posters and photos that would support the transfer of the new content to the students was chosen and developed in the working groups (see step four).

The ability to use moving pictures, like clips and videos, was requested by the teachers but couldn't be realized due to a lack of time. Videos as visual support are a mean of communication and can easily be created together with the students. It is recommended to include the skills of developing and using videos in class in future project activities.

## THE MATERIAL

The material that was developed by the TWGs can be classified in three parts: The first is the compiled information about environment (see step one) The second is the lesson plans that had been adjusted (step three). The third are additional teaching supplements that were elaborated to support the integration process (step four).

### Step three: Adjusting lesson plans

With the end of the pilot phase the teachers had developed adjusted lesson plans for geography, biology and civic education of Secondary and High Schools.

List of adjusted lesson plans

#### Geography Secondary School

Grade 6:	Grade 7:	Grade 8:	Grade 9:
- Lesson 17	- Lesson 9	- Lesson 31	- Lesson 9
- Lesson 23	- Lesson 10	- Lesson 38	- Lesson 36
- Lesson 24			
- Lesson 27			

#### Geography High School

Grade 10:	Grade 11:	Grade 12:
- Lesson 18	- Lesson 3	- Lesson 14
- Lesson 22	- Lesson 4	- Lesson 24
- Lesson 28	- Lesson 11	- Lesson 31
- Lesson 42		

#### Civic Education Secondary School

Grade 6:	Grade 7:	Grade 8:	Grade 9:
- Lesson 3	- Lesson 9	- Lesson 9	- Lesson 6
- Lesson 7	- Lesson 14	- Lesson 17	- Lesson 15
- Lesson 10			

#### Civic Education High School

Grade 10:	Grade 11:	Grade 12:
- Lesson 15	- Lesson 1	- Lesson 7
	- Lesson 11	- Lesson 9
	- Lesson 12	- Lesson 31

#### Biology Secondary School

Grade 6:	Grade 7:	Grade 8:	Grade 9:
- Lesson 3	- Lesson 24	- Lesson 22	- Lesson 49
- Lesson 47	- Lesson 44	- Lesson 33	- Lesson 58
			- Lesson 59

#### Biology High School

Grade 10:	Grade 11:	Grade 12:
- Lesson 2	- Lesson 3	- Lesson 39
- Lesson 17	- Lesson 8	- Lesson 41
- Lesson 31		- Lesson 43
		- Lesson 44

There are no limitations to the involved subjects or education formats. Other interested teachers were found in subjects like literature or mathematics, other school forms were Universities or Vocational Training Colleges.

What needs to be kept in mind is that there is not one common set of material that serves the purpose of integrating environmental education for all. It has to be developed and adjusted according to what is needed by the teacher; the same accounts for the used methods. How the new content is transferred is solely in the hand of the respective teacher. One is more secure in the traditional way of teaching, like presentations, questions and answers; others are more modern and prefer new methods. What matters is that the students understand and internalize.

The most effective way to influence students understanding and their attitude towards nature is the combination of teaching and the actual experience in nature. School excursions are a perfect mean to transport the content that is related to environmental education.



### Step four: Developing teaching supplements

The overall objective of the pilot project in Bac Lieu was the support of teachers to cope with the challenges of „greening“ their lesson plans.

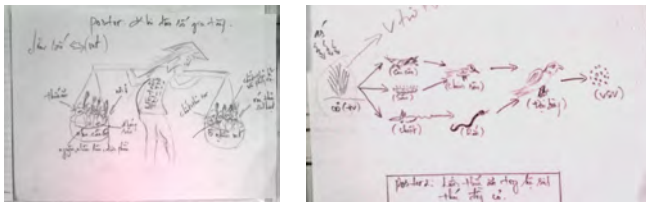
In the process of integrating the content the demand for appropriate photos to visualize the new information became the most urgent need. The best way to get photo material is to ask the students or search within the own data base. The photos need to reflect the situation on site and in the best way also show known areas. That connects the content with the day-to-day life of students and makes taking over responsibility easier.





