

**ENVIRONMENTAL EDUCATION  
IN COMMUNITY-BASED COASTAL RESOURCE MANAGEMENT:  
A CASE STUDY OF OLANGO ISLAND, PHILIPPINES**

by

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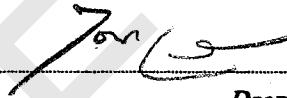
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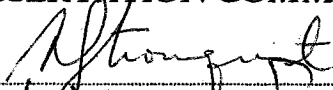
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## **DEDICATION**

I would like to dedicate this dissertation to my parents, Charles and Leona English; and, to my sisters and brothers, Anne, Tim, Kevin and Maureen . It was their love, support and belief in me that helped keep me motivated through the research, writing and editing of this document.

PREVIEW

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## ACRONYMS AND ABBREVIATIONS

BFARMC	Barangay Fisheries and Aquatic Resource Management Council
CI	Conservation International
CLEAR-7	Coastal Law Enforcement Alliance in Region 7
CRMP	Coastal Resource Management Program
DA-BFAR	Department of Agriculture-Bureau of Fisheries and Aquatic Resources
DECS	Department of Education Culture and Sports
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
GMS	Gilutongan Marine Sanctuar
ICM	Integrated coastal management
ICNU	Internation Union for the Conservation of Nature and Natural Resources
ICRI	International Coral Reef Alliance
IEC	Information, education and communication
IMA	International Marinelife Alliance
JAIP	Jerusalem AIDS Project
JICA	Japanese International Cooperative Assistance Agency
LGU	Local Government Unit

NGO	Non-governmental organization
OBST	Olang Bird and Seascape Tour
OIWS	Olango Island Wildlife Sanctuary
PBSP	Philippine Business for Social Progress
PCRA	Participatory Coastal Resource Assessment
SEACAM	Secretariat for East African Coastal Area Management
UN	United Nations
USAID	United States Agency for International Development

PREVIEW

## ABSTRACT

This study examined the dissemination of environmental knowledge and information in a community-based coastal resource management program in Olango, Philippines. Poor coastal planning and inappropriate fishing techniques threaten marine estuaries and coral reefs around Olango. Environmental education can be part of a solution to these problems through raising awareness of issues and encouraging behavioral change.

As a case study of a community-based coastal resource management program, this dissertation facilitates an understanding of how the acquisition and learning of environmentally appropriate behavior take place through increased knowledge and attitudinal change. Using qualitative research methods, this study investigated how non-formal education can raise consciousness about coastal resource management, ultimately resulting in attempts to maintain a sustainable symbiotic relationship with the marine environment. The juxtaposition of several theories frames possible avenues for exchange of environmental knowledge and information. Social learning theories explain one process for the dissemination of environmental knowledge; however, other theories may offer complementing explanations for the dissemination of environmental knowledge and information. Organizational learning theories address the issue of how learning takes place within and among environmental organizations through the sharing of information that includes lessons learned from experience. Historical, experiential and political aspects of

ecofeminist theory help to frame the process of community empowerment, a necessary step in the behavioral change process.

The study specifically describes how the Coastal Resource Management Program (CRMP) mobilizes community members in the Olango area to collectively work for coastal resource management. The CRMP initiatives include consciousness raising campaigns about environmental issues, enterprise development for an alternative livelihood, and strategic planning for law enforcement. The CRMP multisectoral approach to consciousness raising emphasizes information, education, and communication. To encourage illegal fishermen to give up their practices, CRMP's Enterprise Development division works with local island residents in the building and promoting of an eco-tour business. The enthusiasm among active community members gives optimism to the issue of sustainability for the Olango coastal resource management. However, lack of education and a rapidly growing population remain issues that need to be addressed.

*"Our task must be to free ourselves--by widening our circle of compassion to embrace all living creatures and the whole of nature and its beauty."*

*Albert Einstein*

## **Chapter 1**

### **Introduction**

Einstein's words epitomize the spirit of environmental education that includes elements of community cooperation and trans-generational communication. As somewhat of a philosopher on education, Einstein was well aware of the need to pass on knowledge about the environment to future generations in order for them to better understand how to maintain a sustainable relationship with nature.

