

Community Empowerment through Environmental Education

環境教育を通じたコミュニティ・エンパワーメント

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Abstract: Environmental education aims to create an environmental ethic that fosters awareness about the ecological inter-dependence of economic, social and political factors that influence community development. Thus, it is important to integrate environmental education into community development programs because a heightened awareness of environmental issues and their implications can initiate new patterns of behavior towards the environment. Changes in values, attitudes and behavior toward the environment can ultimately result in a better quality of life. Environmental education generates a collective effort to recognize and to dismantle social structures and learned practices that threaten common environmental resources. That knowledge and understanding can empower community members, as grassroots participants, to make appropriate decisions for sustainable community development.

Keywords: environmental education, community empowerment, non-formal education, sustainable development

要約: 環境教育は、環境倫理の創出、すなわち、生態的に依存し合いつつ共同体の形成に影響を及ぼす、経済、社会、政治といった種々の要因への認識を育てることを目的とする。環境問題やそれに関係する諸々の事象への人々の意識を高めれば、それまでに存在しなかった、環境に向き合う新たな行動パターンが生まれる可能性がある。さらに、環境への態度や価値観、行動に変化が起されば、究極的には生活の質の向上へとつながるだろう。環境教育は、共有財産である環境資源を脅かすような社会構造や既存の慣行を認識し、そして解体する試みを生み出す基盤なのである。その知識と理解こそ、草の根運動に参加するコミュニティの人々を力づけ、持続可能なコミュニティ開発のための適切な意思決定を可能にするであろう。

キーワード:

環境教育、コミュニティ・エンパワーメント、ノンフォーマル教育、持続可能な開発

1. Introduction

"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." Einstein's words epitomize the spirit of environmental education that includes elements of community cooperation and trans-generational communication. As both an environmentalist and an educational philosopher, Einstein was well aware of the need to pass on knowledge about the

environment to future generations in order for communities to 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 solving problems that affect communities. Such critical thinking skills should empower community members at the grassroots participant level to make appropriate decisions that would better the quality of life for all current and future generations.

In addition, environmental education also aims to teach both global and local citizenship. A core principle of environmental education is attitude development based on community morals and ethics. The major goals of environmental education programs are to raise consciousness about environmental conditions and to teach environmentally appropriate behavior so that community members can involve themselves in a decision-making process that ensures development considers both the health of current residents and that of future generations. If the grassroots participants in the decision-making process do not have the knowledge to take on the task of eco-friendly community building, it is likely that central governments and corporations will control community development without a concerned voice from the local stakeholders. As an example, Alcala and Russ (2006) claim that an essential step to empowering coastal communities in the Philippines has been to devolve decision-making power down so the local citizenry have adequate participation in the management of environmental resources. For management of environmental resources to be successful, communities need to participate at a local level. Community-based environmental education programs can empower local citizens to take an active role in sustainable development of their communities while protecting their environmental resources.

2. The Importance of Environmental Education

Proponents of environmental education would agree that the major goals of environmental education programs are to raise consciousness about environmental conditions and to teach environmentally appropriate behavior (Milbrath, 1989; Bowers, 1995, 1997; Palmer, 1998; Cole, 2007; Potter, 2010). Consciousness-raising should lead to the acquisition of an environmental ethic in peoples' attitudes, ultimately developing into a more pro-environmental paradigm in society. Griswold (2013) infers that a "higher level of ecological literacy among citizenry will translate into collective action and political support for the creation of a green economy" (p35).

Environmental education envisions a new paradigm of thinking that can meet the challenges of a rapidly changing world. Environmental education is evolving to be education for sustainable and ethical development both at a local and global level. It is environmental education that will prepare the next generation to plan appropriate strategies for addressing issues such as urban sprawl at a local level while still maintaining focus of the challenges that globalization presents on an international level.

Consideration of future generations, a key element in environmental education, includes such concepts as trans-generational communication, stewardship, nurturing, empowerment and emancipatory education. Knowledge about the environment is not an end, but rather a beginning. Knowledge about the environment promotes attitudinal and behavioral change. Therefore, environmental education is an agent of change and a step toward community empowerment. In the on-going dialogue of rethinking education, perhaps it would be advantageous to explore more deeply how environmental education can be an integral component in both community development and education reform.

