

## **Chapter 9**

# **Awareness creation and environmental education in watershed conservation**

### **9.1 Objectives**

#### **9.1.1 Objectives of awareness creation and environmental education**

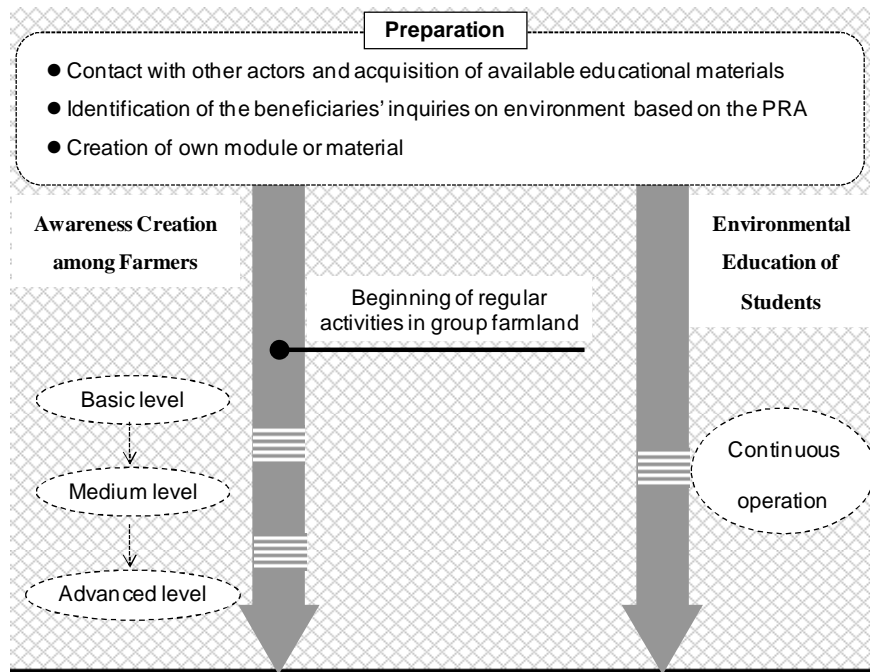
The objective of “creating environmental awareness among farmers” is to motivate the farmers to practice conservation techniques and environment-friendly farming by deepening their knowledge and understanding of the importance of preserving the natural resources of the watershed in which they live.

On the other hand, the objective of “environmental education of students” is to enhance the basic knowledge of students increasing their awareness of the importance of caring for the environment in general and of the natural resources of the watershed in which they live.

It should be mentioned that the key actors in participatory community development projects for watershed conservation are the adult agricultural and cattle farmers, because it is their daily farming activities that produce both positive and negative environmental impacts. In addition the farmers’ groups need to be trained and sufficiently strengthened to achieve a level of maturity where they can be co-managers of the watershed in which their farms are located.

#### **9.1.2 Procedural outline**

The environmental awareness of farmers is developed through the three stages of organizational strengthening of groups (see section 8.2.2) beginning from the basic level and developing to the advanced level. By comparison, environmental education of students is a continuous operation and is developed in a constant manner during the entire course of the project (Figure 9-1). In both cases, one needs to be well prepared before beginning activities in order to avoid unnecessary duplication of similar activities and also to highlight the uniqueness of the watershed being addressed by creating your own modules or material.



**Figure 9-1 Procedural outline of awareness creation and environmental education**

Each project should establish its activity goal, for example “at least X number of activities covering such and such issues will be done per group or per school during the project period”. It is important to remember, however, that the final goal of awareness creation or environmental education is not the number of activities carried out, but the change of behavior of the beneficiaries, which should be monitored and evaluated during a long-term period.

## **9.2 Selecting appropriate issues**

### **9.2.1 Central issues and optional issues**

In participatory community development projects for watershed conservation, it is of utmost importance to define what are the central issues (most closely related to a project’s purpose) and what are optional issues. If a mixture of conservation issues are presented to the beneficiaries “at random” or “by whim”, it could cause the project to stray from its original orientation or create confusion among the beneficiaries. The Table 9-1 presents the 8 central issues.

