

## Formal Environmental Education in Latin America and the Caribbean

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### Abstract

*In the early 1980s environmental education programs in Latin America and Caribbean school systems had just begun. The first efforts were a straight transfer of programs from other countries, especially the developed countries of the north. Often these programs were not well suited to local needs and issues. Programs now have a much stronger local flavor. Surprisingly, nongovernmental organisations and other institutions not related to the school system have given the greatest impetus to formal environmental education in the region.*

*For this paper formal education efforts in the Dominican Republic, Peru and Argentina are highlighted. The three projects have been underway for four years and are examples of programs that respond to local teacher needs.*

*Workshops have been the primary form of training teachers. To increase the effectiveness of training programs in the '90s local support systems for teachers are needed. Environmental education must branch out from the natural sciences to other areas of the curriculum. It must also increase the number of teachers reached by using other delivery systems such as teacher training institutions, radio and video.*

### Introduction

In the early 1980s environmental education had just begun to take shape in Latin America and the Caribbean. Early efforts were simply transfers of environmental education programs from developed countries of the north. Over the last decade the environmental education movement has grown and one can now point to a variety of programs both in the formal and nonformal education sectors. Environmental education programs are also taking on a stronger local identity. As the '90s begin, many challenges still remain if the region is to realise the full benefits of environmental education.

Surprisingly, the impetus for the growth of environmental education in Latin America and the Caribbean originates in the efforts of non-governmental organisations and other institutions not directly related to the formal education

system. In general, ministries of education have been slow to incorporate environmental education into their school systems.

This paper will explore the growth of formal environmental education programs in Latin America and the Caribbean and identify educational issues that need further work in the '90s. First I will give a snapshot of current conditions in Latin America and the Caribbean and then discuss the reality of teaching in the formal education system. Several case studies of programs in Latin America and the Caribbean will illustrate how individuals and local organisations have overcome constraints and incorporated environmental education into the formal school system.

### **Regional Snapshot**

The Latin American and Caribbean regions comprise an immense area stretching from the United States' southern border with Mexico to the tip of South America. The Caribbean islands stretch from the coast of Venezuela northeast to the southern end of Florida. The combined land mass of the region is just under 80 million square miles and is subdivided into 37 different political units (Population Reference Bureau, Inc., 1990). Culturally the region is primarily Hispanic and Portuguese (Brazil) with influences from the French, Dutch, English, Americans and Africans. The Africans were brought to the region as slaves to work on the plantations that provided Europe with molasses and tobacco during the 18th and 19th centuries.

The region's total population is estimated at 447 million. This number will climb to 535 million by the year 2000 if current growth rates continue. Population growth rates range from a low of 0.7 percent in Barbados to 3.3 percent in Nicaragua. If current growth rates continue in Nicaragua the population will double in 21 years. In Honduras 47 percent of the population is under 15 years of age. Throughout the region the population is concentrated in large urban areas (90 percent for Guadeloupe, 87 percent for Uruguay). Because the growth of urban areas has been so rapid, basic services have not kept pace with the need. Yearly per capita gross national product ranges from a low of \$360 (U.S. dollars) in Haiti to a high of \$10,570 in the Bahamas. For Latin America and the Caribbean as a whole the mean rate is \$1,930 (Population Reference Bureau, Inc., 1990).

The types of government in the region range from democracies to dictatorships. At the start of the '80s military dictatorships ruled in countries such as Guatemala, Haiti, Chile, Paraguay, Brazil, Cuba and Argentina. Over the last decade many countries have changed to or are moving toward more democratic types of governments.

Many of the Latin America and the Caribbean countries have been strapped by huge foreign debts (Brazil, 92 billion; Mexico, 83 billion) (World Development Reports, 1989) which have created heavy financial burdens during the '80s. During the same period several countries have suffered from

hyperinflation (Bolivia, 600 percent; Argentina, 300 percent; Peru, 100 percent) (World Development Reports, 1989). Since these countries are dependent on other countries for a variety of essential products such as oil, machinery and medicine, they must obtain expensive U.S. dollars at a heavy cost to their local economies and natural resources.

