

An Ecological Educational Opportunity: The Aquarium

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ABSTRACT Education about ecology need not be complex nor neglected. A simple aquarium, used effectively in an educational programme, can offer opportunity to participate in a wide range of activities which lead towards ecological understanding.

Finding the key to a valuable ecologically based, learning opportunity is not simple, but possibilities do occur. When one turns up, seize the chance and take advantage of it! At least that is the philosophy and practice of my neighbours, Betty and Tom Jones and their daughter Annie (pseudonyms). When their daughter Annie missed a year's schooling because of mononucleosis, she lost out in the competition for grades, knowledge, friends, and self-esteem. Antibiotics used in treatment lowered her immunity to colds, the flu, infections, viruses and every other ailment that circulated. Though the family talked about home education when Annie was young, the opportunity to teach her at home was thrust on them. But where to begin, and how to, became real questions.

Fortunately, a key turned up. This story centres around their efforts to create an ecological learning experience and environment *via* an aquarium.

BACKGROUND

The Jones moved to New Zealand in the early 1980's, partly in response to being near Three Mile Island in the United States and partly because of a good job offer. Annie willingly gave up her pets, school friends, and neighbourhood in return for a new home, the excitement of travel to a new country, and a promised pet. Snowflake, a Romney lamb, joined their family almost immediately upon arrival and became a loved pet for many years.

Annie flourished as did the Jones in New Zealand, until mononucleosis kept her home for an entire school year. For the next year, she attended school only rarely. Because of her weakened condition, she could not keep up, lost interest, and felt very frustrated.

Betty Jones worked at a local social agency, while Tom taught at a nearby University. They commiserated with Annie, but worried that she was losing ground in the race to learn and achieve. She could not get interested in much of anything.

THE AQUARIUM

I recall talking with them as a neighbour about some of the positive family experiences they had over the preceding years. Two events stood out. They visited Hanuma Bay near Honolulu, Hawai'i, and swam happily amidst a huge school of fish. The warm waters, coral reef (even if it was largely dead) and fish feeding tourists contributed to a marine environment that attracts large numbers of beautiful tropical fish. Annie loved it and learned to snorkel well in just three days.

Another special family venture was near a coastal reef on the West side of North Island, New Zealand. Again, this marine environment had many fish, intriguing sea creatures, and pleasant memories for all. The aquarium, based on these experiences, was Annie's idea—"an aquarium would be nice to look at when I am lying in bed sick," she said. "Just maybe," Betty and Tom agreed, "an aquarium could serve as a focal point for more learning opportunities?"

Annie, fully entranced by the idea, began her odyssey into learning when the Jones came home with an aquarium from a garage sale. Since then, they had so many adventures and learned about so many new topics that it becomes difficult to even list them. The aquarium has indeed become a focal point. I should write "the aquariums" for they now have at least four!

Some of the home education subject matter they covered include:

Biology: The specific species of fish, comparisons with other types of species, behaviour, habits, needs, life histories, feeding and nutrition, diseases, plants, relationships of fish with plants, and use of medicines.

Physics: The size of the aquarium, measurement of volume, calculating weight of water, effects of natural *versus* artificial lights, the stand and its construction to support the weight of the tanks.

Chemistry: The nature of water, pH and chemicals, pollution, temperature, chemical balance, cleanliness, filters, oxygen content and effects of evaporation and additions.

Economics: Costs of fish, costs of equipment, comparative shopping, potential profits for fish breeding and sales (limited but possible), value of fishes and tanks, watching for bargains.

Information: Keeping lists, maintaining a diary and a record of unusual events and behaviours, recording, making use of what is noted, and use of library resources.

Art: Drawing pictures of fish and seaweeds or plant life, photographs of fish.

Social: Attraction of visitors and guests to the aquarium, joining the local aquarium society, interacting with others who are interested in fish, visiting the public and university libraries for books on fish and aquariums.

Political: Negotiation with parents for more fish and supplies, tanks, equipment, and so on. Learning to complete tasks before receiving rewards.

Natural History: Exploration of a nearby stream to seek, catch, and identify small fish and various other creatures, learning about the habitat, reproduction in fish, relationships between fish and plants, and ideas about stream ecology.

Psychology: Understanding death, coping with grief, learning to make rational decisions in the fish store, how to temper enthusiasm with reality and constraints.

Reading: A continuous flow of books from libraries, the aquarium society, and friends, reporting information learned to others *via* letters, reports, or orally.

Mathematics: Records of costs of fish, types, length of survival time, financial plans, comparative costs at different stores, and an understanding of values.

Sex and Reproduction: After a couple of the guppies had babies, Annie took the initiative to set up a breeding tank for two Siamese Fighting fish (bettas). The resulting babies were then carefully raised and a large number survived to be

sold or traded. Her accomplishment was recognized at the local Aquarium Society, and led her onwards to enter a competition. She received a prize for her tank, in competition with many others.

DISCUSSION

Obviously, the aquarium has helped the Jones deal with what was a difficult and frustrating situation in a manner which was creative and ecologically sound. The aquarium provided a focal point with opportunity to make use of enthusiasm at reasonable cost and with relatively little energy. It served its purpose. The Jones took the opportunity further, for they insured that the activities were integrated into an ecological whole.

One of the best features of the venture was that Annie became largely self-directing. She took initiatives in development of new ideas, and consistently took risks to advance her own learning. She became fully responsible for the feeding, cleaning, replacement of water, and numerous other tasks involved. Annie led the way and became confident of her own skills and abilities as a result of her experience.

The adventure, however, offered significantly more than just skills and knowledge. The aquarium ensured that a holistic and ecological learning experience resulted as well. Each of the parts of the many learning experiences fit, however neatly, into a larger ecological framework, symbolized by "the aquarium," but going far beyond into and throughout the local community. Annie came to appreciate the inter-relationship of the many parts, and now easily generalizes what she has gained to spaceship earth and the human predicaments we face with our own "life-space aquarium." The family as well learned in a vivid and powerful way about the essence of ecology and environments.

Annie is back in school most days now, and continues learning, feels good about herself, and remains enthusiastic. She has thought seriously about becoming a marine biologist. She recently received a gift of a microscope from a friend, and is beginning to explore further into the environment, nature, and ecology. As parents, Tom and Betty are pleased with their family venture into ecological education for the aquarium has made them richer, deeper, and far more aware of the natural world. They enjoyed the processes of working, sharing and learning together.