



*Singapore
Sensory
Trail*

a nature experience for
visually impaired visitors

新加坡自然

Visitors take time to explore a mollusk.
Mandarin Chinese characters provided
by Jasmine Chen.

Richard Frazier



ON APRIL 15, 2000, THE HONORABLE STEPHEN GREEN, U.S. Ambassador to Singapore, officiated at the opening of a sensory nature trail for the visually impaired on Pulau Ubin. The fact that an American official participated in a ceremony devoted to a special place in the hearts and heritage of Singaporeans is remarkable and indicative of the rich origin and evolution of the project. My participation, both professional and personal, has led me to reflect on many issues connected to environmental education in the local community.

I have spent much of my professional life overseas, teaching science in middle schools that serve expatriate families. In all cultures, adolescence is a poignant stage of life. For the expatriate child, this transitory period is fraught with even more difficult questions of personal identity. For expatriate children, identity within the community is particularly vexing because of their ambiguous connections to the local community. My orientation toward teaching and learning tries to address this through an educational ideology based on firsthand experience and inquiry. This manifests itself in efforts that bring students into direct contact with the local environment.

A RICH ENVIRONMENT FOR SENSORY LEARNING

Tropical Singapore is a joy to a science teacher interested in employing local resources in an educational program. Locally these include tropical rain forest, mangrove swamp, and coral reef, all just a short distance beyond the gates of the Singapore American School. Early efforts to bring students and nature together began through a middle-school ecology club sponsored by teachers. As members of the Nature Society of Singapore (NSS), the sponsors already knew of many interesting sites through NSS excursions. They organized educational trips for the club members. These extracurricular activities led to the inclusion of local environs in the science curriculum.

Efforts to make the local environment a focus in both curricular and extracurricular activities kept the students and teachers interested in discovering new stories, places, and ideas. Members of the club enjoyed creating fund-raisers for causes worthy of more serious attention. These included service projects such as cleaning up beaches, trails, and parks. Educators tried to emphasize other local efforts and causes in hopes of supporting connections the students could make with their surroundings.

As early members of the middle-school club entered high school, they maintained a devotion to the environment through participation in a similar high-school club. After raising substantial funds through “walk-a-thons” and “Earth-fests,” the high-school club twice donated money to the Nature Society of Singapore. The honorary secretary, Evelyn Eng-Lim, accepted the donations with a provision disguised as a question: “Thank you very much for the money. Now, how will you spend it?” The students were not “let off the hook” through their donations; rather, they were recruited into taking action.

感 官 步 道



PROVIDING ACCESSIBILITY TO NATURE

In 1995 Eng-Lim contacted the sponsor and officers of the high-school club, SAVE (Students Against Violating the Environment), with an idea. The island of Pulau Ubin was recognized as an important center of biodiversity in Singapore during a period of intense urban planning based on a growing population and the need for adequate high-density housing. Pulau Ubin means “granite island.” The terrain includes granite gravel, boulders, and quarry walls. It retains a rural and rustic charm of an older Singapore. The island resembles many in the Malay Archipelago, covered with village and forest gardens, plantations, rain forest vegetation, mangrove swamps and shores, and fish and prawn farms. The island remains home to species no longer found on the main island of Singapore. Seeing Oriental pied hornbills, red junglefowl, rare bats, and wild pigs in the vicinity of one of the most densely populated cities in Southeast Asia is thrilling.

Eng-Lim felt that preserving Ubin was an important step to make during efforts to save natural areas from development. Already many citizens enjoyed regular excursions to Pulau Ubin. Yet one segment of society did not enjoy easy access to the island: the disabled. The Singapore Association for the Visually Handicapped (SAVH) was contacted to assess the interest that exploration and interpretation of nature would hold for members. SAVH received the proposal with enthusiasm. The “Sensory Trail” project to make nature accessible for the visually impaired was born.

Initial planning involved two emphases, the first being the trail itself. NSS members and its educational officer helped design a trail and provided assistance in plant identification. Members of SAVE selected interpretive stations along the trail and created descriptive accounts that visually impaired visitors would find interesting. Watching the students on site made the project incredibly special to me. Having spent hundreds of hours as a teacher encouraging students to observe plants and animals in the local environment, I viewed students’ work from a



Embarking on the ferry ride offered a challenge and the opportunity to bond.

unique perspective. The quality of their focus while reconceiving the world for the blind went far beyond typical classroom experience.

Students who had avoided close observation in class before were now touching, smelling, and listening. They were filling descriptions with new realizations. Research for the stations resulted in pages of laminated site details used by sighted guides to interpret textures, shapes, and smells of interesting wild plants (many that are used in popular foods and medicines) for the visually impaired. Shells, rocks, local bird calls, sounds of the sea, and the odor of the mudflats became features of the tour as well.

Staff and members of the Singapore

Association for the Visually Impaired provided the second focus of the program. Workshops for students discussed the nature and range of visual impairments, and offered techniques for assisting visually impaired visitors. Empathy training included students leading students while blindfolded. The first outing placed two student guides with each visually impaired guest. One student would interpret the natural features of the trail, while the other served as a physical guide.