3. Brief Historical Background of Environmental Education

Studying the environment and passing knowledge about the environment from generation to generation has always been essential to the survival of our species. However, the roots of environmental education as an educational philosophy are often credited to the influence of Jean-Jacques Rousseau's teachings that education should consistently focus on the environment; and later, to the 19th century educator Louis Agassiz, who encouraged the study of nature over the study of books (McCrea, 2006). As a precursor of environmental education, Conservation Education grew in popularity as the government instituted programs during the Great Depression and Dust Bowl in the first half of the 20th century (McCrea, 2006).

The term "environmental education" was first used in 1948 at the International Union for the Conservation of Nature and Natural Resources (ICNU) conference. The term did not gain much popularity until the late 1960s when UNESCO became concerned with several environmental issues (Palmer, 1998; McCrea, 2006). In 1977, at the first Inter-governmental Conference on Environmental Education in Tbilisi, USSR, UNESCO established definitions, recommendations and goals for environmental education. The Tbilisi Recommendations state that environmental education is a life-long process. It is interdisciplinary and holistic in nature and application. This means that environmental education is an approach to education as a whole, rather than a

subject. It is concerned with creating an environmental ethic that fosters awareness about the ecological inter-dependence of economic, social and political factors in a human community and the environment. The major goal in the Tbilisi Report is that environmental education aims to create new patterns of behavior towards the environment. The acquisition of knowledge through information learned in the education process can lead to changes in values and attitudes, ultimately leading to behavioral modification (Palmer, 1998; McCrea, 2006; Potter, 2010).

In her book, *Environmental Education in the 21st Century*, Joy A. Palmer traces the changes in environmental education from the ICNU conference through the 1990s. She explains that the proponents for environmental education moved from conservation and urban studies in the 1970s to global and development education in the 1980s. The end of the 1980s saw more of a focus on action research and empowerment. Thus, during those decades, environmental education became more than just a peripheral association to topics such as cultural and critical literacy; the concept of environmental education expanded and continues to evolve into education for a sustainable future.

4. Environmental Education and the Empowerment Process

Empowerment is the ability to make decisions that led to desired future outcomes. For communities those desired future outcomes should include the needs of future generations. Consideration of future generations is a key element in environmental education as C.A. Bowers notes in his discussion of trans-generational communication in the educational process (1995). Bowers expresses the need to shift away from student-centered learning and toward a process “of encoding, storing, and renewing a cultural group’s ways of understanding and valuing the primary life sustaining relationships between humans and the rest of the biome” (p135). This is an eco-centered approach that emphasizes tradition and culture in a way that will require the elder generations to act as “carriers of essential knowledge and values.” The environmental education process that Bowers describes echoes with words like “stewardship”, “nurturing” and “emancipatory educational liberalism.”

Another fundamental element of environmental education is its goal of freeing the environment from human domination. This becomes the paradigm shift from domination to stewardship. Learning to nurture rather than control should also help to alleviate the impacts that destruction to the environment have on marginalized groups. In this way, environmental education is emancipatory for nature, and for the victims of

environmental degradation. Emancipatory education is a feasible strategy to disseminate knowledge that promotes attitudinal change. Stromquist (1992) defines emancipatory knowledge as “knowledge that questions the status quo and seeks its transformation” (p.5). This knowledge is essential when attempting to transform current detrimental trends of development into more appropriate sustainable development. Thus, emancipatory environmental education is a road to empowerment for communities wanting to protect themselves from threats of environmental degradation. Stromquist (1993) defines empowerment as “a process to change the distribution of power, both in interpersonal relations and in institutions throughout society” (p.13). Her “Theorized Chain of Events in the Empowering Process” can be adapted to explain the theoretical empowerment process of community-based environmental education. The modifications below illustrate a conceptual model of how community-based environmental education programs can foster community empowerment and address environmental issues. The process begins with grassroots participation in an environmental education program that has a collective agenda to ensure the continued good health of community environmental resources through shared management. The collective agenda aims to maintain a sustainable relationship between community development and use of community environmental resources.