Environmental education has grown to include more than just field studies in biology and geology. Environmental education also aims to teach critical thinking skills that involve problem solving and decision making; occupation-specific skills; and attitude development based on community morals and ethics (Gayford, 1996).

The undeniable human impact on the environment is causing communities all over the world to rethink planning and development. Environmental education is linked to development because it is through education that communities can raise awareness of detrimental practices and hopefully nurture a new social consciousness that will result in a more symbiotic relationship with nature. Many theorists and educators believe that environmental education is fundamental to effecting change in environmental attitudes and behavior (Milbrath, 1989; Bowers, 1995, 1997; Palmer, 1998). Because of the growing number of non-formal education programs in communities throughout the world, it is necessary to

examine more closely how information is passed on and how learning takes place in non-formal educational settings. Therefore, this study aims to explain how non-formal community-based environmental educational programs function, and how they disseminate environmental knowledge and information. Specifically, this study employs qualitative research methods to gather and analyze data on how a community-based coastal resource management program uses and disseminates information about the environment. A major goal of this study is to broaden an understanding of how consciousness-raising efforts at the local level attempt to promote pro-active programs that initiate change as well as minimize inappropriate practices that threaten coastal environments. Although this study does not attempt to uncover causal relationships, the findings add to a better understanding of the variables that influence the implementation process and the effectiveness of community-based coastal resource management programs.

#### Statement of Problem

There is a growing international concern about the widespread global degradation of coral reefs and their related ecosystems (International Coral Reef Initiative, 1995). Exponential increases in coastal populations magnify the overuse and abuse of coral reefs as communities compete for marine resources (Jackson, 1995).

Although some natural phenomena such as earthquakes, typhoons, climate changes, coral eating predators and plagues may cause threats to marine ecosystems, human activity accounts for the majority of degradation to coral reefs. Siltation, pollution,

poor coastal planning and inappropriate fishing techniques are some of the ways that humans threaten marine estuaries and ecosystems.

There are two basic reasons to argue that coral reefs are worthy of saving. The first reason is that continued destruction of coral reefs will negatively affect people's ability to feed themselves. The other reason is that coral reefs have intrinsic value beyond the need of humans. The former argument relates to economics and development, while the latter is an eco-centric philosophical argument. Many educators and planners may believe that the philosophical argument alone demands that action be taken to limit human destruction of reefs. Although others may not have the same view, the economic value of these marine resources is indisputable. In many island communities, both the fishing and tourist industries are dependent on healthy coral reefs. Thus, coral reef destruction can result in higher unemployment, smaller fish catches and lowered income locally. On a national level, coral reef degradation can lead to loss of income tax moneys, urban crowding due to the collapse of local economies and diminishment in a major source of protein (McAllister and Ansula, 1993). The economic implications of destroying coral reefs alone should be enough to convince people of the need to modify behavior.

Effective coastal resource management is essential to ensuring the health of these important resources. The destruction of coral reefs can have catastrophic effects on local economies and create potential problems for providing enough food for local populations. Unfortunately, poverty and myopia in development planning

cause people to seek short-term gains without realizing the long-term detrimental effects. It is important that effective measures are taken at all levels of government to ensure sustainable use of the coral reef resources and their associated ecosystems. The International Coral Reef Initiative (ICRI) predicts that if proper measures are not taken, 48% of South East Asia's coral reefs will be depleted within two decades (1995). Scientists and lawmakers are limited in their ability to change attitudes and values. Therefore, it is necessary for educators at the grass-root level to assist in the process of disseminating information about practices that can help local communities maintain a more symbiotic relationship with the coastal environment. Various types of programs that address coastal resource management exist; however, localized educational programs may be more feasible and more effective in creating environmental awareness. When members of the community actively participate in the assessment of their coastal resources, they become more environmentally aware of the need to manage those resources. This heightened level of community environmental awareness facilitates better management of the coastal resources. Knowledge empowers communities to plan effective strategies for sustainable use of coastal resources; thus, building a healthier, more symbiotic relationship with the ecosystem.

