

**Education for Environmentally Sustainable Development in the Pacific Islands:
Thoughts and Ideas for Teachers**

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Introduction

This paper is an adaptation for a wider Pacific Island audience of a discussion paper entitled "Important ideas that could provide a basis for education for environmentally sustainable development in Fiji", delivered at The Serua-Namosi-Beqa-Naitasiri Seminar for Head Teachers and Managers, organised by the Fijian Teachers' Association, at Education House, Suva on 29 July 1999.

The purpose of the paper is to provide some ideas on improving the awareness of our students, and teachers, as well as the general public and policy makers, about:

- 1) the importance of environmental education for Pacific Island students, many of whom, in the rush for modern development and cash employment, have lost contact with their island environment and their traditional environmental knowledge;
- 2) the importance of the Pacific Island environment and our plants and animals as a basis for sustainable economic and cultural development;
- 3) how environmental education in the Pacific Islands can be made more interesting, more relevant and more effective, by focusing on the local environment and using local community experts.

Importance of teaching about our local environment

Many of the Pacific Islands' brightest young students and teachers now live in urban areas. They are increasingly exposed to an urban, often foreign, curriculum. They experience increasing exposure to television, computers, movies, computer games, modern sports, and other urban-based activities, including the use of alcohol and marijuana. Much of their education is in a foreign language. Most of them spend very

little time in their rural Pacific Island environments with the older people who know these environments. Most of their daily needs are now obtained from stores and the cash economy (e.g., imported foods, drinks, medicines, perfumes, presents, games, fuel) and not from their gardens, forests, reefs and the sea.

As a result, many of our young men and women have very limited knowledge of their local rural environments and the traditional science of their traditional nature-based societies. They have become an urban generation divorced from their island environment and separated from their traditional elders and the local languages associated with the "living island environment" – their lands and waters. Few young people in urban areas know the names, stories, uses, functions and language associated with their island ecosystems and habitats and the plants and animals that live there. There is, therefore, a need to consciously expose our children (and teachers) to the living Pacific Island world around them, and to improve their understanding and appreciation of it. This is the world that most of their societies will need to depend on for most of their economic, spiritual and cultural needs as we enter the 21st century.

It is not only our urban students and teachers who would benefit from more relevant environmental education. Pacific Islands rural school children would also benefit greatly from teaching and materials written (in both English and local Pacific Islands languages) about their local land and marine environments and the plants and animals that are familiar to them. Understanding important environmental and scientific concepts would be made easier for both students and teachers. The local island environments and resources are the sources of most of their cash and non-cash income. They are responsible for maintaining the quality of life that makes Pacific Islands rural areas among the best places to live on Earth and among the most popular tourist destinations. Focusing

environmental education on them would help promote the responsible use of these resources.

Teaching about the local environment in local languages would also allow traditional elders, our traditional environmental scientists (both men and women) to play a more active and proud role in the education of our children. From my experience, teachers would also enrich their knowledge and teaching effectiveness by involving local community leaders in both teaching and the preparation of teaching materials. At present, many of our most intelligent and knowledgeable parents, grandparents and village elders feel marginalised by a foreign curriculum and a foreign language. They no longer play the roles that they played in the past in the basic environmental and science education of our children.

Recent studies show us that, just as there are both good or serious scientists and not-so-good (not-very-serious) scientists in urban areas and in overseas countries and universities, there are both good scientists and not-so-good scientists in Pacific Island rural areas. Many of these “good (serious) scientists” who have the most in-depth knowledge of their environment and cultural traditions are now dying without being able to pass on this information to future generations. In some Pacific Island countries, such as Nauru, Niue, Tonga, Tokelau, Samoa and the Cook Islands, the current generation of older people may be the last generation to have in-depth information on traditional uses of the environment and the names of the less well-known plants, animals, fish and shellfish that used to be important to their communities before people began to depend on imported substitutes to satisfy their needs (e.g., for medicines, snack foods, emergency foods, drinks, clothing, rope, packaging or wrapping, tools, fishing equipment, boats and other culturally important products). This is information that has been collected over thousands of years by countless generations of Pacific Island men and women who have lived in close contact with the land and sea. Allowing these people to pass away without passing on their cultural legacy would constitute an environmental and cultural tragedy. Involving these local experts in our formal education system would help to ensure that the valuable knowledge they hold is not lost forever.

Guiding principles for environmental education in Pacific islands

There are a number of guiding principles that could be followed in the strengthening of environmental education in the Pacific Islands. Some of these are listed below.