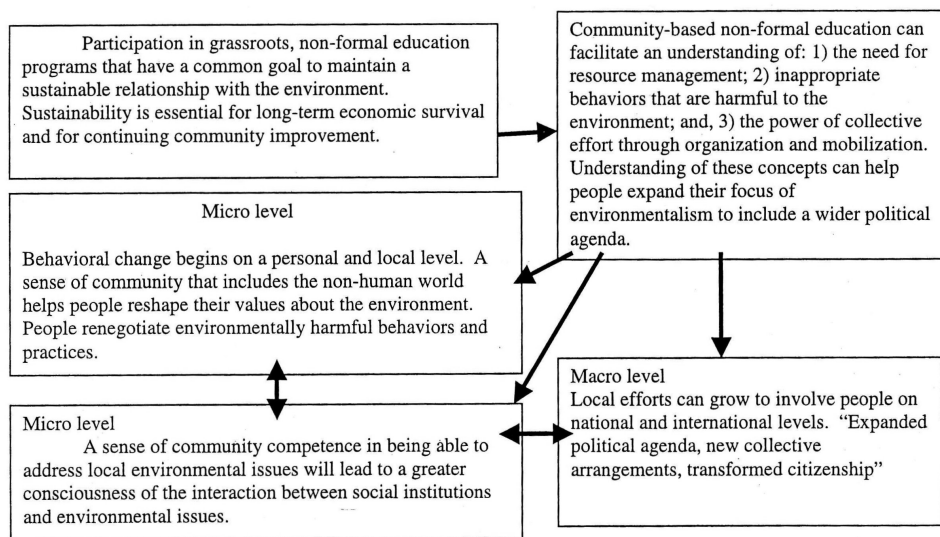


Figure 1: Empowerment Process of Community-Based Environmental Education

Source: This model is adapted from Stromquist's (1993, p. 17) "Theorized Chain of Events in the Empowering Process".

The empowerment process begins with awareness. The dissemination of information and consciousness-raising about environmental problems are the first steps in the empowerment process for community management of environmental resources. Successes demonstrate the power of collective efforts and consequently strengthen the bonds in socially valued pursuits. Still, community empowerment is an evolving process of rethinking common goals and strategies to attain those goals. New information and knowledge—products of both successes and failures—guide the rethinking of approaches to resource management. Successes minimize skepticism; hence, encouraging passive members of the community to join the collective effort. The power of collective effort gives the community a voice in the expanded political agenda and establishes new collective arrangements to fortify the campaign for environmental resource management.

As learning takes place in the context of a socially valued pursuit, empowerment emerges as a theme during the education process. The empowerment process includes organizational change and organizational learning as well as individual change and individual learning. Successes and challenges of environmental resource management efforts have resulted in additional learning among community members. Challenges include addressing other factors that influence or hinder the acquisition of an environmental ethic in human behavior.

Environmental education programs can facilitate an understanding of inappropriate behaviors that are harmful to the environment. Community-based non-formal education can also help people to perceive accurately the power of community effort through organization and mobilization. This understanding can help people expand their focus of environmentalism to include a wider political agenda. Knowledge and understanding give rise to attitudinal and behavioral changes. A sense of community that includes the non-human world helps people reshape their values about the environment. People renegotiate environmentally harmful behaviors and practices. As this consciousness-raising process continues and intensifies, people begin to realize the relationships between economics, politics, religion and environmental issues leading to expanded political agenda.

Environmental education should be an essential component of community development because it is through education that communities can raise awareness of detrimental practices and nurture a new social consciousness that will strengthen the community's 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; Griswold, 2013). 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.

5. Eco-Centered Non-Formal Education

Communities need a structural organization to disseminate knowledge as the first step toward emancipatory action. Non-formal educational projects can provide the needed structure to raise consciousness about environmental issues and promote behavioral change. Non-formal education is a viable approach to meet the challenge of articulating notions of community that include, in a comprehensible way, all of nature—humans, the resources they must manage for future generations and the intricate relationships between community development and those resources.

Smith (1999) defines non-formal education as learning settings and opportunities that are not tied into the acquisition of diplomas, or licenses. Smith's discussion primarily refers to adult non-formal education; however, children can also benefit from programs outside the realm of formal education (Blunt, 1994). Non-formal education is a very broad term that goes beyond the scope of this paper. Thus, a more specific definition is needed. For the focus of this paper, non-formal education will imply proactive approaches to changing attitudes about the environment at local levels. These types of programs are environmentally based and eco-centered.