Environmental problems include contamination of land, water and air. Few cities in the region treat waste water, most dumping it directly into the nearest waterway. Contamination by various pesticides no longer permitted in developed countries is still widespread. Air pollution in the major cities is bad and mostly due to vehicle emissions. Leaded gasoline is still used throughout the region. While these issues of environmental contamination are critical, they are a lower priority since most countries in the region are still not meeting their population's basic needs for food, housing and health care.

The fauna and flora of the region is diverse with a high degree of endemism. The world's largest remaining tracts of undisturbed tropical forest are found within the region. These areas are under continued threat of conversion to agriculture. Unfortunately many tropical forest lands are not suited for agriculture and must be abandoned within a few years. In the process, many species are lost.

### **The Educational Reality**

Countries in the region have realised the importance of having a citizenry that is informed about the environment. Many have enacted legislation requiring the teaching of environmental education in the schools. But governments have not had the resources to implement the legislation. To date, environmental education legislation has mostly functioned as leverage point that environmental educators have used to gain access into the system. Because legislation exists, ministries usually will tolerate individuals and organisations that want to promote environmental education within the schools.

Ministries of education in the region are hampered by the bureaucratic government structure they work under. Negotiations with ministry officials to include environmental education in the curriculum and incorporate teacher training programs take time. In fortunate circumstances, an agreement is signed before ministry personnel change. This is usually not the case, however, since ministry personnel change frequently.

School systems throughout the region lack adequate facilities and basic resources such as text books, paper and rudimentary support services. Transportation for field trips is a luxury; few teachers can take their class further than the school grounds. School systems do not have buses, and if they do, they don't have funds to operate them.

Teachers are generally not well prepared. Many are trained at the secondary level in special teacher preparation programs. Most lack an understanding of basic concepts in the social and physical sciences. Once in the classroom teachers must manage classes of 40-50 students or more. Because of limited facilities

schools often operate both a morning and afternoon session. I have also known cases where a third evening session is held. Because salary levels are low teachers may need to work more than one session. With such heavy work loads, most teachers just barely get through the day. Under such difficult working conditions, few have time to prepare lessons with an environmental education component. The low salary levels also result in frequent teacher strikes. These strikes often interfere with environmental education teacher training programs. In the Dominican Republic an environmental education training program was delayed two months because of a teachers' strike.

Teachers tend to rely on traditional teaching styles where the student is passive and the teacher is the purveyor of information. Rote memorisation is still the norm and the effectiveness of the teacher is measured by the number of pages students write in their notebooks. Deviation from this norm meets with resistance from directors, colleagues, and parents.

Inservice training, though sparse, does exist and could alter the traditional techniques used. Unfortunately most teachers report that inservice training is not good; most find it boring. When training is available, teachers find it difficult to obtain release time to attend.

The scarcity of materials about the local environment make it difficult for teachers to incorporate environmental education. Texts and other materials have tended to describe exotic environments and neglected the student's own community.

In spite of these limitations environmental education is taking place in Latin America. This is largely thanks to the efforts of nongovernmental organisations concerned about the environment. Many work with volunteers on severely limited budgets. Members of these organisations have tended to come from the science disciplines, especially biology and ecology. Other institutions, especially zoos in the Dominican Republic, Belize and Guatemala, have conducted environmental education programs for teachers and school children.

### **Local Environmental Education Efforts**

The following section will review three environmental education programs in Latin America and the Caribbean. Each has a unique approach for integrating environmental education within the school system of their country although all are dealing with similar constraints. The programs selected are ongoing and have been operating for over four years. Other environmental education teacher training efforts have occurred but have tended to be short-term programs or singular training workshops without follow-up. The programs described below are excellent examples of local initiatives that have evolved over time to better meet local needs.

Formal environmental education programs are frequently criticised because their impact is difficult to measure and their results are long-term. In the face of more pressing local needs it is understandable that people should question why

formal environmental education programs deserve funds. Critics underestimate the potential of schools in a small community. Next to the church, schools are the second most important social institution in the community. Changes started in schools can spread to the rest of the community. School teachers are important and respected members of the community. Their values and behavior are modeled by their students and other members of the community.