**Table 9-1 Central issues for environmental education and awareness creation**

Level	Central issue	Some Key Concepts
1. Basic	1-1. Concepts of environment, natural resources and watershed	-
	1-2. Watershed environment in which beneficiaries live	Relief, Vegetation cover, Drainage, Land use, Protected area
2. Medium	2-1. Importance of water resources and their conservation	Water use, Quantity and quality, Pollution
	2-2. Importance of soil resources and their conservation	Fertility, Erosion, Sedimentation
	2-3. Importance of forest resources and their conservation	Forest products and services, Deforestation
	2-4. Impact of human activities on the environment	Agriculture, Cattle farming, Mining, Urbanization, Hunting, Fishing, Wastes
3. Advanced	3-1. Importance of the region's biodiversity	Fauna, Flora, Ecosystem, Exotic species
	3-2. Environmental regulation and citizen participation	Environmental standards, Voluntary actions

Optional issues can be added to the program, such as recycling, renewable energy, organic agriculture, environmental crimes, basic sanitation, climate change and desertification, etc. However, greater priority should be given to the central issues over the optional issues.

### **9.2.2 Selecting appropriate issues for farmers and students**

Each of the above-mentioned central issues is still broad and covers various concepts. A key concept can also be treated as a separate issue depending on its importance to the beneficiaries and to the watershed in question.

Regarding the raising of environmental awareness of farmers, it would be recommendable to highlight those issues that are directly related to the daily situations of local inhabitants (for example: to address environmental problems in the group's community and to seek for solutions). Any environmental issue could be taken up in this way, however, the general order for introducing the central issues during the project should be maintained from basic level toward advanced level.

Regarding environmental education of students, you can be more flexible in selecting the issues which have more general and universal character. There is no strict order of introduction, and you could add optional issues according to the situation of each school. See Annex 4 for some available educational materials.

### 9.3 Methodology

#### 9.3.1 Basic elements of the methodology

##### 1) Actors in environmental education and awareness creation

At the beginning of the project, the external actors (personnel from the project, from institutions, NGO's, etc.) normally play the main role. However, together with the organizational strengthening of the groups, it is hoped that the group members and school teachers will gradually develop their abilities so that they can take the role of the main actor in environmental education and awareness creation in their community (Table 9-2). The transfer of this role can be facilitated by training the teachers in the use of the "Teachers' Guide to Environmental Education" (see section 9.3.2) and also by involving farmers to practice reporting in front of participants.

In addition, environmental education and the creation of environmental awareness should be conducted by making use of both the formal and informal educational systems on the national as well as regional level (see Annex 6).

**Table 9-2 Actors in environmental education and awareness creation**

Stages of organizational strengthening	Actors for creating environmental awareness in farmers	Actors for environmental education of students
First Stage (Establishing the fundamental base of a group)	Personnel from the project, institutions and NGO's	Personnel from the project, institutions, NGO's, and teachers
Second Stage (Developing group activities)	Personnel from the project, institutions, NGO's, and group members	Personnel from the project, institutions, NGO's, teachers and group members
Third Stage (Developing social activities)	Group members	Teachers, group members

##### 2) Basic methods

Among the seven basic learning methods (see Table 8-2), four are appropriate for environmental education and awareness creation with target groups, namely: lectures, workshops, tours and regular activities on the group farmland. Table 9-3 explains the first three, and the fourth "regular activities on the group farmland" is the foundation for raising the environmental awareness of farmers during the entire project period.

We should keep in mind that today's educator is facilitator, orienteer, promoter and motivator of the process, and should not apply conductive focus.