- We must stress that an improved understanding of our island environment is essential if we are to successfully protect it as a foundation for sustainable development in both urban and rural areas.
- Environmental education should not focus only on natural environments and ecosystems, but also on cultural environments and the plants and animals that live there (e.g., farms, home gardens, pine plantations, grazing lands, fishponds) and people’s relationships with these environments. In the Pacific Islands, people and their ancestors and future generations were always seen as part of their local environment (e.g., *vanua*, *fonua*, *fanua*, *whenua*, *te aba*, *ples* or *kastom*, depending on where you come from) and not as separated from it.
- We must stress that the easiest way to protect our plants and animals is to protect the places (habitats and ecosystems) where they live (e.g., our mountains, forests, rivers, agricultural areas, villages, coastal forests, beaches, lagoons, reefs and open ocean).
- We should stress that we must protect and learn about not only the large plants, animals, fish and other marine animals that are familiar to us, but also the thousands of very small plants and animals that live on our islands, in our rivers and seas, and on our reefs. These smaller plants and animals (e.g., beneficial insects, crabs, corals, medicinal plants, seaweeds and mushrooms) play very important roles in keeping our countries healthy and clean.
- Environmental education should focus on Pacific Island plants, animals, places and people and how they have lived together peacefully in the past, and how they can continue to do so in the future.

- Environmental education should focus on plants or animals that have national, spiritual, cultural or economic significance.
 - Environmental education could focus on plants or animals or habitats that are found in a number of different Pacific Island countries so students can learn about other Pacific Island countries. This could also include learning about the plants and animals that are valued by Indian, Chinese, European and other immigrant communities in the Pacific Islands.
 - Some focus should be placed on natural events that affect our environments and their plants and animals, events such as tropical cyclones, droughts, tidal waves, tsunamis, floods, fires and pest outbreaks.
 - Some emphasis should be placed on the major human threats to the Pacific Island environment e.g., global warming, the breakdown in the Earth's protective ozone layer, pollution, nuclear radiation, the use of pesticides, unsustainable fishing methods and other inappropriate technologies.
 - We must stress that, although we can continue to use many of the plants, animals, fish, and other living things for food, fuel, construction materials, boatbuilding, medicines, leis, garlands and many other purposes, we must not be selfish and use too much, or destroy too much. If we continue to be selfish and use unsustainable practices, future generations will not have the same resources for their development (or their education!). We must either replace what we take or let the plants and animals reproduce before we take more. We must see our environment and plants and animals as a "living bank account" that will continue to grow and from which we can continue to make withdrawals, if we use it sustainably and wisely. If we use it selfishly or unwisely, it will lead to "environmental bankruptcy", just as the unwise and selfish use of urban bank accounts, loans and money has led to the bankruptcy of many important Pacific Island people and their governments.
 - Some focus should also be placed on communities and countries (e.g., some countries in Asia and Africa) that have adopted unsustainable ways of using their environments and have selfishly over-exploited their plants and animals and destroyed the places where wild and domesticated plants live by overfishing, destroying native forests, overcropping farm lands, using fish poisons and other destructive fishing techniques.
 - Educational materials should always try to include some traditional knowledge and, where appropriate, local language and names for animals, habitats, places, people and systems for using our living resources.
 - Going on fieldtrips or field exercises and doing associated assignments or tasks are among the most effective and enjoyable ways of teaching about the environment. Local experts should, where possible, be used as resource persons, teachers, "expedition scientists", etc..
 - Environmental principles and content should be included in a wide range of appropriate subjects, and not just within the geography, social science, biology or general science curricula. The use of information and stories on Pacific Island environments, how they function and why they are important to Pacific Island societies could significantly enrich English, home science, technology, art, music, physical education, economics, history and many other subject areas, making these subjects easier to digest, more interesting, more exciting, and more meaningful to Pacific Island students. For example, part of physical education could include an overnight camp on a small offshore island, a long hike to the top of a nearby mountain or hill, a long beach walk or a visit to a national park and the teaching of survival skills.
- Suggested topics or concepts that could help our children appreciate and understand our local environment and improve their understanding of environmental science**

Listed below are only a few of the many important topics or concepts that could be included in curriculum materials to 1) help our children appreciate their lands, rivers and marine environment and understand why they should protect them and use them sustainably and 2) improve their understanding of some of the basic concepts and principles of modern environmental science.

- **The importance of plants as producers:** Materials or activities focusing on why plants are so important to all other living things, e.g., the concept of plants being the only living things on the land and in the water that, through the process of photosynthesis, can use the energy of the sun, along with water, carbon dioxide and minerals, to make food and other products, providing the food needed for other living things.

The following plants and animals can be studied in terms of the roles they play in our island ecosystems and their value to Pacific Island people:

