

Chapter 18

Walk with the Formosa Macaque



Yun-Hsuan Chiu

18.1 Introduction to the Promotion of Environmental Education Act in Taiwan

Taiwan is an East Asian island nation situated on the northwest side of the Pacific Ocean with a population of approximately 23,3500,000. In 1992, scholars in Taiwan proposed the idea of formulating an environmental education act, and a draft Environmental Education Act was formulated in 1993, but Executive Yuan deemed that there was no legislation necessity. However, during the 2007 presidential election, a candidate listed environmental education legislation as a major policy, and eventually Executive Yuan promulgated the “Environmental Education Act” on June 5, 2010 (Laws & Regulation Database of the Republic of China (Taiwan)).

One year later, the act was implemented on June 5, 2011, as Taiwan became the sixth country in the world to implement an environmental education act following the U.S., Brazil, Japan, South Korea, and the Philippines. The legislative goals of Taiwan’s Environmental Education Act were to nurture Taiwanese citizens’ understanding on the ethical relationship between themselves and the environment, enhance Taiwanese people’s knowledge, skills, mindset, and values of environmental protection, and further encourage Taiwanese citizens to treasure the environment and take actions to achieve sustainable development.

The year 2021 marks the tenth anniversary of Taiwan’s implementation of the Environmental Education Act. By December 2022, there were 257 certified environmental education sites and 10,072 certified environmental education personnel in all of Taiwan (Environmental education certification system, [n.d](#)). Through the certified sites and personnel, environmental education courses and activities have

Y.-H. Chiu (✉)
Friendly Seed Co., Taipei City, Taiwan
e-mail: wild.eleanor@friendlyseed.com.tw

been organized across Taiwan to convey diverse environmental viewpoints and strengthen the important concept of harmonious coexistence between people and the environment.

With the rapid promotion of the Environmental Education Act, the government has relied on the professional assistance of the private sector to keep up with changing times, consequently giving rise to private organizations and enterprises that are dedicated to the promotion of environmental education. For example, Friendly SEED (Friendly toward Sustainable Environmental Education Development), funded in 2010, is a private corporation that gathers environmental education professionals to help the government and enterprises to manage and operate environmental learning centers, train personnel, and develop and implement training programs, or even help other public or enterprises to plan and apply for environmental education facility sites.

Other non-profit organizations, such as the Society of Wilderness and Wild Bird Society of Taipei, have also started to plan for and operate local environmental learning centers by means of wilderness adoption, charitable trust, and government contract; some larger enterprises have also established foundations to operate private centers. These private engagements also cooperate with the public sector to further drive the rapid development of environmental education facility sites.

18.2 Background and Content of Taiwan's Outdoor Education Promotion

Outdoor education has long existed in Taiwan since the Japanese colonial period. Back then, "public schools" promoted mountain climbing, offering venues and opportunities for "practical learning" of new knowledge. Later, outdoor education transformed through various formats, and its content grew richer and more diverse to include mountain climbing, hiking, scouting, place based education, natural survey, environmental education, overseas study, and mountain education.

In recent years, with Taiwan's educational reform and the society's growing emphasis on environmental education and explorative and experiential education, outdoor education has drawn more attention from schools and relevant agencies. However, there remain some real issues of outdoor education promotion. For example, there is a lack of comprehensive supporting measures on the administrative end of education agencies, including funding, manpower, organization, related information, and incentive and recognition of relevant personnel.

Moreover, when school teachers organize outdoor education programs, they face the issues of teaching agenda and class rescheduling, school expenditures, manpower for the execution of the program, administrative procedures application, safety of outdoor activities, and related laws and regulations, which hinder their willingness to take students out of the classroom for outdoor education.

Furthermore, many teachers experience difficulty choosing outdoor education sites, because, at present, the resources of outdoor education sites are not integrated, and existing teaching plans and resources of each site are not gathered and promoted, leading to unorganized information that has not been integrated and updated.

Further examination of the risk assessment and management mechanism of Taiwan's outdoor education sites shows that there are no comprehensive risk assessment tools and models, and therefore, schools have many concerns when promoting outdoor education. In addition to the concerns for missing administrative support and site safety assessment, most school teachers generally lack practical professional training on the planning and evaluation of learning experience offered by outdoor education.