**Table 9-3 Lecture, workshop and study tour for awareness creation and environmental education**

<b>Lecture</b>	This is commonly used and it does not require extensive preparation. The lecturers need to have skills in talking to participants without boring them, be able to answer questions correctly, and guide the group discussion. More developed options include dialogue, debate and round table.
<b>Procedure:</b>	1) The lecturers give a talk on the issues decided upon beforehand, in some cases using slides, videos or printed material. A session should be no more than 1 to 1½ hours maximum; 2) Facilitate discussion among participants, and close the session with a questionnaire for participants to fill out on what they learned.
<b>Preparation:</b>	1) Presentation (content of the talk, slides, and printed material); 2) Questionnaire; 3) Equipment required (screen, portable electric generator, projector, speakers, etc.)
<b>Workshop</b>	Working with the hands on tangible products helps to motivate the participants. In some cases the environmental significance of the artwork is weak.
<b>Procedure:</b>	1) The facilitators guide the implementation of an art project (drawing, crafts, map, etc.), depending on the issue chosen. A workshop could last around 3 hours or more. 2) Present the results to all the participants and evaluate them. Close the session with transfer of the central message and a questionnaire to fill out on what they learned.
<b>Preparation:</b>	1) Facilitators; 2) Material and tools for the art project; 3) Questionnaire
<b>Study tour</b>	Direct observation creates a greater learning impact for participants. The success of a tour depends greatly on the time and opportunity of the visit. It requires good preparation and coordination, and the safety of the participants.
<b>Procedure:</b>	1) The coordinators prepare the itinerary and coordinate the logistics. 2) The facilitators or the people of the place visited offer technical explanations. 3) Close the event with a questionnaire to be filled out by participants on what they learned.
<b>Preparation:</b>	1) Logistics (transportation, food, etc.); 2) Facilitators and their material to be distributed; 3) Authorization from the place to be visited (when necessary).

When planning an activity that requires overnight lodging for participants, it would be recommendable to also include other project activities in the program, such as technical training and/or organizational strengthening over a period of several days. In this way you can achieve better logistical efficiency and also minimize the difficulties that could be caused to participants who have to leave their community.

### 3) Selecting places for activities

In principle, the most important place for holding activities for creating environmental awareness of farmers is the group farmland, and for environmental education of students it is the school. Also, since many activities require an enclosed facility with chairs, desks, restrooms and sometimes electricity, you should be able to use the

group meetinghouse, community center, government facilities, etc. Regarding tours, appropriate sites to be visited can be selected from inside or outside the community, according to the theme of the activity.

### **9.3.2 Application of the methods for development of the activities**

#### 1) Application of methods for awareness creation of farmers

Once the regular activities have begun on the group farmland, the extension workers raise the environmental awareness of group members by starting with the first two central issues (see Table 9-1): “Concepts of environment, natural resources and watershed” and “the watershed environment in which we live”. These activities normally take place outside the group farmland and take the form of a lecture or tour. It would be recommendable that they are carried out before the first annual workshop (see Chapter 12).

In the medium level, talks (lectures) given on the group farmland become the most important method for addressing the following issues: “the importance of ‘water’, ‘soil’, and ‘forest’ resources and their conservation”, and “the impact of human activities on the environment”. The technical and social extension workers could make use of the regular assistance activities and give a simple talk to the group about these issues, for example taking time on each assistance day to give a talk in the group’s meetinghouse with patience and constancy. The benefits of good crop and cattle farming practices in conserving the watershed should be emphasized to the farmers on the group farmland because they will continuously observe and learn, on site, the effects of these techniques.

Table 9-4 gives an example of a module for giving lectures that was developed by Alhajuela Project. It includes various themes and key concepts in the same session.

**Table 9-4 Example of the module of environmental lectura for farmers**

<b>First part (duration 1.5 hours)</b>	
1	Concept of a watershed
2	Canal Watershed and its importance to the country
3	Alhajuela Lake sub-watershed and its importance
4	Chagres National Park: its origin, territory and importance
5	Vegetation and forest coverage in the Canal Watershed
6	Environmental degradation (1): Deforestation, Erosion and Sedimentation
7	Environmental degradation (2): Instability of river discharge, Water pollution
8	Slash-and-burn agriculture: Merits and demerits, Stable cycle and instable cycle
9	What happened in Azuero: “When the forests are gone”
10	Environmental impacts of modern agriculture
11	How to balance life improvement and conservation
<b>Second part (duration 1.5 hours)</b>	
12	Environmental land-use regulation in Canal Watershed
13	Threats of deforestation: slash, burn, fire and livestock farming front
14	Reforestation to restore the forest, Problems of exotic species
15	Efforts and results of restoration of degraded watersheds
16	Good practices for crop/cattle farming ; Cleaner production
17	Planning an organized use of farmland and its implementation
18	Protecting sources of water, Reduction of use of agrochemicals
19	Agroforestry and organic agriculture: Merits and demerits
20	Waste management and concept of 3R
21	Role of ANAM
22	How to spread good environmental practices to neighbors