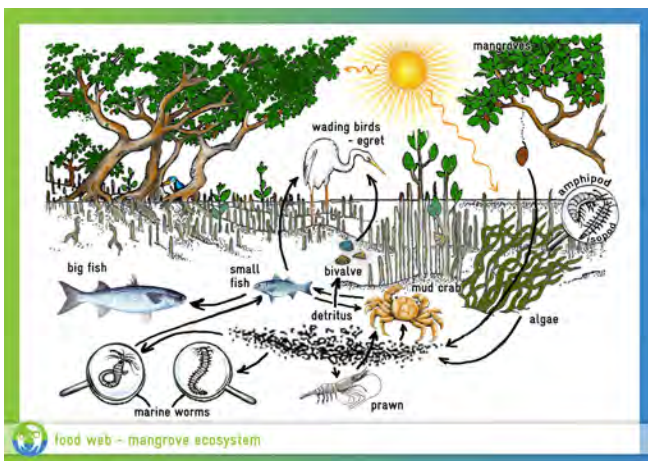
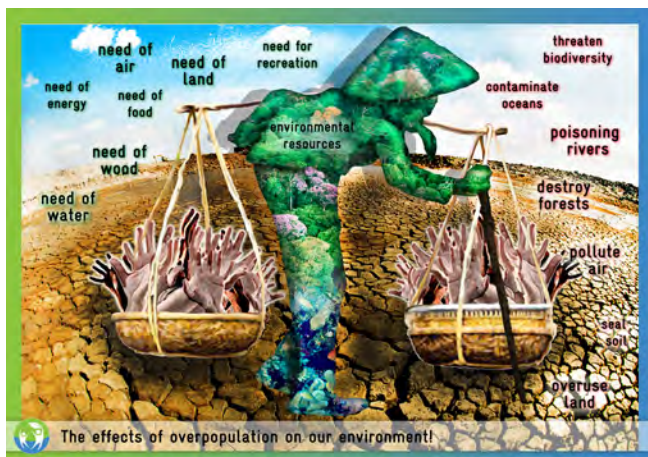
**Lesson learnt:** It is necessary to have the photos in a minimum resolution of 300 dpi in order to print them in a good quality also in poster sizes. Another essential is to respect the ownership and copy right of the original owner of a photo. In order to spread the developed material it is a must to have the right to use the photo.

Sometimes a photo is not enough. If there are processes to be visualized or a message needs to be linked to the picture, posters are needed. The teachers were asked to elaborate drafts and ideas of posters that would be needed in order to support the integration of environmental education in their lesson plans.



The figures are two examples of drafts that were developed by the teachers. The sketch on the right was a request to visualize the population pressure on natural resources and the one on the left a food chain representative for the conditions in the Delta.

The following two pictures are the results after multiple adjustment loops.



In total 17 posters were developed. They are available in English and Vietnamese language.

- Acid Rain
- The effects of overpopulation on our environment
- Birds of Bac Lieu Birds Sanctuary
- Facts and Figures of the Bac Lieu Birds Sanctuary
- Greenhouse effect and Climate Change
- Food web - mangrove ecosystem
- Mangrove forest
- Mangroves as habitat
- Process of photosynthesis
- Propaganda poster - Protect our forests
- Propaganda poster - Reduce/Reuse/Recycle
- Propaganda poster - Don't litter our rivers
- Propaganda poster - Plant trees
- Propaganda poster - Role of water
- Sustainability Triangle
- Salinization
- Sustainable Aquaculture

The process of developing the posters was twofold. Besides creating and adjusting the posters based and following the teachers' wishes, a capacity building in developing the medium by the teachers themselves was conducted.

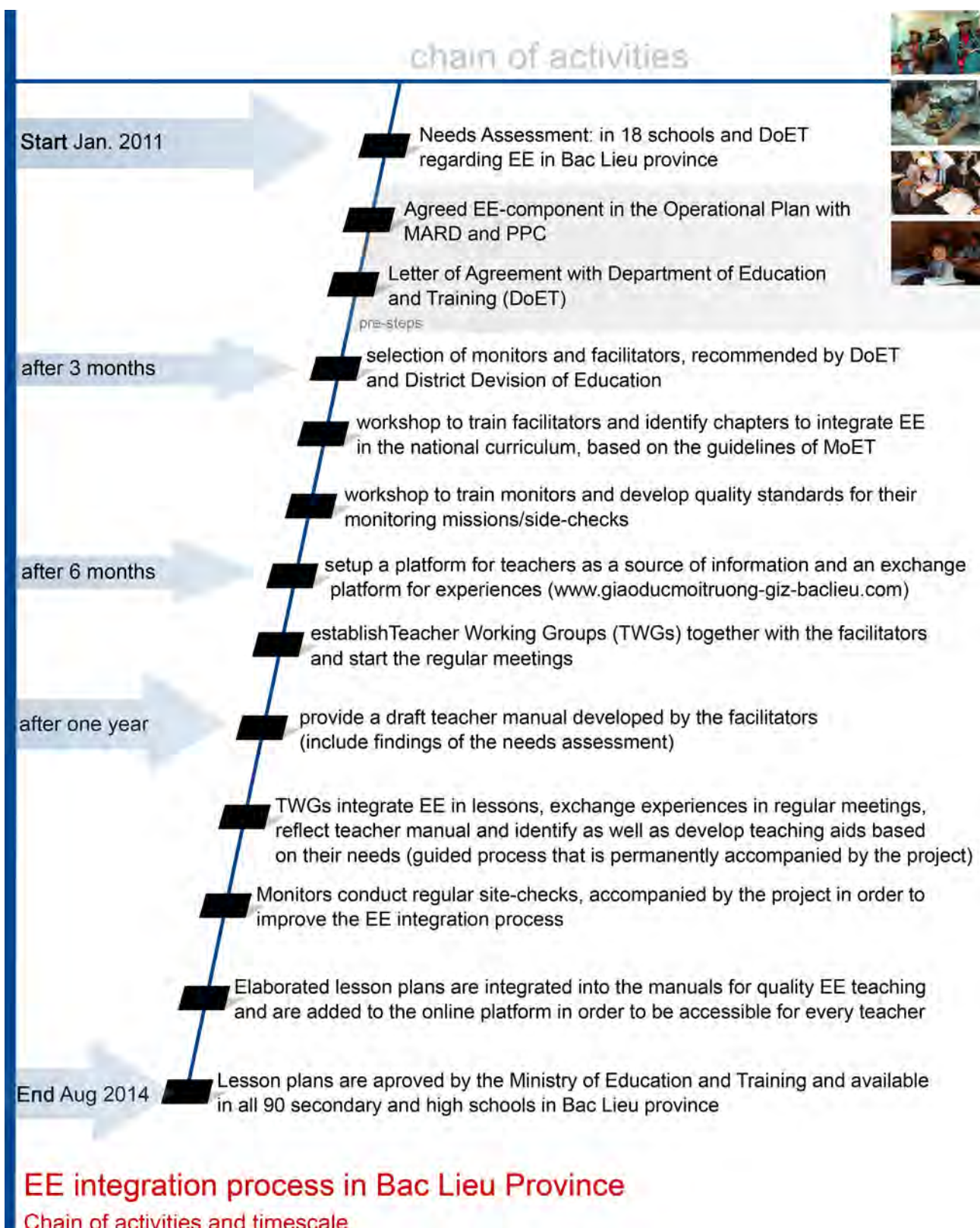
**Lessons learnt:** In order to ensure the practicability of the new skill of designing their own posters, the teachers used open source software for example GIMP. The download and use of this so called open source software is free of charge and could therefore be used by all.

