NAKHARA (Journal of Environmental Design and Planning)

Volume 19 | Number 1 Article 1

2020-01-01

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Available at: https://digital.car.chula.ac.th/nakhara/vol19/iss1/1

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Nakhara: Journal of Environmental Design and Planning
Volume 19, 2020

A Prospect of Disaster Education and Community Development in Thailand: Learning from Japan

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Received 2020-03-03; Revised 2020-09-30; Accepted 2020-11-10

ABSTRACT

This paper aims to examine a prospect of disaster education and community development in Thailand focusing on a traditional waterfront community, named Hua Takhe. It explores the program and participation as well as meaning and implication of the Japanese cases through observations. Based on the analysis of questionnaire surveys, the strengths of the Hua Takhe community include solidarity, human, cultural, and educational resources. Its weaknesses are a limitation of disaster prevention-related resources, insufficient interaction between the old and the young generations, a lack of systematic disaster management, and low participation in drills. Collaboration with educational institutions, integrative and inclusive learning, and a better quality of life can be its opportunities; however, changing the usage of dwellings and an unbalanced development can be its threats. While the proposed workshop for children focuses on identifying the disaster prevention-related components and storytelling of Japanese and Thai wisdom, the workshop for multigenerational residents emphasizes identifying risks, discussing about the CBDRM, and participating in the community's festival. Concentrating on community engagement comprises of sharing the survey results, group discussion, hands on experience in investigating the living environment and making a hazard map.

Keywords: *Disaster education, disaster prevention, informal learning, community development, Hua Takhe community*

INTRODUCTION

Considering the Sustainable Development Goals, disaster education principally relates to goal 11, making cities and human settlements inclusive, safe, resilient and sustainable, and supplementally goal 4 as well, ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. As one of the most disaster-prone nations in the world, Japan has developed its disaster prevention education and practice, both at national and local levels as well as formal and informal ones (Yamori et al., 2006). There are a number of disaster education activities that integrate the learning of indigenous assets and wisdom co-organized by communities, local authorities, schools, and universities, as evident in the studies by Katada et al. (2000), Yamato & Tanaka (2017), and Tanaka et al. (2019), for instance. However, disaster education is new to Thailand. There are gaps between top-down plan and bottom-up action as well as knowledge and experience.

It is obvious that disasters accelerate changes in all life dimensions. On a national scale, Thailand's disastrous flood in 2011 affected 13 million people and accounted for over 680 deaths with approximately 1.4 billion Thai baht damage and losses in infrastructure, production, social, and environmental sectors (The World Bank, 2012). On a local scale, recurring disasters, such as fires and floods, in numerous traditional communities generated negative impacts in human settlement, the way of living, and the walk of life. For instance, the 2011 flood at the 100-year-old *Kao Hong* community in Suphan Buri province, the 2014 fire at the 150-year-old waterfront community in Samut Prakarn province, the 2016 fire at the 100-year-old *Bang Luang* market in Nakhon Pathom province, and the 2018 and 2020 fires at a 200-year-old silk weaving community, named *Baan Krua*, in the inner core of Bangkok are all recent disasters.

This paper selects a hundred-year-old waterfront community, named *Hua Takhe* (*Hua* means head or skull, *Takhe* means alligator), or the HTK community for short, located in eastern Bangkok, as an area of study. From a flourishing hub of waterfront business to a deserted market with cheap accommodation and to a revived art and creative district (Wongphyat, 2019), the community has witnessed several natural and man-made disasters, i.e. four floods and four fires, which not only affected the community's cultural heritage, but also the inhabitants' quality of life. The objectives of the study are, first, to examine disaster education activities of the Japanese cases; second, to investigate disaster experience and preparedness and attitude towards disaster education along with a perspective on the community's assets of the Thai case; and, third, to analyze an outlook of disaster education and community development appropriate to the Thai context. The methods include interviews and questionnaire surveys of the Thai case study along with participation and observations of the Japanese case studies. Its ultimate goal is to propose a disaster education program that engages the community, encourages inclusive learning, and contributes to disaster resilience of Thai communities.

THAILAND DISASTER PREVENTION AND EDUCATION

Community-Based Disaster Risk Management

To achieve disaster resilience, which is an essential constituent of the UNICEF sustainable development goal, Thailand's National Disaster Prevention and Mitigation Plan 2015 was enacted under the Disaster Prevention and Mitigation Act 2007. Given various aspects of challenges and limitations in past disaster management practice, which include (1) structural, organizational, and mechanism aspect, (2) planning process and emergency support function aspect, and (3) disaster-related knowledge and data aspect, its concept of operation is drawn in line with international and national action frameworks. These frameworks include the Sendai Framework for Disaster Risk Reduction 2015-2030, the United Nations Framework Convention on Climate Change and the Kyoto Protocol, the ASEAN Agreement on Disaster Management and Emergency Response, the Bangkok Declaration on Disaster Risk Reduction in Asia and the Pacific 2014, and the 11th National Economic and Social Development Plan. Its goals are to tackle unprecedented emergencies ensured by the integrated cooperation among all sectors, to promote learning communities, and to develop disaster resilience in Thai society.