A MULTIFACETED ADVENTURE

Fifteen guests from SAVH went on the first outing. Teachers from the Singapore-American School, members of the Nature Society of Singapore, and members of the

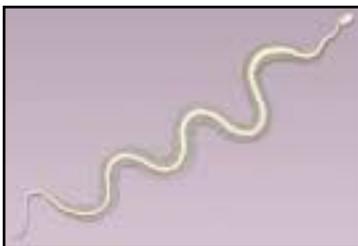
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high-school SAVE club accompanied guests to Changi Village, where “bum-boat” ferries made the ten-minute trip to Pulau Ubin. Embarking onto and disembarking from the boats on rough waters became a bonding adventure demanding both courage and faith for the guides and their visually impaired acquaintances.

Once ashore, the groups of students and guests began to experience Pulau Ubin’s beauty. The trail followed the shore with its sound of gentle waves and soon turned into an orchard typical of rural Southeast Asia. The trail took walkers beneath a tickling curtain of adventitious roots from a giant fig. Once in the orchard, the visually impaired guests found themselves on a delightfully nostalgic trek as they recognized through smell and touch prized plants such as rambutan, jak-fruit, Malay gooseberry, banana, pineapple, durian, starfruit, mangos-teen, betelnut palm, coconut, guava, and more. The refreshing scent of a piece of crushed lemongrass was followed by a discussion of how tapioca roots and leaves had become a survival food during the Japanese occupation of World War II. A cool shade greeted the visitors as they entered a fragment of secondary rain forest. Along a mangrove shore, the prickly fronds of pandan or screwpine were felt, along with the viviparous floating fruits of prominent mangrove species. The tactile geometry of shells, the sculpted texture of mounds built by the “mud lobster,” the sucking sounds of mudskippers moving over the tidal flats, and the “stitched” call of the tailorbird all provided a sense of the diverse animal life found in the mangrove. The diversity of bird life on Ubin adds great value to the place, and we always felt lucky when we heard the gurgling vocalizations of the strawheaded bulbul, the abrupt crowing of the red junglefowl, or the cough of the Oriental pied hornbill.

Afterward the groups stayed together for lunch at a Singaporean food court. For the next three years, trips followed this format: bus rides to the jetty, boat rides to Pulau Ubin, guided trail exploration, and lunch at a local restaurant or “hawker” stall.

AFFECTING INTELLECT AND EMOTIONS

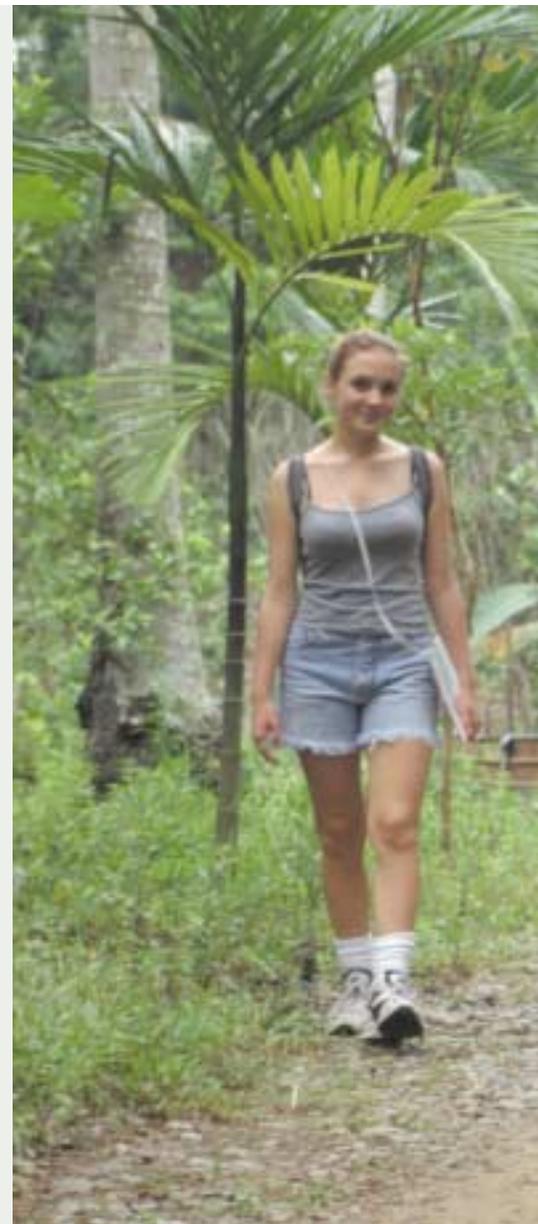
It is difficult to explain the dynamic range of educational and interpretive outcomes that accrued to everyone involved. Emotions ran the gamut. Participant reactions ranged from joy and deep satisfaction to humility, courage, admiration, empathy, and newfound respect. In many cases, the students’ expectations of leading was transformed into fascination as they became learners while their visually impaired guests shared their knowledge of plants, culture, and history. The trip was nostalgic for many of the guests, a foray into the village life of their youth. Teachers marveled at the multidirectional knowledge being shared. Expatriate students held hands with the disabled, older citizens of Singapore. Americans held hands with Malays, Tamils, Chinese, and Eurasians. American students practiced Mandarin from class in a functional setting, creating a warm friendship through an appreciation of nature’s beauty.

