

Application of Environmental Education in Taiwan: The Case of Nature Center in National Forest Recreation Areas

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Abstract. With the progress of modern society, the role of natural environment is getting more important. Many countries in the world start to pay more attention on environmental education, so does Taiwan. As the adoption of the Environmental Education Act, people in Taiwan share efforts in nature environmental protection. Taiwan Forest Bureau has established eight Nature Centers in each of its Forest District Office. The Nature Centers not only provide environmental education programs, but also lead the development of outdoor education. I collect the relevant literature so as to understand the operation and current status of the Nature Centers. This study aims to report the current operation of Nature Center via case studies and to clarify the role of Nature Center in fostering environmental education in National Forest Recreation Areas.

Key words: Nature Center, Environmental Education, Taiwan Forestry Bureau, National Forest Recreation Area.

Abstrakt. Prowadzenie edukacji przyrodniczej na Tajwanie na przykładzie Centrów Przyrodniczych na Narodowych Leśnych Obszarach Rekreacyjnych. Wraz z rozwojem nowoczesnego społeczeństwa rola naturalnego środowiska zyskuje na znaczeniu. Podobnie jak wiele innych krajów, również Tajwan przykładą dużą wagę do edukacji ekologicznej. W efekcie przyjęcia Ustawy o edukacji ekologicznej obywatele zwiększają wysiłki na rzecz ochrony środowiska przyrodniczego. Tajwańska Agencja Lasów założyła osiem Centrów Przyrodniczych, po jednym w każdym ze swoich Regionalnych Zarządów Lasów. Centra przyrodnicze zapewniają nie tylko edukację przyrodniczą, ale również przewodzą w rozwoju edukacji w terenie. Na podstawie zebranej literatury przedstawiłem działalność i aktualny status Centrów Przyrodniczych. Celem artykułu jest przedstawienie działalności Centrów Przyrodniczych na wybranych przykładach i wyjaśnienie ich roli we wspieraniu edukacji ekologicznej na Narodowych Leśnych Obszarach Rekreacyjnych.

Słowa kluczowe: Centrum Przyrodnicze, edukacja ekologiczna, Tajwańska Agencja Lasów, Narodowe Leśne Obszary Rekreacyjne.

Introduction

People gradually realize that climate change and the seriously impact of nature resources is getting worse in recent years. The discussion of environmental issue has been increase. Many people believe that these environmental problems stem from the alienation of people and nature, therefore many countries in the world start to pay more attention on environmental education. United Nations Educational, Scientific and Cultural Organization (UNESCO) have already embarked on a variety of environmental education through the promotion of international environmental education program (IEEP). Taiwan Forestry Bureau amended and promulgated the National Forest Recreation Area Establishment and Management Act in July, 2005. Environmental education has been one of the most important projects in National Forest Recreation Area. Taiwan Forestry Bureau also learned from the program and started to establish the first Nature Center from 2007, and then establish eight Nature Centers in each forest district office during the following three years. This not only provides the firsthand learning experience but becomes the biggest environmental education learning system network in Taiwan.

Taiwan is a country witch located in East Asia, also called as Ilha Formosa, literally meaning “Beautiful Island”. According to the results of The Third Survey of Forest Resources and Land Use in Taiwan in 1995, forestland occupied 2 102 400 ha; this is relatively 58.53% of the Forest area in Taiwan total island area, which are 3 591 500 ha. Among the forestland 76.7% or 1 642 900 ha is national forest. Occupying 1,120,400 ha, hardwood forests exist as the major forest type on the island, followed by 438,500 ha of conifer forests, 391 200 ha of mixed conifer and hardwood forests, and 152,300 ha of bamboo forests. The total forest volume of the island is 358 744 000 cubic meters, of which 125 835 000 cubic meters is contributed by conifers, 132 973 000 cubic meters by hardwoods, and 99 401 000 cubic meters by mixed forests. The average forest volume per hectare of the island is 287 cubic meters for conifers, 119 cubic meters for hardwoods, and 254 cubic meters for mixed forests. Topographic complexities of Taiwan’s terrains and climatic variability have together produced an environment that is warm and moist, giving rise to a many varieties of vegetation classes. Based on the influence of climate, humidity, and altitude, forests can be classified as tropical forests, sub-tropical forests, temperate forests, and alpine forests (Taiwan Forestry Bureau 2006).

Article 8 of Taiwan Forestry Management Plan were amended and promulgated by the government on 13th of November 1991. “Annual timber volume should not log more than two hundred thousand of cubic meters. Each clear cut area should not log more than five hectares. Comprehensive ban on logging in natural forest, conservation forest, forest protection area, nature reserves area, national parks, and reforestation area which can’t be reforestation. No logging in experimental forest except research or manufacturing needs.”