Therefore, there is room for improvement in terms of changing education professionals' mindset on outdoor education and boosting teachers' outdoor teaching capacity and willingness. In light of the aforementioned issues of outdoor education implementation, the Ministry of Education promulgated the "Guidelines Governing the Establishment of Outdoor Education Promotion Committee" and "Outdoor Education Declaration of R.O.C." in 2014 (Outdoor Education, [n.d](#)), hoping to address the issues and problems faced by outdoor education through the assistance of policies and related supports, and establish outdoor education's important place in the future 12-year basic education.

A decade after the promulgation and implementation of the Environmental Education Act in 2011, "environmental education facility sites" certified by the government have also created more quality learning venues for the public, government agencies of all levels, and schools; specifically, these facility sites have provided schools more quality venues, teaching staff, and curricula of outdoor education, thus lessening the burdens of outdoor education promotion of schools and teachers. The active promotion of outdoor education has also provided environmental education facility sites more resources and greater demand, encouraging more agencies to actively promote environmental education.

18.3 Case Study of Environmental and Outdoor Education in Taiwan

18.3.1 Program Background and Implementation Surroundings

This outdoor education case takes place in Kaohsiung, a predominantly industrial city in southern Taiwan. A hillside land approximately 11.23 square kilometers in surface area in downtown Kaohsiung had been conserved and was designated as a national natural park in 2011. Since Shoushan (Monkey Mountain) is situated near downtown Kaohsiung, there are extensive human activities, and many

Fig. 18.1 Formosa Macaque in the Shoushan area (Photo: Friendly SEED)



environmental issues have sprung from the interaction of the environment and people, such as the conflict between humans and wildlife. When facing environmental issues, the national natural park not only manages the park in accordance with the law but also tries to cooperate with private organizations to solve these conflicts through the promotion of environmental education.

According to a study conducted in 2013, the Shoushan region is home to nearly 1500 Formosan macaques (see Fig. 18.1) (Hsiu-hui & Shu-Wei, 2013). Since the activity areas of hikers and tourists and the monkeys are highly overlapped, coupled with the practice of feeding the monkeys in the past twenty years, the monkey's natural habits have changed, as they have started to beg tourists for food or directly grab food from tourists, leading to frequent incidents of human-monkey conflict (tourists have their food taken away, tourists scratched or bitten by monkeys, monkeys harmed by people, and monkeys involved in car accidents, and so on). How to influence citizen actions and awareness through educational activities, mitigating the conflict between humans and monkeys, has become an important task of the national natural park.

Shoushan National Natural Park cooperated with Friendly SEED to pass the environmental education facility site certification in 2015 and develop the “Walk with Formosa Macaque” outdoor education module, which is open to field trip applications from elementary schools to senior high schools. The program offers students the opportunity to learn the behaviors of monkeys through outdoor education to lower the chances of conflict, nurture a mindset of coexisting with wild animals, and understand related management measures of the public sector, building a natural site where people and monkeys can coexist.

18.3.2 Walk with Formosa Macaque Outdoor Program

Shoushan National Nature Park, located in the southwestern part of Kaohsiung City, Taiwan, is also known as the Macaque hill. Human-macaque conflicts occur quite frequently within the park. Some visitors even get hurt due to these conflicts.

Shoushan National Nature Park use environmental education as a management tool to minimize potential human-macaque conflicts and to let public get evolved with conservation business.

The program aims to help students to:

1. Understand the physiology, ecology, behavior, and body language of Formosa macaques.
2. Understand the impact of human feeding behavior on macaques.
3. Learn how to live peacefully with Formosa macaques.

The program is conducted mainly for elementary school students to senior high school students. There are also different programs for preschool children and adults. Table 18.1 provides an overview of its main activities.

Through collection of information before developing the program, we have found out that the human-monkey conflicts on Shoushan have been the result of human misconceptions of monkeys. Thus, we designed the program in order to gradually bust these myths through the program.

For example, the myth of “monkeys must be fed because there are no fruits in the mountain” sprung from the misconception that “monkeys eat bananas”. We use a game-based teaching method and guidance of teachers to introduce students to all the foods wild Formosan macaques can eat in the mountain, busting the myth on the feeding habits of monkeys (see Fig. 18.2). In the first lesson, “A Closeup on Formosan Macaques,” we help students to understand the feeding habits, foraging behaviors, physical characteristics, and other habits of Formosan macaques as the teaching objective. Through the aforementioned concept and the game-based teaching method, we can successfully bust the myths and correct the misconceptions on monkeys, establishing accurate knowledge and understanding.