After the first trip in 1996, the project won the Singapore Rotary Club International’s “Preserve Planet Earth Award.” The award included a grant of nearly 10,000 Singapore dollars by the Hong Kong Bank issued to continue the project. The SAVE students were energized through winning this prestigious award and made a commitment to lead monthly tours during school for the next three years.

TAKING THE PROGRAM TO ANOTHER LEVEL

As new students joined the club and participated in outings, new discussions took place. Partnerships developed with Singapore’s National Parks Board, and conversations turned to making the trail a permanent fixture in the Ubin landscape. My previous experiences with Elephant Rocks State Park Braille Trail in my home state of Missouri in the United States gave insight into the situation at hand. When the project began, the trail only existed informally as described in laminated guidebooks. The National Parks Board became interested in establishing a permanent trail on Pulau Ubin, through which all citizens could better appreciate nature.

Collaboration began between stu-



dents enrolled in a high-school “Global Issues” class, the National Parks Board, Nature Society members, and SAVH staff and members. The teachers of the Global Issues class had developed a course in which students became deeply involved in a variety of community projects. One of the instructors was the main sponsor of the SAVE club and its work with the visually impaired. Proposals that permanent interpretive signs in English and Braille be placed in two national parks were submitted to the National Parks Board. The various agencies provided mentors for the students, who conducted research and then composed text and illustrations for the signs. Visually handicapped consultants and expert naturalists helped the students choose stations, species, and points of interest



West meets East on the trail.

for the proposed trails. The proposal to make the trail permanent on Pulau Ubin was eventually accepted.

Outings to Ubin continued during this procession of events as regular guests and other groups of other visually impaired guests enjoyed the island. Through collaborative work on the proposed trails and regular outings, members of SAVH and members of the SAVE club became good friends and participated together in other activities, such as concerts, festivals, dinners, and other nature excursions. During one special excursion, the middle-school branch of SAVE served as guides for students from the Singapore School for the Blind. A teacher from

the School for the Blind expressed hope that her students would be able to experience the world more fully. She described the adventure of boarding and riding the boats as “protected danger.” Not only did the trail support their science curriculum, but it also provided an essential experience in developing confidence and independence for her students.

Fund-raising efforts in 1999 focused on constructing and installing Braille-English signs for the Ubin trail. Corporate donations and individual gifts enabled the SAVE club to raise enough money to cover costs of signs and to continue outings. During the 1999–2000 school year, the final trail route was set. The National Parks Board had planted a new sensory garden, and the interpretive sign text had been edited several times. Braille signs were piloted, evaluated, and produced by visually handicapped experts. The date of April 15, 2000, was set for the official launch, and the U.S. ambassador agreed to oversee the ceremony.

The SAVE club of the Singapore American School and the Singapore Association for the Visually Handicapped have “adopted the trail” for the next five years and will work as partners to maintain accessibility and trail conditions for use.

A COMMUNITY-BASED LEARNING SUCCESS STORY

From a teacher’s viewpoint, this project was an excellent example of authentic education. The project did not fit in any curricular categories; nor did it develop from any core curriculum based on achieving school-defined results. The project was never designed to achieve any preconceived standards. The project evolved through the concerns of a diverse group of people. The students knew that their work and effort were greatly appreciated from the beginning. They also discovered, as is often the case in volunteer activities, that they received more than they gave. All parties returned from project activities feeling energized and enriched through their efforts, even if unforeseen frustrations and challenges threatened delay or derailment.

Those particular students who took on major roles in organizing trips, training

volunteers, working with governmental and non-governmental mentors in designing the permanent trail and signs, raising funds, and coordinating with other clubs and agencies, experienced a real-world education that surpassed those encountered in typical school courses.

Education is community-based. When community is the context for school and the boundary between community and school is blurred, then all education can become environmental education.

Current discussion focuses on the importance of diversity in educational settings, from tolerating diversity to respecting and celebrating it. Conflict between various factions is constant in contemporary news. The sensory trail project brought together a diverse group of people in a context of mutual aspiration and appreciation. All parties were beneficially affected, resulting in newfound respect, admiration, and affection for each other and the natural world.

Through this diversity, unexpected partnerships evolved. The Singapore Association for the Visually Handicapped is building on its commendable efforts to ensure that the visually impaired become full participants in their society. Their work and consultation with the National Parks Board shows how responsibility can be shared between a government agency and a non-governmental service organization. The association and friendship that developed between SAVH and the Singapore American School remains strong because participants have worked toward specific goals together.

The most important beneficiary of the project is the ecosystem of Pulau Ubin. The permanent trail substantiates the innate value of the island as a precious relic of Singapore’s natural heritage. The sensory trail makes nature more accessible to all citizens in Singapore and highlights the essential role of wild places in the soul of a world that is rapidly losing them.

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