For many countries, and especially developing coastal nations, the economic implications of healthy coral reef eco-systems are far reaching because coral reefs provide food and a vital source of protein for local communities. In addition, healthy coral reef eco-systems can “provide millions of jobs, earn export dollars



and attract tourists” (McAllister and Ansula, 1993). Because these coastal resources are tied so closely to the quality of life for those living in small island communities, it is important to study how knowledge and information about caring for the environment are disseminated at a local level.

This dissertation addresses the issue through analysis of qualitative data collected in a case study of a community-based coastal resource management program in the Republic of the Philippines. The Philippines is an example of a developing country that has a heavy reliance on its marine environment. Coastal waters provide “half the dietary protein for many of the 62 million Filipino people and fishing employs over 2 million people either directly or indirectly” (MacAllister and Ansula, 1993, p. 7). A significant number of these people are women who gather mollusks, seaweed and other reef resources. Coral reefs also help to support the tourist industry by attracting over a million foreign visitors a year to the Philippine Islands.

The situation in the Philippines is particularly grave. In the Philippines, “coral reefs occupy an area of 33,000 square kilometers at depths under 37 meters” (Carpenter as cited in McAllister and Ansula, 1993). About 80% of these reefs are in poor condition due to damage by humans (McAllister and Ansula, 1993; Pineda-Ofreneo, 1993). The magnitude of inappropriate practices can be seen in one example from the on-line magazine, *People and Planet*: “In the Philippines, over 6,000 cyanide divers squirt an estimated 150,000 kilograms of dissolved poison on to some 33 million coral heads each year” (*People and Planet*, 1996).

Inappropriate and destructive fishing techniques include fishing with explosives, using cyanide or other poisons to stun rare tropical fish for the lucrative pet industry, and using poles to break up the coral to drive fish into large heavy nets (McAllister and Ansula, 1993; U.S. Department of State, 1998).

### Overview of Theories

This dissertation attempts to explain how the acquisition and learning of environmentally appropriate behavior take place through increased knowledge and attitudinal change. The juxtaposition of several theories frame possible avenues for exchange of environmental knowledge and information. Social learning theories may explain one process for the dissemination of environmental knowledge via community-based programs because ecological information can be passed on from one person to another through social interaction and involvement in community activities. Since social interaction is inherently part of community-based education, it logically follows that social learning theory can at least explain the pathways for sharing knowledge about the environment. However, other theories may offer competing or complementing explanations for the dissemination of environmental knowledge and information.

Organizational learning theories address another aspect of environmental education and lend insight into how learning takes place within and among organizations. A non-governmental organization (NGO) that promotes environmental education in small coastal communities needs to develop approaches to learning based not only on its own experience, but also based on the experience

of other organizations with similar objectives. Organizational learning theories can also help to explain how an organization's structure affects the learning process and how the organization changes over time to meet the needs of the community. The discussion on organizational theories will consider the possibility that social interaction is a key variable in organizational learning that may result in the acquisition of new behaviors.

One competing theory that suggests an alternative view of environmental problems is ecofeminist theory. Ecofeminist theory helps to frame environmental problems in the context of productive and reproductive labor while also bringing to light how the process of community empowerment is a necessary step in the developing of proactive environmental behavior. Ecofeminism emphasizes the need to change social and political constructs based on patriarchal attitudes that breed unsustainable development. One major principle of ecofeminism is the "absolute respect for nature as the foundation of liberation from both patriarchy and industrialism" (Castells, 1997, p. 117). In addition, ecofeminism attempts to explain the need to include all members of the community and especially marginalized groups that may suffer most from environmental degradation. Education can increase awareness about such attitudes and help to promote change by encouraging grass roots involvement in environmental programs. Therefore, community-based environmental programs that reach out to and seek the involvement of all members of the community become tools for empowerment that focus on the importance of education to promote attitudinal and behavioral change.