Another important reason to work with schools is that it takes time to change such a large system. Large institutions change slowly and only through long-term, consistent work can one hope for change. But once the idea is accepted and incorporated into the system, it will remain and be driven by institutional inertia.

### **Environmental Education Teacher Training in Peru**

In the late 1970s several people came together as a result of their concern for Peru's deteriorating environment. The group established themselves as non-governmental organisation, The Peruvian Association for the Conservation of Nature (APECO). The association first focused on research of threatened ecosystems and species. It quickly became apparent to several members that awareness and knowledge about Peru's environment were major obstacles to a more rational use of the county's natural resources. To address this lack of awareness, APECO initiated a national environmental campaign in 1985 to begin educating local citizens about Peru's unique environment and the richness of its natural resources. A slide program, pamphlet, coloring book and travelling exhibit were produced as part of the campaign. The campaign was taken to the twenty major cities of Peru. In each city a news conference was conducted, lectures given, public debates held and presentations made at schools and universities.

The unique feature of this campaign was that APECO worked closely with interested persons in each city. These people helped organise the campaign for their city. The same people became the core group for continuing environmental education work after the campaign moved to another city. Many of these informal local groups, as a result of the campaign's success, established themselves as environmental organisations. These local organisations later became the focal points for training when APECO began a teacher education program.

APECO began its teacher education program by first training the members of the local organisations. These groups then conducted local environmental education teacher training workshops. In addition, APECO began to write and test a teacher environmental education resource manual. Teachers participating in the workshops were trained in the use of the materials and agreed to test activities in their classrooms. At follow-up evaluation workshops teachers gave valuable comments for improving the manual. Because the ministry had not recognised APECO's training, teachers participated in environmental education workshops on a voluntary basis during their own time.

APECO's early efforts to work with Peru's Ministry of Education were a failure. The ministry viewed environmental education as a low priority. Although the ministry was not interested, APECO was able to identify persons within the ministry that were sympathetic with APECO's mission. APECO invited these people to local workshops and slowly built credibility for their environmental education teacher training program.

Because of changes in ministry personnel, the process of cultivating a relationship with the ministry restarted several times. Once, APECO was close to signing a memorandum of understanding with the ministry. Several days before the signing was to occur, the government changed its personnel. APECO had to begin the whole process of educating the new ministry personnel once again.

APECO finally signed a memorandum of understanding with the ministry in 1989. This agreement recognised APECO's training program and established a pilot testing program in three distinct regions of the country. With this recognition, teachers could receive release time to attend the workshops and receive credit towards their professional development. The agreement also incorporated the training of the ministry's trainers. This was a significant achievement since the trainers work with teachers on an on-going basis. If the trainers incorporate environmental concepts and teaching techniques into their regular training, APECO's environmental education work will be multiplied many times over.

### **Environmental Education Teacher Training in the Dominican Republic**

In 1976 the National Zoological Park (ZOODOM) opened in the Dominican Republic. The ZOODOM is a modern zoo where animals are kept in open, landscaped areas that resemble their original habitat. Soon after the ZOODOM opened an Education Department was established to conduct interpretation activities. School groups visiting the park were met by a docent and given an introduction to the park. The classes then received an interpretive walk through the park.

Since its beginning, the Education Department has had a strong interest in environmental education. Because teachers showed interest and wanted to know more about the environment, the education staff began short training workshops for teachers. These workshops reached the teachers of Santo Domingo, the capital city where the zoo is located. It was evident that a program was needed to reach teachers in the interior where resource management problems were critical.

In 1986 the ZOODOM started an environmental education outreach teacher training program in the northwestern part of the Dominican Republic. Twice a month the ZOODOM education staff traveled to different parts of the northwest to conduct training for teachers in their home environment.

Usually three or four staff would travel, often by bus, to a central city. From there the staff would deploy themselves to several rural schools where the

training was to take place. Reaching the training site was often difficult. Sometimes the staff would hire motorcyclists to take them up to the more remote schools since the roads were inaccessible by cars or buses.