As for the misconception that “monkeys will proactively attack people”, we designed a game for the second lesson, “Facebook Account of Formosan Macaques”. Through games and a group discussion, as well as physical performance, this lesson introduces students to the body language of monkeys, so they can understand which actions of people will trigger hostility, while also teaching students how to respond when they encounter monkeys in the wild, ensuring safety of both parties. Furthermore, we also use media like films, slideshows, news, and photographs, in the indoor part of the program to help students to learn the ecological behaviors of Formosan macaques and understand their ecological value.

Table 18.1 Program activities

Time	Units	Content
70 mins	Something about Formosa Macaques	Understand the physiology, ecology, behavior of Formosa macaques.
40 mins	Read Macaque facial language	Understand the facial and body language of Formosa macaques, so we won't misunderstand each other.
90 mins	Walk with Formosa Macaques	Walk into the wood and observe the macaques.
60 mins	Reduce the conflict	Learn how to get along with Formosa macaques.

Fig. 18.2 Understanding behaviour of the monkeys – indoor part of the program. (Photo: Friendly SEED)



The advantage of the indoor introductory part is that students can learn much about Formosan macaques within a short period of time. After all, it is difficult to learn all the feeding habits, body language, and ecological behaviors of monkeys through outdoor observation; however, if the program was conducted only indoors or in a built environment, students would never gain firsthand experience with nature, let alone the emotions of curiosity, understanding, and respect, triggered by their own encounter with nature, which are qualities we aspire to. Therefore, we first establish students' cognition of the habits of macaques, including appearance recognition, feeding habits, and interactive behaviors between macaques, such as hostility, friendliness, pet invitations, and other behaviors. In addition, students are taught how to respond if the macaques behave hostilely to the observer during the outdoor observation period.

The core part of the program takes place outdoors, where students can observe Formosan macaques in the wild. Students look for monkeys and observe their various behaviors from appropriate distances. In the wild, students must follow the rules of field observation, such as no approaching, no touching, and no loud disturbances. Moreover, students must also complete an observation chart (see Appendix 1). The chart shows us the details observed by students, while also allowing us to find out whether their perceptions of monkeys have changed after the observation (see Fig. 18.3).

The final discussion is a core aspect of this program (see Fig. 18.4). Because human-monkey conflict has gone on for so many years, a high percentage of people are hostile to monkeys. We carry out in-depth discussion on the conflict between humans and wild animals, hoping that students can understand that a certain level of danger exists if they come into contact with wild animals, as well as the reasons for people's interferences with and misconceptions of Formosan macaques, ultimately learning how to live with Formosan macaques. In this lesson, through news footages, students can see the misconceptions and perspectives about Formosan macaques among the public and media. We guide students to consider from diverse angles whether the news stories are all human-centric, overlooking the nature of monkeys. For this part of the program, we designed questions about human-monkey interactions, such as "How do you think you should get along with the macaques?"

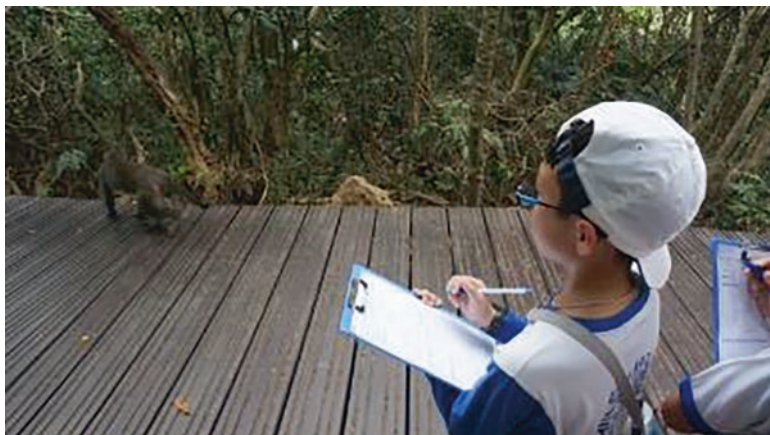


Fig. 18.3 Surveying the macaques. (Photo: Friendly SEED)



Fig. 18.4 Concluding discussion serves as both review and commitment phase of the program. (Photo: Friendly SEED)

What would you want to do if you encountered someone feeding the macaques? Students separate into different groups to discuss these questions and write on posters. We can see how students' attitudes toward monkeys change, as they agree that it is necessary to redefine how humans should coexist with monkeys and internalize this idea into their own values.