1. **Land plants:** Materials or activities focusing on some of the important types of land plants: trees, shrubs, vines, soft plants/herbs, grasses, ferns and mosses.
 2. **Aquatic and marine plants:** Materials or activities focusing on important marine plants (sea grasses, seaweeds and small algae) that are the base of all marine food chains in the Pacific Islands.
 3. **Land and marine animals with backbones (vertebrates):** Materials or activities focusing on well known land and marine vertebrates (both wild and domestic), including fish (true finfish, eels, sharks and rays), amphibians (frogs and toads), reptiles (turtles, snakes, geckos and lizards), birds (seabirds, land birds), and mammals (domesticated and wild land mammals: pigs, horses, dogs, rats, bats, mongooses, goats, possums, etc. and marine mammals: whales, dolphins, and dugongs).
 4. **Land animals without backbones (land invertebrates):** Materials or activities focusing on important invertebrates such as insects (e.g., ants, butterflies, moths, beetles, flies, cockroaches, centipedes, spiders, worms, snails, slugs).
 5. **Marine animals without backbones (marine invertebrates):** Materials or activities focusing on the many marine invertebrates (e.g., shellfish, corals, crabs, lobsters, prawns, sea urchins, starfish, sea anemones, bêche-de-mer, octopi).
- **Dispersal of plants and animals:** Materials or activities focusing on how plants and animal (including land, freshwater and marine animals) get from place to place and how they can get from larger continental areas to islands or from island to island.
 - **Succession (how habitats change over time and how the original plants in a habitat are replaced by new, more competitive, plants and animals):** Materials or activities focusing on how new islands, areas that have been destroyed by volcanoes or landslides or old garden sites, or even plain earth in a box or bottle will change, with the first plants and animals (pioneer plants and animals) being replaced over time by other more complex, often larger, plants and animals.
 - **Food chains and food webs:** Materials or activities focusing on how different plants and animals join together in food chains or webs, and what will happen when something happens to one of the plants or animals in the food chain or food web. Students could be asked to study food chains or food webs from both the land and the marine environment.
 - **The importance of nutrients and the cycling of materials:** Materials or activities focusing on the substances or nutrients needed by land and marine plants and animals to remain healthy, and how nutrients can be protected, replenished or recycled so that our environment and its plants and animals can survive and reproduce.
 - **Life cycles of plants and animals:** Materials or activities focusing on the interesting life cycles and seasonal growth, reproduction or migrations of some of our more important

animals and plants (e.g., mosquitoes, corals, mullet, lobsters, seabirds, whales, yams, bananas, fruit trees).

- **Types and importance of different habitats or ecosystems:** Materials or activities focusing on important habitats or ecosystems, such as inland forests, mountain forest, coastal forests, mangroves, rivers, seagrass beds, coral reefs, lagoons and the open sea, and why they are so important to both humans and the plants and animals that live there. We should try to bring these habitats alive for our students and give them 'personality'. We can take students to some of these habitats so that they can write their own stories and do their own scientific studies.
- **Close relationships between people and their living world:** Materials or activities focusing on the close relationships and friendships that Pacific peoples have, and need to have, in order to live in harmony with their plants and animals. This could focus on ancestral or spiritual plants, totems, mythical plants or human personalities (e.g., fishers, yam farmers, medical practitioners, people who made leis and garlands or traditional ceremonial clothing), and people that had *mana* because they were the custodians and protectors of our living world, and were the teachers who passed this priceless knowledge on to succeeding generations.
- **Importance and diversity of local food systems:** Studies could be carried out on edible plants that grow wild, cultivated food crops and sea foods, why they are nutritionally sound, how they are usually pollutant and chemical free, and how the increasing consumption of imported foods has led to serious health problems in the Pacific Islands (e.g., heart disease, stroke, diabetes, cancer, obesity, anaemia and dental disease).
- **Destruction of the living world by humans:** Materials or activities focusing on how our living world can be, and has been, destroyed by non-caring, selfish, ignorant societies that have lost touch with and lost their love of the living world.

Conclusion

These are only some of the thoughts and ideas that could be used to enrich environmental education as a basis for promoting sustainable development in the Pacific Islands. There are, of course, many other guiding principles, topics and concepts that could be included. If, however, we follow some of these guiding principles and include some of these concepts in ways that improve our children's and grandchildren's knowledge and appreciation of both traditional and modern science, then environmental education and a wide range of other subjects can once again become exciting and useful subjects for the Pacific Islands' urban and rural children. If we fail to do so, our children will have to face an unsure future in a rapidly modernising and globalising world that could leave Pacific Islands' people without their traditional treasure chest of knowledge about their living island world. Without this knowledge, sustainable economic and cultural development in the Pacific Islands may be impossible and the "Pacific Way", as we know it today, may die with our elders as they pass on, carrying this treasure chest with them to their ancestral homeland. This would amount to environmental, cultural and educational bankruptcy, something we, as teachers, cannot afford!

For Further Reading:

- Thaman, R.R. 1987. Environmental education as a basis for ecological development in the Pacific Islands. *Directions* 9(2): 89-102.
- Thaman, R.R. 1993. Children and the future of the Pacific Islands. *Directions* 15(1): 1-18.
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Thaman, R. R. 1996. Distant fields: The relevance of field studies for distance education in the Pacific Islands. In Ravaga, V., Vatucawaqa, L., Hola, L., Faasalaina, T. and Singh, V. (eds), *Negotiating the distance: A collection of experiences in teaching extension courses at The*

University of the South Pacific (Celebrating 25 years of distance education at The University of the South Pacific). University Extension, The University of the South Pacific, Suva. Pp. 125-142.