5.1 Criteria of Non-Formal Education

Some proponents of non-formal education provide specific goals and criteria that are helpful in understanding how programs can become deep-seated agents of change within communities. Van Riezen's (1996) explanation of the importance of integration in non-formal education is a guide for proposing a list of several desired criteria for eco-centered non-formal education programs. First, such programs should maintain a flexible design so they can function as a "tool to reach development goals" by addressing the needs of the community and adjusting to ongoing interventions. These development goals should consider present conditions, possibilities for change and the long-term perspective. This requires needs assessment to determine the community goals and needs. One important point of consideration in the needs assessment process

is deciding who can best evaluate the needs. This may be the first difficult challenge in designing any non-formal education program.

A second criterion for environmentally based non-formal education is the people in the community should be able to participate freely in the program organization and educational process. Participation has three basic features: decision-making, implementation and rewards. The people in the community must not only be part of the decision-making and implementation processes, they must also benefit from the educational program (Midgley as cited in Van Riezen, 1996). If the needs assessment has been conducted properly, benefits to the community should naturally follow.

Third, non-formal education should be a life-long process. The concept of life-long learning should be a quintessential feature in eco-centered environmental educational programs that not only allow each member of the community to participate regardless of age, but also encourage trans-generational communication about environmental issues. As previously mentioned, Bowers (1995) indicates the value elders' knowledge and experience has for the educational process. Elders can pass on essential knowledge so that tradition and culture do not compete with environmental education, but rather help to enforce appropriate values toward the environment. Community elders are agents to disseminate knowledge from the life-long lessons they have learned. However, it is logical to expect younger community members will bring their own knowledge and perspectives into the trans-generational arena. In this way, youth can be a bridge between formal and non-formal education programs.

These three general criteria are important features of community-based environmental education. The involvement of community is a powerful variable in taking proactive steps to maintain sustainable relationships with the environment. Matching the criteria with the goal of maintaining a sustainable relationship with the environment extends the concept of community to include the non-human world.

5.2 Principles of Environmental Education

These three general criteria for non-formal education need to be aligned with the principles of environmental education. Smith and Williams (1999) provide a concise, but complete list of their "Principles of Ecological Education" (p.6). In context, their use of the word "ecological" is synonymous with this paper's use of the word "environmental." Their seven principles are:

- Development of personal affinity with the earth through practical experiences out-of-doors and through the practice of an ethic of care

- Grounding learning in a sense of place through the study of knowledge possessed by local elders and the investigation of surrounding natural and human communities
- Induction of students into an experience of community that counters the press toward individualism that is dominant in contemporary social and economic experiences
- Acquisition of practical skills needed to regenerate human and natural environments
- Introduction to occupational alternatives that contribute to the preservation of local cultures and the natural environment
- Preparation for work as activists able to negotiate local, regional, and national government structures in an effort to adapt policies that support social justice and ecological sustainability
- Critique of cultural assumptions upon which modern industrial civilization has been built, exploring in particular how they have contributed to the exploitation of the natural world and human populations

The similarities between the criteria for non-formal education and the principles of ecological/environmental education are obvious. These similarities are the foundation for a type of participatory community education that raises consciousness about environmental issues effecting attitudinal and behavioral change while encouraging emancipatory action.

6. Non-Governmental Organizations and Non-Formal Education

Fernandes (1985) aptly notes, “The function of non-governmental organizations is to serve.” Non-governmental organizations (NGOs) offer a “bottom-up” inductive approach to bettering communities and addressing human concerns. Fernandes discusses how NGOs in Latin America have promoted people’s participation in slum management and encouraged political involvement. In a specific report on NGOs in the field of education, Archer (1994) reviews how some NGOs have historically focused on providing educational services to communities throughout the world. Although it is certain that many of these organizations serve causes not directly related to environmental issues, some of the other important literature on NGOs makes direct references to NGO involvement in environmental programs. In an overview of

environmental politics in Asia, Schubert (1993) affirms that in most Asian nations, NGOs are “the primary impetus for environmental protection and nature conservation” (p.241). According to Schubert, many of the thousands of environmental NGOs in Asia are “grassroots movements of people concerned about specific conditions in local eco-systems.”