The final central issues, namely “the importance of the region’s biodiversity” and “environmental regulation and citizen participation”, can be addressed in the form of a tour or some volunteer activity, once the group is considered able to understand the advanced level. It would be recommendable to make use of the different organizations of government institutions, the teachers’ network and volunteers.

## 2) Application of methods for environmental education of students

The methodology for environmental education directed at students is not explained in detail in this chapter, because there are already considerable material and guidebooks available on the matter. Figure 9-2 gives an explanation on how to use the “Teachers’ Guide to Environmental Education” (ANAM / MEDUCA), which provides a wide variety of environmental activities for students (see Annex for some activities related to the central issues).

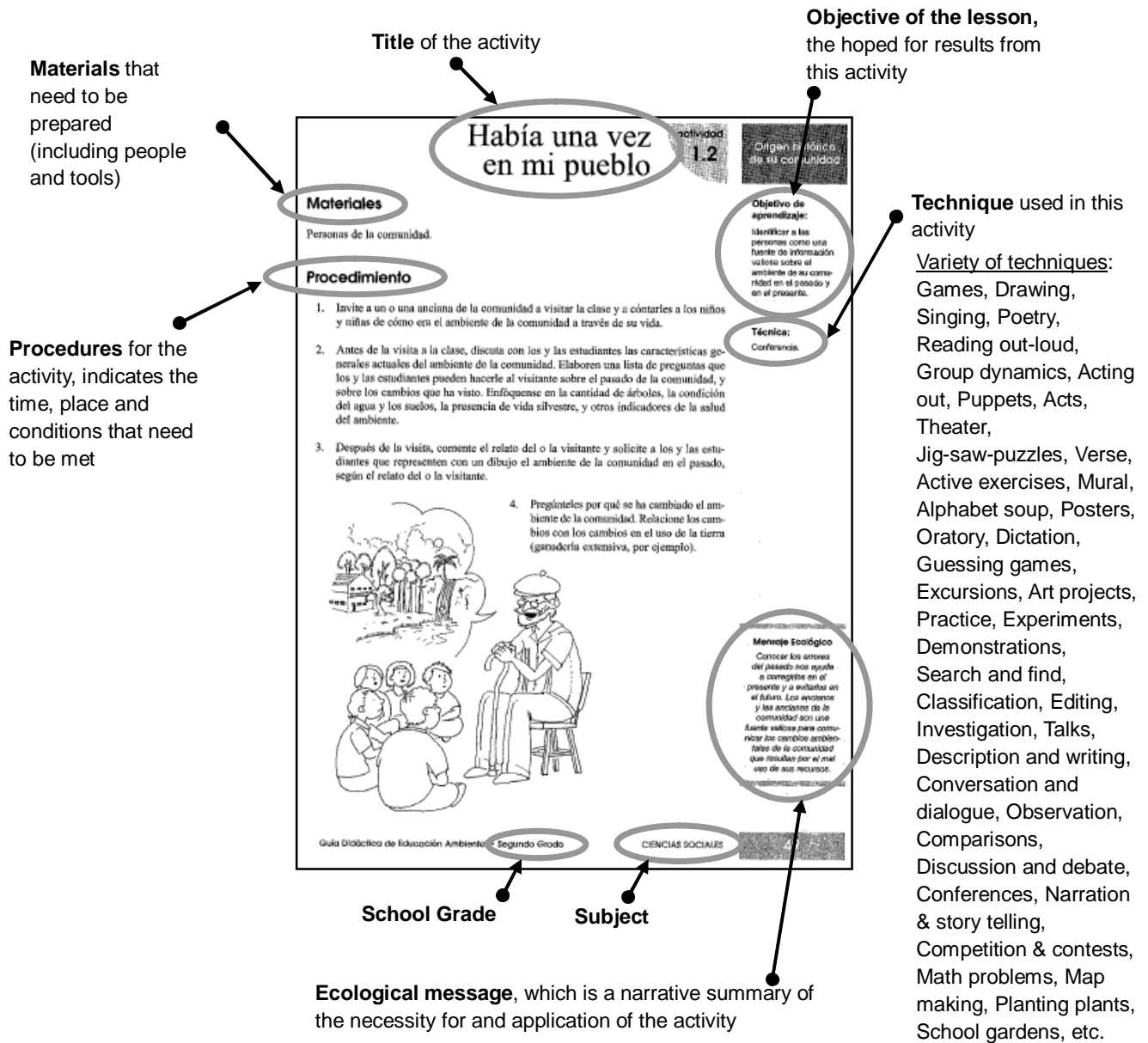


Figure 9-2 Use of “Teachers’ Guide to Environmental Education”

During the course of a project, it would be advisable to train the teachers of the area on the use of the Teachers’ Guide to Environmental Education. This can be coordinated with the regional offices of ANAM (Directorate for the Promotion of Environmental Culture) and MEDUCA (Ministry of Education, Directorate of Environmental Education). In general, a full 5-day training course is required to be able to grant an official certificate to the teachers.



It should be mentioned that environmental education to students has some advantages over creating environmental awareness in farmers.

- School-age children learn environmental studies with greater ease;
- The selection of environmental issues is less complicated because students still are not economically independent and therefore face less dilemma in the tension between improving their living standard and conserving the environment;
- There are a wide variety of material and methodologies available on the subject, which have already been developed and tested.
- The schools can function as the center of the community for changing people's attitude toward the environment.

### 3) Other alternatives for development of activities

Celebrating environmental days (see Annex 5) can be recommendable for awareness creation as well as environmental education. Also, the groups and teachers may create their own material for lectures and workshops, in order to emphasize the characteristics of the environment surrounding their communities. When the groups desire to extend their activities toward other adult people and students, it is recommended to participate in collective events like community fairs where they could offer talks and distribute materials.

