

## **Environmental Education in the Galápagos: Where do we go from here?**

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### **Abstract**

Our future leaders' environmental understanding improves their resource management skills and decision-making capacity. Community awareness and "hands-on" involvement preserves bio-diversity and addresses human impacts. This report discusses the importance of environmental education, and effective environmental learning programs. Quality education in the school system is important, and implementation strategies in the Galápagos are discussed. I worked as a volunteer in the Colegio Nacional Galápagos (CNG) in 2006, and will address: 1. Increasing natural process understanding to promote more conservation based lifestyles. 2. Conservation understanding, participation, and collaboration to strengthen social organizations and encourage integration and participation in regional conservation programs. 3. Environmental education in the formal education system to change awareness, attitudes, and beneficial actions to promote sustainable fishing practices with and for Galápageños. Enforcement and scientific research are important, but will never change peoples' political will – this is done by working with the younger generation and developing new visions for the future.

### **Educación Ambiental en las Galápagos: ¿Adónde vamos desde aquí?**

#### **Resumen**

Nuestro futuro los dirigentes de la comunidad, y es su conciencia ambiental crítica de interesados en el desarrollo de la capacidad de decisión. La sensibilización de la comunidad y promover la participación de la adopción de medidas eficaces para

preservar la biodiversidad, así como abordar los impactos humanos en la isla de ambientes. Este informe se refiere a la importancia de la educación ambiental, y se analiza la educación formal efectiva programas de educación ambiental y aplicación futura. Obtención de programas de educación ambiental de calidad en el sistema escolar formal es una cuestión muy complicada, por lo que las estrategias de educación ambiental en las Galápagos son discutidas. He trabajado como voluntario en el Colegio Nacional Galápagos (GNC) en 2006 y 2007, y tratará los siguientes aspectos: 1. Formación para aumentar la comprensión del medio ambiente en el proceso de Galápagos y promover estilos de vida más adecuadas de conservación. 2. El fortalecimiento de la conservación de la comprensión, la participación y colaboración de instituciones públicas y organizaciones sociales. 3. El fortalecimiento de las organizaciones sociales para fomentar la integración y la participación en los procesos regionales de conservación con la Reserva Marina interesados. 4. Mejorar la educación ambiental sobre las políticas, normas y procedimientos. La idea es utilizar la educación ambiental en el sistema formal de educación para ayudar a cambiar la conciencia, las actitudes hacia, y beneficiosa para promover acciones prácticas de pesca sostenible en las Galápagos, con y para los Galápageños. El uso de la aplicación y la investigación científica son importantes, pero nunca será suficiente para cambiar la voluntad política de las personas - esto sólo puede hacerse mediante la colaboración con las jóvenes generaciones y el desarrollo de nuevas visiones para el futuro de las islas a través de nuevas ideas y el aprendizaje.

### **Introduction**

Our future community leaders' environmental understanding improves decision-making capacity. Community awareness and "hands-on" involvement preserves biodiversity and addresses human impacts. The proximity concept (Stepath & Whitehouse, 2006) in environmental science education displays 'rediscovery' of our connections to the world around us. As a result of experiences, students bring a more holistic relationship to animal and other living things into being. This positions marine resources

as being nearer and more important, and therefore in need of attention and care.

Environmental education program strategies are discussed, since I worked as Colegio Nacional Galápagos (CNG) volunteer in 2006 and 2007. My previous work with science education research (Stepath, 2006) led me to determine environmental training: 1. increases natural process understanding and promotes conservation lifestyles; 2. reinforces conservation participation, and collaboration of community organizations; 3. strengthens participation with Marine Reserve stakeholders; and, 4. improves environmental policies, as well as awareness, attitudes, and actions to promote sustainable practices. Enforcement and scientific research are important, but will never change the political will of the people – this can only be done by working with the younger generation and developing new visions for the future.

### **Methods**

My report addresses observations I made while working in the Galápagos, and review of the related literature. In Rickinson's (2001) extensive review of environmental education research he notes greater attention needs to be paid to investigating students' learning experiences. Even though environmental education is one of the pillars and objectives of the Charles Darwin Foundation (Lizana et al., 2000a) -- the current state of Galápagos environmental education is not strong. Many programs have been implemented, but little research or learning outcome evaluation is available. These were formal and non-formal programs (Analyzer, 1998; Lizana et al., 2000a; Lizana et al., 2000b), and many education programs were implemented. An agreement was made between the National Department of Professional Improvement (DINAMEP - Dirección

Nacional de Mejoramiento Profesional) and the Charles Darwin Foundation (CDF).