In order to share the developed material and to spread the message other free web services were used. For example:

- Dropbox to share photos and documents
- WeTransfer to transport documents from A to B
- Flickr to upload and display photos and posters
- Issuu to store and display documents

It needs to be clear that the user rights by using the free services are not well protected. In order to avoid copyright abuse clear communication and labeling together with the upload is recommended. If the print is funded a requirement is also the integration of logos and ownership remarks in the text of the document itself or as part of the poster design.

**Lesson learnt:** Without the active participation of the Department of Education and Training in the pilot province of Bac Lieu, the incredible motivation and interest of the involved teachers, the GIZ project in Bac Lieu and the support by the Ministry of Environment of Germany the project wouldn't have become what it is now: a successful pilot and an example of best practices of integrating environmental education in Secondary and High Schools.





## THE FOLLOW UP

The pilot in Bac Lieu took in total 3 1/2 years. The teachers had 2 years out of that to work on the material, integrate the new content and develop their own capacity. They were supported by the GIZ project and became a best practice after the end of the project.

All material is tailored to the needs in Bac Lieu Province. In order to use the lessons learnt and the results within a broader area, the content had to be adjusted. Therefore the Departments of Education and Training and the GIZ projects in the broader Mekong Delta were brought together.



Through a common effort, additional content and available material had been identified that would be needed in order to harmonize the results in Bac Lieu with the other Mekong Delta Provinces. Even though a common basis of information was agreed on, if other provinces and schools want to integrate environmental education on an advanced level, a pre-phase of adjustment and extension of the content based on the local needs had to be undertaken.

The specific folder design of Bac Lieu's environmental education material is designed to meet diverse needs. The folder system is based on exchangeable sub-folders. This special feature allows choosing between the content that is of most interest in teaching environmental education on site and makes it easy to add more information.



The final set of material includes three additional folders from Soc Trang Province that contains additional general information about Climate Change, mangro-

ves, water and sanitation. All together the content is harmonized and fits the needs of the Mekong Delta in general.

### General Part: **Environment and Education**

The first sub-folder is available in Vietnamese and covers topics like nature and environment of Vietnam and environmental challenges. The folder is supposed to give a first overview and reflects the actual state of the environment in Vietnam.

### Specific Part: **Bac Lieu**

This folder deals solely with the environmental conditions in Bac Lieu Province. It is available in Vietnamese. If other Provinces want to integrate Environmental Education it is recommended to spend some time beforehand and work on a folder that serves the needs of the specific Province.

### General Part: **Climate Change**

### General Part: **Mangroves**

### General Part: **Waste, Water, Sanitation**

These parts are available in Vietnamese and English. The original was developed by the Department of Education and Training, the Forest Department and the GIZ project in Soc Trang Province.

### Specific Parts: **Lesson Plans**

The 6 folders of lesson plans were developed by the teachers in Bac Lieu. It is labeled „specific“ to underline the necessity to integrate the content needed to undertake environmental education in class by the individual teachers that will use it. Even though the already adjusted lesson plans can be used, it is recommended to rather utilize them as reference material and develop them further. The lesson plans are available in Vietnamese.

Alongside with the sub-folders, a set of 29 photos and 17 posters is available.

The material is free to be used. The copyright is with the GIZ. It is therefore requested to only use it in a non-commercial, non-profit way and mention the origin.

The material is available under  
[www.issuu.com/greeneducation4all](http://www.issuu.com/greeneducation4all)



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