According to the new law in Taiwan, Government tends not to cut too many wood in the forest. The aggressive environmentalists in Taiwan, those who claim that according to the law government shouldn’t cut any tree put a big pressure on the government. Actually the government in Taiwan doesn’t cut any tree now. We import most of the wooden usage from other country. This leads the government to put more effort on environmental education. We know education is the only way to change the misunderstand concept of citizens.

Taiwan government set the Environmental Education Act in 2010. This Act is formulated to promote environmental education, to advance citizens’ understanding of the interdependent relationship between individuals, society and the environment, to raise the nation’s environmental ethics and responsibility, so as to maintain the ecological balance

of the environment, respect life, and foster social justice, and cultivate environmentally aware citizens and environmental studies communities to achieve sustainable development. Those who refuse to receive environmental instruction or fail to receive four hours of such instruction per year shall be fined NT\$5,000 to NT\$15,000. Those who still refuse after being notified again may be fined each time they refuse until they attend. This proves that the government in Taiwan really cares about the environmental education of citizens. The role of Nature Center has been much more important in Taiwan.

The author is a student who works in Taiwan Forestry Bureau Nature Center as an internship. In addition, he is the youngest National Forest Volunteer who devotes all the knowledge in environmental education in Taiwan. This paper is to introduce the application and status of environmental education in Nature Center.

Definition

Environmental education

Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulating of a code of behavior about issues concerning environmental quality (UNESCO 1978). Environmental education means the application of educational methods to cultivate citizens' understanding of their ethical relationship with the environment, improve citizens' knowledge, skills, attitudes and values with regard to protecting the environment, encourage citizens to treasure the environment, and to take action in a public education process that aims to achieve sustainable development (Environmental Education Act 2010). Due to both of them, we can find out their similarities. Environmental education is an educational progress aimed to promote national attention to the environment, to take action to achieve sustainable development, and its connotation includes values, knowledge, attitudes, skills, and global perspective. In Nature Center we claim that environmental education is learning in the environment, learning for the environment, learning about the environment, and education for sustainability.

Nature Center

Nature Center is an organization with a visitor center or interpretive center designed to educate people about nature and the environment. Usually located within a protected open space, Nature Centers often have trails through their property. Nature Center in Taiwan is a place that can integrate professional environmental educators, resources, design projects, and provide services to customers. Nature Center must have four basic elements including people, facilities, management, and project which contain environmental education, interpretation, and communication (Fig. 1). Four of the elements influence each other.

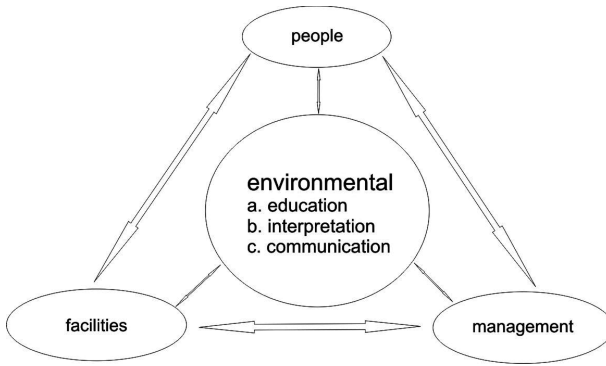


Fig. 1. Nature Center elements figure
Ryc. 1. Elementy Centrum Przyrodniczego

Case study

Taiwan Forestry Bureau divided forest area into eight districts. We establish office in each district, so there are eight forest district offices.



The first Nature Center, Dongyanshan, which is in the northern part of Taiwan, was established in 2007. Another four, Luodong, Basianshan, Aowanda, and Chihnan, which are in the center of Taiwan, were established in 2008. The other three, Chukou, Jihiben, and Shangliou, which located in southern Taiwan, were established in 2009. This shows that the development of Nature Center is from north to south in Taiwan (Fig. 2). There are about four to six project teachers, who work and design environmental education project in each Nature Center. The total of project teacher is about 30 people. With the integrated system in Taiwan Forestry Bureau, the National Forest Volunteer project has about 300 volunteers in National Forest Recreation Area. Volunteers give assistance and to participate in environmental project held by Nature Center. This increases the service quality of Nature Center, and solves the problem of too many visitors in high season.

Fig. 2. Development Plan of Nature Center in Taiwan
Ryc.2. Plan rozwoju Centrum Przyrodniczego na Tajwanie

The purpose of Nature Center in Taiwan is “learning happily from nature”. In order to let people know more about forestry, to ensure high-quality services provide by Nature Center, and identified as a leader of environmental education in Taiwan. Nature Center set up nine objectives (Tab. 1). 1. Extend service targets. Nature Center should combined with the purpose of Taiwan Forest Bureau, and develop multivariate forestry curriculum program. 2. Share how Nature Center operate and the achievement of Nature Center to other environmental education organizations. 3. Planning the education field that fit the local forestry industry and cultural resources. 4. Unified communication platform and build the code of operation. 5. Implementation effectiveness evaluation and feedback mechanism. 6. Establish target customers for maintaining stable customers’ relationship. 7. Build up strategic partner alliances and become the first choice of public-private partnership. 8. Explore diverse marketing of Forestry Bureau. 9. Become the model for public sector in domestic.