The training consisted of information and activities concerning the Dominican Republic's natural resources, ecological concepts, environmental problems and environmental education principles and techniques. During the first year an evaluation was conducted to determine the effectiveness of the course. Although teachers praised the course, they suggested improvements such as: 1) increasing the number of training days from three to five; 2) including more field activities; 3) giving more emphasis to environmental teaching techniques; and 4) distributing additional resource materials. Based on these results the education staff revised their training program.

Twenty-five of the original teachers who participated in the training during the first year were invited back for a special training session to help test and revise new field activities, teaching techniques and materials. From the group, four teachers who demonstrated strong leadership, excellent teaching skills and high motivation were selected as training assistants for the project. These teachers were paired with ZOODOM staff and assisted in the delivery of training workshops in their region.

Since the program's inception, the ZOODOM has worked closely with the Ministry of Education, Arts and Culture. The Ministry has given the teachers release time with pay to attend the training sessions and provided a resource specialist to assist with the workshops. In addition, the education staff have incorporated other specialists from various resource management agencies in their workshops.

The training program continued in the northwest through 1989 and is now being evaluated to determine its impact. In the same year ZOODOM's training shifted to the southwest region where a five-year training program is underway.

### **Environmental Education in Argentina**

*The environmental education effort in Argentina is the result of work by a nongovernmental environmental organisation, the Wildlife Foundation (FVS). Their program was also initiated in 1986 and focused on training workshops in four provinces.*

Whereas the education systems in Peru and the Dominican Republic are centralised, the education system in Argentina is decentralised. This means that negotiations to incorporate environmental education into the school system must be conducted province-by-province. This lengthens the negotiation process and results in program variations among provinces. Depending on the province, teachers may receive release time and be permitted to count the course as part of their professional development. The value assigned to the course can also vary among provinces.

Early support for the environmental education program was obtained through workshops which introduced environmental education concepts. Administrators and teachers representing five provinces participated in the first workshops. As a result of these workshops, FVS received the endorsement of the national education ministry. FVS then initiated negotiations with four education ministries to conduct environmental education teacher training in their provinces.

Teachers generally participate in an introductory workshop followed by an evaluation workshop several months later. The latter is used to identify problems teachers encountered, enhance environmental education teaching skills and encourage teachers to continue incorporating environmental education into their classrooms.

An early goal of the program was the development of an environmental education resource manual for teachers. At the introductory workshop a draft manual was introduced to the participants. During the workshops, activities from the manual were conducted so that teachers would have first-hand experience with the material. Between workshops teachers used the draft environmental education manual in their classroom. At the evaluation workshop teachers discussed what worked, what didn't and gave suggestions for changes. After three years of testing draft materials FVS will publish the environmental education resource manual in 1990. The training will also continue in the original four provinces and be extended to two new provinces.

### **Looking to the Future**

The three programs above rely on teacher training workshops as their principal means of reaching teachers. An important component for the long-term success of the workshops is the establishment of local teacher support systems that will function after the trainers leave. Workshops serve as a catalyst, but unless local support systems exist to reinforce the skills learned and motivation generated, the gains made are quickly lost once teachers return to their schools.

Each of the above programs has attempted to solve the problem of a local support system in a different way. In Peru the local nongovernmental organisation conducting the workshop continues to work with teachers. Teachers who participate in the workshops often become members of the local environmental organisation. In the Dominican Republic, teachers who participated in the workshops have tended to form their own support groups, some actually forming an environmental organisation. In Argentina, FVS has attempted to identify resource persons in the community who would continue to work with teachers. The foundation plans to bring these local resource people together several times a year for training and hopes to build a sense of common purpose among them.

None of the solutions is completely satisfactory but for now they are adequate, considering the limited resources, poor communication channels and



difficulty with transportation. The refinement of these community support mechanisms for teachers and the creation of new ones are essential for the continued growth of environmental education in Latin America and the Caribbean in the '90s.

Although workshops are an effective means of training teachers, they are expensive, the number of teachers reached are few, the number of trainers are limited and teachers often cannot take the time required to attend. Other mechanisms for reaching and training teachers are necessary. One alternative is to work more directly with teacher preparation institutions. If environmental education was incorporated into teacher training programs a whole cadre of teachers with a strong environmental education foundation would exist. Other possible options include training through radio, printed materials, videos or a combination of the three.