Through qualitative investigation, this study explains how non-formal education can raise consciousness about coastal resource management, ultimately resulting in attempts to maintain a sustainable symbiotic relationship with the marine environment. This study is primarily concerned with explaining how a community-based coastal resource management can effect change in attitudes toward the environment over time through consciousness raising efforts and how any change in attitudes might affect behavior.

An increase in knowledge about local environmental issues is expected to contribute to the development of an environmental ethic manifested in proactive environmental behavior. Although it is hypothesized that community-based coastal resource management promotes positive environmental attitudes resulting in proactive environmental behavior, it is possible that other factors influence people's attitudes and behavior (see Figure 1.1). These factors include, but are not limited to, peer groups, level of education, social norms, monetary incentives, legislation and available law enforcement. Some of these factors may facilitate or hamper a community-based coastal resource management program's initiatives. For example, peer groups may either function to challenge or to facilitate the process of attitudinal change. Peer groups may pose as a challenge if the lack of awareness about environmental issues results in peers continually modeling environmentally inappropriate behavior. The continual modeling of inappropriate behavior leads to the social norms of a group. Therefore, coastal resource management programs can target specific peers groups (e.g., community

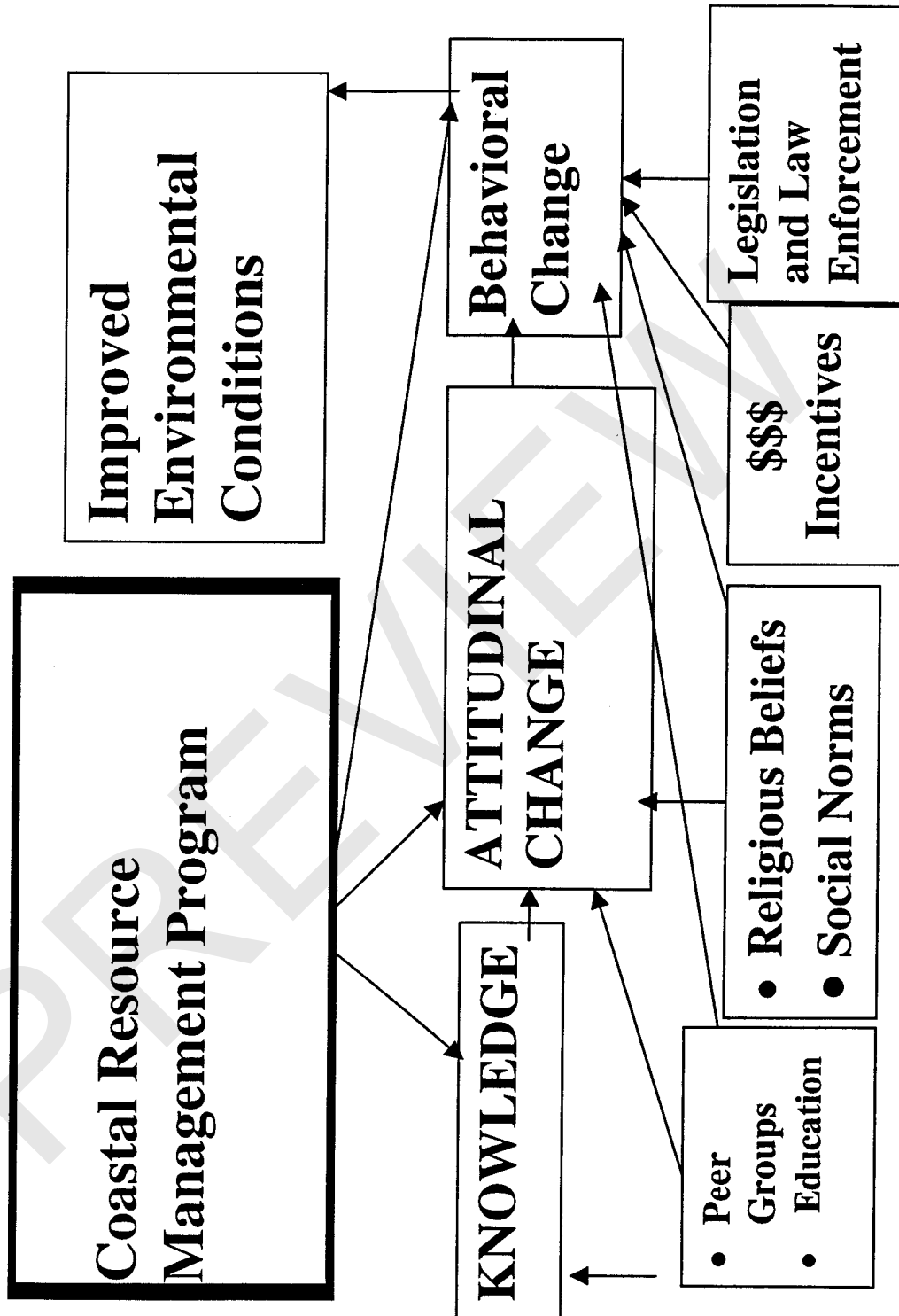


Figure 1.1: Possible Factors Influencing the Promotion of Pro-Active Environmental Behavior

organizations and labor organizations) for involvement in consciousness raising activities. Helping these specific groups better understand the causal relations of human interaction with the environment and the deep implications of their actions is expected to effect change in attitudes and ultimately behavior.

Similarly, money is a double-edged sword in any campaign to manage environmental resources effectively. Illegal fishing and other environmentally detrimental activities are products of “want” or “need.” Money can influence action and the lack of action. If environmentally appropriate practices are believed to have greater financial rewards, it is hypothesized that people will adopt those alternatives. Therefore, coastal resource management programs need to explore how money can influence the development of an environmental ethic in communities and what types of alternative livelihood are available for those dependent on illegal fishing or gathering of resources.