Whether NGOs focus on environmental issues or seek to provide other services, they provide additional monetary backing for local community efforts. Fernandes’ (1985) claim that there are thousands of NGOs administering hundreds of millions of dollars in Latin America (p.7) gives an example of how NGOs can provide needed resources for grass roots efforts. Schubert (1993) reasons that despite good intentions, many governments lack sufficient funding, training and enforcement to implement effective environmental protection policies and programs. Therefore, there is a need for NGOs to augment the environmental efforts of national governments. Schubert clearly states, “The insufficiency of resources available to most policy makers in Asian nations calls for, even necessitates, the active inclusion of NGOs in policy formulation, enactment and enforcement” (p. 242).

Although Schubert is referring to a broad view of NGO roles in developing effective environmental policies, there are definite implications for NGO roles in more specific environmental education programs. NGOs can provide resources to greater the probability that community-based environmental programs will be effective agents of change. Ideally, educational programs can promote attitudinal and behavioral changes to facilitate policy formulation, instigate action and reduce the burden of enforcement.

6.1 Invasive or Noninvasive?

One issue relevant to the role of NGOs is whether the actions of a particular NGO are invasive or non-invasive. Fernandes (1985) provides a list of organizational problems that many NGOs have. These include, designing goals to satisfy budgets and funding rather than vice versa; poorly paid staff and inter-organizational communication problems. Proposing solutions to these problems is beyond the scope of this paper; however, it is necessary to address criticisms of NGOs that are relevant to the theoretical design of eco-centered community-based environmental education.

Some critics of NGO involvement in local community concerns may argue that many NGOs are actually products of governments that are set up to implement official agenda (Quizon and Reyes as cited in Toh and Floresca-Cawagas, 1997). The argument would be that governments use NGOs to disguise political agenda. Similarly, Toh and

Floresca-Cawagas (1997) argue, “There are differences in world views and motivations among NGOs, some of which may not be authentically dedicated to the well-being of their constituents” (p. 534). If NGOs have goals that do not address the real needs of the community, it is likely that their involvement will be seen as an outsider attempt to control local social institutions. When locals view NGOs as outsiders, resentment will dilate and participation will wane.

It is important that NGOs avoid becoming invasive in their involvement. This is especially true for NGO support in establishing community-based educational programs in rural areas. In addition to the theoretical reasons already discussed in this paper, there are the practical reasons of workability for NGOs to maintain a non-invasive approach to implementing educational programs. In specific reference to non-formal education, Van Riezen (1996) reasons that since specific groups have specific needs, the curriculum used in an educational program must relate to the needs and resources of the local community. People in rural communities will not profit from curriculum and textbooks designed for people in cities or more affluent countries. Van Riezen explains that avoiding invasive involvement includes using the vernacular as a way of showing respect for the local culture. The inclusion of local culture sends a message to communities that their participation is valued (Cole, 2007). This gives community members a sense of worth and purpose that encourages active participation.

McCormick (1993) gives two factors that influence the effectiveness of NGOs. These, too, apply to NGOs in general, but also have significant relevance to community-based educational programs. The two factors are:

- 1.) Their political influence (as measured by the level of political support they enjoy, and their ability to use political structures effectively).
- 2.) The importance of having clearly defined constituencies and clearly defined avenues through which to make their appeals and to influence government. (p.142)

In their discussion on people-centered education in the Philippines, Toh and Floresca-Cawagas (1997) suggest four themes. Consideration of these four themes allows community educators and NGOs to negotiate how to maximize the positive impacts of McCormick’s two factors. The four themes are, a pedagogy of dialogue; a praxis of critical empowerment; active nonviolence for peace and justice; and walking in solidarity. The first theme can begin to define participants, methods and approaches to

achieving the goals of a community-based education program. As previously discussed, empowerment, the second theme, can lead to political clout beyond the local level. Thus, the first two themes address McCormick's second conditional factor for effectiveness. The second, third and fourth themes are all significant in optimizing the political influence that an NGO backed grassroots environmental program might have and how such a program can foster community empowerment.

Carefully weaving all four of the themes into the planning and implementing of community-based environmental education programs is beneficial. Inclusion of these themes will help to strengthen ties between any supporting NGO and the community. Inclusion of these themes will help to ensure a greater effectiveness in achieving the goals of a program.