Since 2002, the Civil Defense Plan, or Disaster Management Master Plan, stated that Civil Defense Secretariat Office, or Department of Disaster

Prevention and Mitigation (DDPM), is obliged to provide the budget and support and to conduct disaster-related training courses for government officials as well as the general public. The DDPM is responsible for developing the curricular, evaluation of training achievement, and launching a public campaign. Consisting of seven campuses located in Pratum Thani, Prachinburi, Songkha, Chiang Mai, Khon Kaen, Phuket, and Phisanulok, the Disaster Prevention and Mitigation Academy (DPMA) conducts five fields of training; firefighting, building collapse, Hazmats Emergency Management, Civil Defense, and Disaster Management, of which the community-based disaster risk management training is an integral part (Disaster Prevention and Mitigation Act, 2017).

Community-based disaster management, or CBDM, was a popular term during the late 1980s -1990s. It gradually evolved to CBDRM and subsequently to CBDRR. On closer look, while the CBDRR emphasizes pre-disaster activities for risk reduction, the CBDRM encompasses a broader perspective of risk reduction-related activities in all phases—before, during, and after disasters. Despite their slight difference, the term CBDRM and CBDRR are often referred to the same meaning and thus used interchangeably with the focus on "risk" (Shaw, 2012). The CBDRM is a bottom-up and people-oriented approach. It is a process of disaster risk management in which at risk communities actively participate in identifying, analyzing, handling, monitoring, and evaluating the disaster risks in order to reduce their vulnerabilities and enhance their capacities (Kafle & Murshed, 2006). It focuses on realizing a planning process as a tool for risk reduction, preparedness, and response rather than a production of planning document (Luna, 2014).

In general, the CBDRM system in Thailand is present through actions, e.g. training courses, evacuation drills, and simulated demonstrations, initiated by the government sector, of which the DDPM is the principal agency. Given the fundamental concept of the CBDRM involves the development of bottom-up processes arising from the communities themselves, such actions cannot complete the CBDRM indicators. As it is frequently found that communication barriers between planners and decision makers as well as old and new community members are difficult to bridge, informal forms of communication such as game simulations, storytelling, and local card games are necessary.

Despite several studies on CBDRM, it seems there is a very limited number of research focusing on informal communication or learning that is implemented in Thailand. Among them, there is participatory action research on a prototype of a community cooperation game: a simulation game of community based flood disaster management (Tanwattana & Toyoda, 2015). Additionally, research on adaptation and preparedness for natural disaster prevention: a study on applying a gaming simulation in community based disaster risk management (Tanwattana & Toyoda, 2018) unveils possibilities to develop and apply a gaming simulation as a tool to enhance CBDRM and its contributions to three flood-prone communities with a varying degree of disaster preparedness in Nan town municipality in northern Thailand (Tanwattana & Toyoda, 2017).

Disaster Education Related-Curricular

Learning Standards and Indicators of Social Studies, Religion, and Culture (revision 2017) under the 2008 Core Education Curriculum published by Office of the Basic Education Commission, Ministry of Education sets the learners' standard quality relevant to disaster education as follows:

After finishing grade 6, learners shall gain disaster preparedness-related knowledge including geographic condition, type of disasters, and socio-economic activities at national level. By grade 9, learners shall gain disaster preparedness and sustainable management of resources and environment-related knowledge at a global level together with an understanding of international resources and environment cooperation. By grade 12, learners shall gain knowledge about changes and problems of physical condition and disasters influenced by geographical factors, the interrelationship between physical environment and way of living, along with national and international resource and environment cooperation in order to prepare for global changes and the sustainable management of resources and environment (Ministry of Education, 2017). However, when looked closely, the content of the Thai curricular and activities pertinent to disaster education is somewhat general and compartmentalized. It seems to simply provide basic information, causes and consequences of

natural disasters, excluding in-depth knowledge and first-hand experience that will equip the learners with disaster preparedness and response in an actual situation.

Although Thailand's Office of the Basic Education Commission under the advisory of Japan International Cooperation Agency (JICA) announced disaster education guidelines in 2012 and, in 2013, developed a publication on natural disasters to be employed as a supplementary reading for primary and secondary schools, the use of such material is rather limited. In addition, according to the survey result of approximately 25 primary school children whose grade ranged from 3 to 6 in the study area, approximately 60% of the respondents are not able to recall whether there are disaster-related lessons in the classes, while others indicated that the lessons are given in forms of lecture and assigned report. Hence, it can be inferred that there is still a huge gap between theory and practice and a lack of shared disaster experience between local schools and the community.