Table 1. The vision and objectives of the Taiwan Forest Bureau Nature Center
Tab. 1. Wizja i cele Centrum Przyrodniczego Tajwańskiej Agencji Lasów

Purpose	Learning happily from nature		
Vision	Let people understand forestry	Ensure high-quality service	Identified as a leader of environmental education
Objectives	Extend service targets	Unified communication platform	Strategic partner alliances
	Share experiences and results	Implementation feedback mechanism	Explore diverse marketing
	Keeping with culture characteristics	Establish target customers	Become the model for public sector



Photo 1. School programs provide in Nature Center
Fot. 1. Programy szkolne świadczone w Centrum Przyrodniczym

There are five dimensions of Nature Center in Taiwan. These are the main services what Nature Center provides:

School programs: In the past of Taiwan, primary school teachers tend to bring their students to amusement park for field trip. This is a kind of negative old habits in Taiwan. Hopefully with the progress of environmental education, teachers will like to take their students to a National Forest Recreation Area for field trip in recent years. Nature Center provides the service such as field trip projects. These projects are based on different grade of students, and plan to be one-day or overnight type outdoor curriculum.



Photo 2. Based on different grade, we provide the plan which fits the age of children
Fot. 2. Na podstawie różnych kategorii, oferujemy plan, który pasuje do wieku dzieci

Theme activity: Theme activity combines resources of the National Forest Recreation Area, the change of seasons, and international response to environmental issues. We hold different kinds of theme events and camps due to various groups during weekends, holidays, and festivals.



Photo 3. Theme activity
Fot. 3. Działalność – motywy



Photo 4. Leave No Trace (LNT) project
Fot. 4. Projekt Leave No Trace (LNT)

Training: Training is the project provided for teachers, government departments, and non-government organizations. Our target is those adults and high school students who will like to gain knowledge about Nature Center and environmental education.



Photo 5. Participants receive Certificate after
Fot. 5. Uczestnicy otrzymują certyfikat

Training



Photo 6. There is also project to teach people how to use fire safety in the forest

Fot. 6. Istnieje również projekt do nauczania ludzi, jak w lesie bezpiecznie korzystać z ognia

Special Events: Special event is project which is not on annual schedule. Project teacher in Nature Center design environmental education curriculum for groups according to different ecological environment, festivals, and themes.



Photo 7. If people are interested about insect, we design insect project

Fot. 7. Jeśli jest zainteresowanie owadami, projektujemy projekt o owadach

Interpretation: Interpretation is the most common service provide by Nature Center. With the cooperation of National Forest Volunteers, there are free guide in National Forest Recreation Area every weekend.



Photo 8. A National Forest Volunteer is introducing maple tree
Fot. 8. Wolontariusz Lasów Państwowych przedstawia klon



Photo 9. There are lots of training for volunteers to keep the high quality of knowledge
Fot. 9. Dla wolontariuszy przewidziano wiele szkoleń, aby utrzymać wysoki poziom wiedzy

There are about one hundred thousand people who attend the services provided by Nature Center in Taiwan each year. According to the statistic result made by Taiwan Forestry Bureau, interpretation is the majority of services. School programs stand the second place of services. This shows that we put much more effort in primary school students (Tab. 2).

Table 2. Number of Participants of Taiwan Forestry Bureau Nature Center

Tab. 2. Ilość uczestników Centrum Przyrodniczych Tajwańskiej Agencji Lasów Number of Participants of Taiwan Forestry Bureau Nature Center

Service dimensions	2010	2011	2012	2013till October
School Programs	28,127	24,440	24,994	16,758
Theme Activity	6,799	11,467	4,505	4,731
Training	3,785	3,723	7,150	5,749
Special Events	5,476	9,219	9,211	5,822
Interpretation	53,563	83,784	66,730	59,043
Total	97,750	132,633	112,590	92,103

Conclusion

There is an obstacle of logging in Taiwan, but we turn the crisis into opportunity. Taiwan Forestry Bureau tends to put our effort in non-wooden production and environmental education. We know that the only way to change people's mind is by environmental education. Primary school student is our next generation, so it is important to provide environmental education through Nature Center. That's the reason why we need some project teachers who work on to connect environmental education with formal education. They also edit and publish education specialized books. Nature center in Taiwan is still young but successful. It's our proud to make abundance and complete services.

The numerous participants of National Forest Volunteers show that people really care about environmental education in Taiwan. They willing to spend their time and share their knowledge to tourists who travel to National Forest Recreation Area. With the implement of Environmental Education Act, Nature Center is getting more and more important in Taiwan. Hope this study not only shows the case of Taiwan, but stimulates environmental education in Poland.

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