7. Examples of Environmental Non-Formal Education

Throughout the world, there are countless grassroots non-formal environmental education programs. Some have been successful while others have little impact on improving conditions.

Taylor et al (1993) describe environmental movements in several countries that have had varying degrees of success. In the Republic of the Philippines, historical and cultural variables may facilitate the workability and success of environmental non-formal education. A history of political struggle has laid the groundwork for grassroots movements in the Philippines. The 1986 revolution and subsequent ousting of Marcos are evidence of the power and possibilities that solidarity provides in the Philippines. This is important in the development on environmental non-formal education programs because "few environmental movements in less affluent countries have their primary origins in ecological concerns or focus exclusively on environmental issues" (Taylor et al, 1993). Since grass-roots movements have an anchored base in the Philippines, the move to local, proactive environmental programs is more natural than in countries with centralized governments.

Women also play an important role in Philippine environmental movements. Through their participation and involvement, they are able to address many environmental issues that parallel concerns about their position in society. It is women who may be affected most severely by environmental degradation's effects on the job market, economy and demographic trends. Despite any traditional or historical

subjection of women in the Philippines and other countries, many of the environmental movements are “essentially women’s movements” (Taylor, et al, 1993).

Perhaps, the most impressive example of coral reef management in the Philippines is Apo Reef (Bagarinao, 1998; Hinrichsen, 1997; Alcala and Russ, 2006). By the mid-1980s, the reef was almost totally destroyed by villagers’ inappropriate fishing practices. The use of dynamite, cyanide and destructive nets to eke out a living from the failing reef nearly destroyed the island community’s livelihood. Apo reef has made a dramatic comeback over several decades due to proactive reef management by the local community and experts from Silliman University in Dumaguete. The villagers have learned sustainable practices that are essential to maintaining healthy reefs. Alcala and Russ (2006) indicate the rippling effect from the Apo Island success has motivated other communities in the Philippines to form community-based education initiatives:

The work that began with social preparation, community organization, environmental education, and capacity building at Sumilon and Apo islands in the 1970s has acted as a major impetus for larger, more holistic and coordinated programs. (p. 52)

Since community-based education involves people in social dialogue, it follows that social interaction should be a vehicle that disseminates knowledge and information to initiate behavioral changes. One interesting example of how social interaction can play a role in the dissemination of information about environmental concerns comes from a case in Thailand. Sudara (1999) writes about how Buddhist monks were able to use their important roles in society to become vehicles in consciousness-raising efforts about environmental concerns. Several environmental NGOs recognized the connection between Buddhism and respect for the natural environment. Accordingly, they helped to organize seminars on environmental awareness for monks. The monks, in turn, incorporated newly gained knowledge into their teachings to people in their local areas. In addition to raising consciousness about protecting natural resources, the monks’ efforts prompted the King of Thailand to declare over one million trees sacred, thus saving them from the saw.

This spread of environmental information via respected community members exemplifies how NGOs can utilize existing community networks as vehicles to promote learning about socially valued issues. The motivation in this case could be that the locals expected positive feedback from the monks as respected members of the

community, or the desire to conform to Buddhist values, or positive feedback in the form of acceptance from other members of the community. Cross (1981) maintains that societal motivation can be an important factor for encouraging adult learners to be more cognizant of issues relating to energy or ecology. Rotter (1982) claims that although the need for social approval varies among individuals, the strength of the need is enough to motivate most people to conform to group values. In the Thai example, societal motivation and social approval may be perceived or actual positive feedback from the monks or other members in the community.

An example from an environmental program in Indonesia helps to illustrate how observation and higher levels of social interaction combine to influence proactive environmental attitudes and behavior. Research describing the campaign to promote cleaner coastlines on the island of Ambon in Indonesia reveals that observational learning alone is not enough to sustain long-term behavioral change (Uneputtu, Evans & Suyoso, 1998). The local government on the island combined forces with two NGOs to organize a beach clean-up event for members of the coastal villages. The organizers believed that modeling alone would not motivate villagers to keep coastlines clean so they organized a one-day community event with an opening ceremony, speeches about the importance of the marine environment and a group clean-up effort. The mix of villagers participating in the event included community leaders, health department officials, students and common villagers. After clean-ups in four villages, the organizers held a seminar on marine pollution for about 100 government officials.