Teachers were trained in environmental science, but the effect does not appear strong and no training took place during my work in 2006-07. This work involved the design and execution of projects, and promotion of extracurricular activities at Colegio Nacional Galápagos, and CDF was involved also involved at their Environmental Education Centers.

Investigating the experiences of individuals and the meanings they make of their experiences is important education research. I worked with senior high school students at both campuses of Colegio Nacional Galápagos on Santa Cruz, and the observations took place from August 2006 to January 2007 with five teachers and their classes (approximately 100 students).

## **Results**

A lot of energy seems to have been made in environmental science education especially in the year 2000, when there was a real boost from the CDF in advising on integrated educational reform. Even though, I could not find concrete educational effects of this work, it appears have been a good start. There little or no related follow up evaluation, and evaluation is necessary to develop effective programs. Evaluation promotes learning, keeps networks developing and promotes change in education systems.

A first year basic education book was published ("Un montoncito de tierra en el mar"), and the CDF distributed copies throughout the islands and conducted didactic workshops for teachers. This was the first of a series of ten books, one per year, to cover

topics on island nature and the environmental and social processes. These corresponded to the methodology of integrated education, and supported all subjects in the school curriculum. The idea was wonderful, but the follow through very weak, and I am not sure how many of these books were published. I did use “Galápagos y el Manejo de la Reserva Marina” © 2003 Parque National Galápagos, and found it good. There were student complaints about always using the same book, and they wanted new books at different grade levels. This situation needs more investigation, and I could find no program evaluation or report in the CDF library.

In order for environmental science programs to be effective the teachers in the school system have to be trained regularly. Not only to learn the cause and effect relationships of natural processes, but to have critical learning skills developed, and learn implementation strategies for new ideas and methodologies. Educational programs should be developed with learning outcomes in mind, and evaluated for attainment, and then modified to continually increase students’ learning. My research in the Galápagos in 2006-07 has not produced any concrete results at this time, but valuable information has been gathered.

### **Discussion & Conclusions**

Problems continue in the Galápagos formal education system. The curricula have been modified since the 1990s, but are still not appropriate to such a unique and ecologically important marine protected area. The Special Law of Galápagos (1998) presents an opportunity for sustainability, and provides a legal basis for educational reform. “It is urgent to find a meaningful way of designing a sustained environmental

education program of sufficient depth and breadth. All sectors of the Galápagos population need an understanding of the role they play in the rational management of the natural resources” (Herrera-MacBryde, 1982, p. 4). The Galápagos Islands are undergoing rapid change, and increased human pressure affect the ecosystems.

Many projects have been implemented in schools such as: workshops for teachers, scholarships for university students, naturalist guide and sustainability courses, and vocational field trips for children. A system of textbooks was developed to support curriculum, but few teachers continue to use them – so projects need to be coordinated with teachers and schools.

Teachers need better support and training about ecology and bio-diversity issues, and the rapidly changing needs of Galapagueños. Strategic investment in education is critical to address growing economic, environmental, and social pressures. This supports the CDF Strategic Plan 2006-2016 since it generates:

- Resident understanding and caring of their surroundings’ bio-diversity;
- Learners with conservation-oriented economic skills; and
- A culture of pervasive collaboration and sustainability.

Much environmental education has been done, but it needs more coordination, more continuity, and more research about its impacts.

Let’s promote change by: 1) curricular reform and teacher trainings for sustainable futures; 2) encouraging an island wide understanding of conservation and a sustainable vision; 3) student environment guardian clubs, and teacher working groups; and 4) improved learning about ecosystem relationships so the local schools become a model for sustainable living. I was impressed with the educational personnel in the

institutions, and they need more training and support with, teaching assistants, textbooks, and technical equipment. I met a tremendous number of truly dedicated educators.

The schools are not equipped with educational resources needed for a rapidly growing population, and the educational system is not seen to have improved Galápagos island conservation or the inhabitants' quality of life. A major problem continues of a migration-driven population growth and immigrants having an extremely poor to nil understanding of conservation concepts and practices. A general attitude was observed ranging from 'subsisting at whatever cost' to 'making oneself rich within a few months'.

Environmental education in the Galápagos needs help. Herrera-MacBryde wrote: "the results obtained from my 1981 year of experiences strongly suggest the immediate need of incorporating environmental education into the whole curriculum" (1982, p. 1). It is important to learn from our mistakes and proceed forward with vigor and a sense of urgency. Improved education in the schools can help promote a sustainable future in the Galápagos. Much support is necessary, but it is important that it is implemented in a constructive, coordinated, and supportive way with the Galapagueñian people. Sí, se puede.

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