Table 18.2 Post-program evaluation data

	Walk with Formosa Macaque (N = 1120)	average (Maximum 5 points)
1	Formosan macaques have lots of natural foods to eat in nature.	4.6
2	Formosan macaques do not need human feeding to survive in nature.	4.7
3	I know how to get along peacefully with Formosan macaques.	4.5
4	We have to observe them in a proper distance, at least 10 m.	4.5
5	Staring at Formosan macaques is an unfriendly behavior.	4.5
6	I would like to introduce Formosan macaques to my family and friends.	4.3
7	I am devoted to participating in outdoor teaching activities today.	4.5
8	I like today's outdoor program.	4.6

18.3.3 Program Evaluation

The evaluation of this program is not limited to tests or questionnaires. In addition to a questionnaire after program completion, there are also informal or non-written review points throughout the course of the program. These include: onsite observation of teachers, Q & A, outdoor observation chart, in-class discussion and review, and a post-program questionnaire. Different types of evaluation are used in different stages of the program. The most common feedback by students, in addition to gaining clear understanding on the habits of monkeys, is that they no longer dislike or are afraid of monkeys. Many students have expressed after the class that their impression of Formosan macaques has changed, and being able to read the monkeys' body language has helped them to more freely and alertly appreciate wild animals in the wild.

The following figures (see Table 18.2) are post-program evaluation data of students participating in this program from 2016 to 2021. The total number of students is 1120.

From the quantitative data below, we can see that most participants have gained a clear basic understanding of Formosan macaques after the program and should have a positive attitude and awareness in inverse items as well.

18.4 Conclusion


One of the objectives of Friendly SEED's long-term assistance in Shoushan National Natural Park's promotion of environmental education is to help national natural parks solve environmental problems through education. Of course, the problems are deeply rooted in myths shared by society cannot be easily and quickly solved through informal education, but the evaluation data give us evidence that the program can influence viewpoints, leading to different behaviors. The human-monkey conflict program at Shoushan National Natural Park has added diverse content since 2013 and has been expanded to accommodate a wider audience from K1-K12 students, college students, general public, and enterprises. Based on different learning characteristics, the program has devised a series of classes on human-monkey conflicts and even developed a "pop-up" performance to convey important concepts of human-monkey coexistence at locations with a large tourist presence during holidays.

This environmental education program that focuses on the "conflict between humans and wild animals" starts with busting the myths on monkey's habits, then introduces the influences of human's action of feeding on the biological habits of monkeys, and finally delves into the factors of human-monkey conflict for in-depth discussion, guiding learners to develop their own environmental thinking. Combining indoor classes and outdoor activities is effective in achieving the program's objectives. Field observation plays a key role in this program and allows participants to verify in the wild the knowledge they have learned in the first half of the program. Then they take their observations of the interaction between humans and monkeys back to the discussion on values and behaviors during the following activity. The data collected serve as the source of information for their concluding thoughts. Outdoor environmental education is not the only way to influence people, but it offers an opportunity to gain firsthand experience and observation, providing students, agencies, enterprises, and the public a way of understanding the issues as well as a platform for further discussion and learning.

Acknowledgments The Ministry of Education has promoted outdoor education implementation plan 2016–2019.

Appendix 1: Observation Chart

Please select a macaque, carefully observe its appearance and behaviour, and record it as completely as possible in the following chart.

DATE		TIME		WEATHER	
MY NAME		PLACE			
Named the macaque you observe		Gender of Macaque	<input type="checkbox"/> Male <input type="checkbox"/> Female		
Record the facial features of macaques					
					
What is the macaque you are observing doing? Please describe or draw a picture of its behavior.					
Please carefully describe or draw the environment around the macaques					
What are your thoughts after observing the macaque?					

References

- Environmental education certification system. (n.d.). [https://neecs.epa.gov.tw/Home/Certification System](https://neecs.epa.gov.tw/Home/CertificationSystem)
- Hsiu-hui, S., & Shu-Wei, N. (2013). Population density of Taiwanese Macaques (*Macaca cyclopis*) and Human-macaque interactions in Shoushan National Nature Park. *National Park Journal*, 23(3), 33–48.
- Laws & Regulation Database of the Republic of China (Taiwan). <https://law.moj.gov.tw/Eng/index.aspx>
- Outdoor education. (n.d). <https://outdoor.moe.edu.tw/index.php>