The results of a monitoring study after the event showed that the clean-up activity had short-term effects (up to six months) on keeping shores clean. During several months after the clean-up, monitors found that litter was being removed from adjacent beaches by those not directly involved in the clean-up event. Although the researchers do not speculate on a reason for this, it seems likely that villagers from those beaches may have witnessed or heard about the clean-up and showed efforts of trying to emulate that behavior. In spite of producing only short-term results, this project was successful in raising consciousness about environmental problems and solutions, a necessary step to effect change in the legislative decision-making process. In the months following the clean-up event, the city of Ambon implemented a plan to reduce litter on shores and beaches.

Salehudin, Prasad and Osmond (2013) examined several local community empowerment initiatives at resorts in Malaysia. Their research was specifically related to tourism and how resorts and local residents try to create symbiotic relationships to

maintain sustainable development and conserve environmental resources. They closely examined the impact tourist resorts have on the lives of local residents as well as the surrounding environment. They noted that some degree of control on the part of the local community and an equitable sharing of benefits are factors likely to affect the sustainability of tourism developments. The researchers found that selected resorts had initiated local community development and helped to increase local employment. In terms of environmental conservation and preservation, most of the resorts had implemented environmental conservation and rehabilitation programs that aided local communities in protecting their environment.

Tidball and Krasny (2010) suggest approaches to community-based environmental education in urban areas include an integrated social-ecological systems perspective in which human activities may have positive outcomes for the environment. Examples of such activities are urban community gardens, community forestry, and similar community-based stewardship or civic ecology practices. They reason that with these types of activities, local citizens act as stewards of their local environment. Consequently, these activities effect change in urban systems through creating more vegetation, which in turn generates ecosystem services such as the provision of food, mitigation of stormwater run-off, and educational opportunities. Additionally, community-based environmental activities are likely to have additional benefits for human health and well-being as participants have greater understanding of urban ecology while creating a sense of place, and spending more time in the outdoors.

8. A New Environmental Paradigm

Environmental education is emancipatory in that it leads to the reproduction of environmental values. The passing on of environmental values from one generation to another begins the process of structuring a new social paradigm. Within the theoretical framework of the empowerment process, environmentally based non-formal education can change the way people think about their relationship with nature. Lester Milbrath (1989) aptly argues for the need to promote new social paradigms that focus on sustainability and reconsider the way society dominates the environment. Some of Milbrath's ideas are radical in that they require a massive restructuring of political institutions and society. Still, some of Milbrath's other points are relevant and can be addressed by environmentally based non-formal education programs. These points

include a shift toward placing a higher valuation on nature, carefully planning action to avoid risks and limiting growth.

Through participatory resource assessment and consciousness-raising about local environmental issues, non-formal environmental education can help citizens realize the dependence humans have on the environment. This creates a more holistic perspective that tightens the relationship between humans and nature. The ultimate goal here, however, is to encourage behavior that favors environmental protection over economic growth. Economic growth is not necessarily harmful; this simply means that environmental protection should be a priority. To maintain a balance, careful planning with local participation is needed. Planning should consider all short-term and long-term risks. Education is an important element in the planning process because knowledge allows communities to make informed decisions about their lives. A crucial element of informed planning is the ability to realize the limits of growth. Thus, one major goal of community-based environmental education programs is to determine what types of growth could lead to the degradation of valuable environmental resources.

9. Conclusion

Environmental education generates a collective effort to recognize and to dismantle social structures and learned practices that threaten common environmental resources. Environmental education facilitates the understanding of how financial and social structures recapitulate the oppressive cycle of poverty. That knowledge and understanding can empower community members, as grassroots participants, to make appropriate decisions for sustainable community development. Eliminating behavior that threatens the sustainable use of community resources and replacing it with more environmentally symbiotic practices is an essential element of the empowerment process. As environmental information is disseminated via social interaction and involvement in community-based environmental education programs, individual and community awareness expand to promote a reactionary change in the status quo through collective effort. Collective effort to instigate change is evidence that a community is empowering itself through responsible participation in the decision-making, planning, implementing and monitoring phases of the environmental resource management process.

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