To date, environmental education has had most success in reaching primary schools. Curricula at that level are more flexible, the day is not segmented, and one teacher is responsible for teaching everything. This makes the incorporation of environmental education at the primary level much easier than at the secondary level where the opposite conditions exist. But unless environmental education also reaches into the secondary level, the gains made at the primary level are not reinforced. This is unfortunate since it is at the secondary level that students are more capable of undertaking projects to help improve local environmental conditions. In the '90s a much stronger effort must be made to incorporate environmental education into the secondary level.

Environmental education has related most easily to the natural science disciplines. In the school curriculum the biology concepts of environmental education are most frequently taught. Environmental educators are biased in the same direction as well. Many are biologists or people trained in natural resource management. But biology and the natural sciences are only one part of environmental education. In the future, a more balanced approach among the social and natural sciences is needed. More work must be done in identifying and linking environmental literacy concepts to other parts of the school curriculum.

More work is needed on developing models that help teachers identify and select appropriate techniques for environmental education. Teachers need assistance in handling controversial issues and better guidelines for helping students decide when and how to move from awareness to action. Teachers must also clearly understand the difference between their own environmentalism and their role as environmental educators.

To increase the effectiveness of formal environmental education programs, greater integration with other sectors of the community is necessary. People are much more likely to accept a new message if they hear it from a variety of sources. One critical area that has been sorely overlooked by environmental education is agriculture. Yet this sector makes a significant impact on the rural environment. If environmental education dealt more directly with agriculture and

was able to motivate agricultural specialists who incorporated environmental education into their work, the potential for change would be significant. Other areas of potential integration include rural development and community health.

Overall environmental education programs lack evaluation. To date the evaluation conducted has focused on the training workshops. No evaluation has been done to determine how effectively teachers use the knowledge and techniques learned in the workshops, the resulting gains made by students of teachers who participate in the workshops, or the impact on the community. While such evaluation is difficult to conduct, studies are needed to verify whether what we think is happening is actually taking place. We should also be able to see a changes in school curricula over time. If formal environmental education is successful we should start to see more environmental concepts incorporated into other areas of the curriculum.

Another important change that is needed for the '90s is a shift in how people are perceived and how environmental problems are presented. There is still a strong negative bias against people when environmental educators speak about the relationship between people and the environment. People are frequently portrayed as predators and destroyers of the environment instead of, as is often the case in Latin America and the Caribbean, well-meaning folk just trying to make a living. Too much emphasis is placed on identifying an enemy instead of seeking workable alternatives.

Although there is much talk about how conservation is for people, environmental problems are still often interpreted from the naturalistic or aesthetic perspective. This makes it difficult for people who are not meeting their basic needs to be sympathetic to environmental issues. Such people could more easily relate and understand an environmental problem such as deforestation if it was interpreted as a fuel wood problem and alternatives addressed that concern.

## **Conclusion**

Formal environmental education in Latin America and the Caribbean has made significant strides over the last decade in spite of limited resources and personnel. Its success is largely due to the work of nongovernmental organisations and other institutions outside the school system. These organisations and institutions have negotiated for the inclusion of environmental education in the school curriculum, they have designed and conducted teacher training workshops and produced resource materials for teachers. They have worked closely with teachers to ensure that the training programs and materials meet local needs. Much of the success of the programs is due to the commitment of these organisations. They have continued to work with the teachers even when environmental education was not viewed as a priority by the ministries, they have conducted workshops with extremely limited resources and under difficult conditions for the trainers and have continued to work consistently for several years. Teachers feel that the program is permanent, that the trainers will be back and that they are part of a larger effort.

### **Note**

The three projects described in this article received financial and technical assistance from World Wildlife Fund. Complete technical reports for each project are on file at World Wildlife Fund-U.S. (reports are written in Spanish).

### **References**

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in silence ~  
We surely come to see  
Our growth attains its completion  
Only through union with others.

Gordon