Finally, lobbying for legislation and effectively enforcing laws can pressure individuals and companies to adopt more environmentally appropriate practices. The lack of action on the part of law enforcement reduces any immediate negative consequences that otherwise may discourage illegal degradation to the environment. Therefore, community-based coastal resource organizations need to lobby on behalf of the community and campaign for the protection of environmental resources while also working with law enforcement to develop effective strategies for enforcing regulations.

Exactly how all the factors in Fig. 1.1 affect the learning process in community-based projects is one of the questions this study begins to answer. In addition, this study examines the community empowerment process and how it relates to building a more sustainable relationship with the marine environment.

### Research Questions

The main research questions that this study addresses are:

- 1) How does a community-based coastal resource management program contribute to the dissemination process of environmental knowledge among community members
- 2) What is the dissemination process of environmental knowledge in a community-based coastal resource management program
- 3) How has the organization evolved over time in attempts to better meet its goals?
- 4) What effects has the coastal resource management program had on the community?
- 5) How has the community-based coastal resource management program impacted the lives of women in the community?
- 6) How has the community-based coastal resource management program affected any marginalized members of the community?

What other variables contribute to the acquisition of environmentally friendly behavior?

## Overview of Research Methodology

This study uses qualitative research methods to investigate how a community-based coastal resource management program contributes to the dissemination of environmental knowledge and information in an island community. The study is particularly concerned with explaining any perceived changes in attitudes or behavior. Data will be gathered through interviews, participant observation and document analysis. The data will be analyzed through coding and theme definition. Both emic and etic perspectives will contribute to the explanation of themes and concepts as they emerge.

### ***Assumptions***

- (1) It is assumed that all the subjects interviewed have answered the questions honestly and to the best of their ability.

### ***Delimitations***

- (1) Since this study focused on a specific community, its people and its environment; the data may reflect a particular social, cultural or political climate that may not be characteristic of other coastal communities.
- (2) This study was limited to the subjects who agreed to participate voluntarily.

### ***Limitations***

The data and analysis will reflect only one experience involving the cooperation of an environmental program and a local community. Other programs or communities may have very different experiences.