### **9.3.3 Verifying the results**

The final result of environmental education and awareness creation is not the number of activities that were carried out, but rather the change of behavior in the beneficiaries. However, this Guideline does not present a methodology for qualitatively evaluating the change of conduct, since it would be complicated to attempt to measure and quantify the awareness and conduct of different people by using some indicator that can be verified objectively.

On the other hand, one needs to know the beneficiaries' perception of the implemented activities. The use of a simple questionnaire at the close of each activity also helps in quickly verifying the results perceived in participants. When interpreting the beneficiaries' comments, one needs to pay attention to expressions that indicate some positive change of awareness or conduct, for example: "Before, I didn't know / think / do that, now I know / think / do that", "Now I know more or practice better environmental habits", etc.

In the case of the environmental awareness of farmers, the monthly meetings and semiannual and annual workshops (see Chapter 12) are good opportunities for asking their perceptions and comments. In the case of students, the teachers can observe the perceptible changes in the students who participated in an environmental

education activity, and after a certain period of time answer the questionnaire from a teacher’s viewpoint.

### **9.4 Inputs needed**

The inputs needed to carry out activities of awareness creation and environmental education can vary substantially depending on the situation, and it is difficult to present a standard. See Annex “Case studies from experiences of Alhajuela Project” for more details. The following chart shows the three types of most common activities.

<b>Activity</b>	<b>Personnel</b>	<b>Time</b>	<b>Material and Cost</b>
Lecture	Lecturer; Project personnel as coordinator	Up to 1.5 hours	A room with roof and chairs; Equipment for presentation (and audio-visual); Printed materials; Questionnaire
Workshop	Facilitator; Project personnel as coordinator	3 hours or more	A room with roof and chairs; Tools and materials for the art project; Printed materials; Questionnaire; Allowance for facilitator
Study tour	Facilitator; Project personnel as coordinator	1 day (variable)	Transportation; Food or refreshments; Printed materials; Allowance for facilitator; Questionnaire; Lodgment and daily allowance (if necessary)