JAPAN DISASTER PREVENTION AND EDUCATION

In such disaster-prone countries as Japan, disaster education plays a major role in reducing risk caused by disasters. Risk awareness at school is a part of the nation's strategy to promote countrywide commitment to Disaster Risk Reduction (DRR). Starting with the 1958 School Health and Safety Act, which was revised in 2008, the particular focus on school and children makes vital practices compulsory at school such as emergency planning, safety inspections, and evacuation drills. When the new curricular institutionalized an integrated approach in 2002, transversal courses on disaster risk reduction became mandatory. Since Ministry of Education, Culture, Sports, Science and Technology (MEXT) enacted a basic strategy to promote the DRR in 2006, educational institutions at all levels are required to develop DRR education. Local approaches are encouraged to take into consideration the local specificities of disaster risks. Furthermore, since 2020, natural disasters that occurred in each region will be added as examples in the social study course at elementary schools. It is likely to include examples of past disasters corresponding to local conditions in the home economics course at junior high schools from 2021 (Tanaka & Chaimuk, 2018; Tanaka, Kubo, & Anbo, 2019). Consequently, Japan has observed a growing number of pedagogical methods and materials developed to promote disaster education that correlate with local contexts.

Disasters in Gunma Prefecture

Located in the northwesternmost region of the Kanto plain, Gunma prefecture is one of eight landlocked prefectures in the country. It is composed of twelve cities and seven districts, one of which is Sawa district, where Tamamura town is situated. Its population density is 1,430 people per square kilometer. There are five elementary schools, three secondary schools, and a university. It is noted that the Department of Aesthetics and Art History from Gunma Prefectural Women's University often organizes art workshops in Tamamura town.

Originally known as *numa no ue* (literally means "on swamp"), Goryo village is located at a junction between the Tone river, which is regarded as one of the Japan's "Three Greatest River," and the Karasu river at the southeastern end of Tamamura town. The village served as a fishermen's and boatmen's village due to the thriving water transportation industry from Edo period (1603-1868) to the middle of Meiji period (1868-1912). It was awarded the *Gunma machi hito kenchiku shoreisho*, the important cultural heritage of Gunma prefecture, the intangible cultural heritage, and the selected record *kiroku sentaku* of Japan.

Apart from the Asama eruption in 1783, major disasters in Gunma prefecture consist of the 1910 flood and the 1947 Kathleen typhoon, which caused severe landslides and floods. Particularly, the Kathleen typhoon accounted for massive floods in the Kanto and Tohoku regions due to debris flow, river flooding, and banks breaking. Gunma prefecture witnessed the worst damage in these regions, with the highest number of deaths (592 people), the highest number of half-collapsed houses (21,884 units), the second largest number of flooded lands (62,300 ha), and the third highest number of flooded houses (71,029 units), mainly at Mt. Akagi. In spite of such destruction, all the Goryo villagers were safe due to the use of local wisdom—a type of natural wall made of leafy trees, such as bamboo and cedar, that helps protect the collapse of river bank called called *kinagashi*—the help of local fishermen and boatmen, and the community's solidarity (Yamato & Tanaka, 2017). In this respect, it is crucial to note that past disaster experience,

response towards disaster, and local wisdom should be shared among the community members, especially the young generation.

Disaster Education in Tamamura Town

1. The Water God Festival and Workshop

Suijin Matsuri, or the Water God festival, is enshrined at Iidama shrine in Goryo village. Originating in the Edo period, the festival is currently held every July in hope that there are no water-related disasters. In 2015, the festival was designated as an important intangible folk cultural property of Gunma prefecture.

(1) Program and Participation

The entire process of the Water God festival takes three weeks. In 2019, the activities were held on July 14th, 21st, and 28th. Every year, the first week of the festival focuses on the preparation of materials, i.e. bamboo, straw, and *chigaya*—a kind of water plant growing near the riverbank— to build a seven-meter-long boat. Bamboo serves as the main structural members of the boat. Straw is used as an enclosing element. *Chigaya* serves as boat roofs and ornaments. Approximately 10 skilled villagers are engaged in this process. The second week is the boat building stage. There were about 24-25 experienced working members, mostly male, along with the villagers' housewives who helped provide refreshment for the boat building team. An open space around the shrine functions as the main venue for the preparation and production of the boat. On the third week, which is the festival day, not only the shrine committee and commanders, and the boat building members, but also other villagers, school children, as well as university professors and students participated in the event.

Before the festival is the children's play session. Participants included 30 Goryo children and 15 university students from Faculty of Education, Gunma University. This session comprised of two disaster education-related activities; *kamishibai*, or storytelling, and a local card game. The *kamishibai* focuses on sharing Goryo village's past flood disaster, local wisdom, and the meaning of the festival (Figure 1). The card game, called Gunma disaster prevention trump, illustrates various types of natural disasters in Gunma prefecture along with life before and after disasters, rescue and recovery methods, preparation and evacuation, local wisdom and cultural heritage, including folklore and the Water God festival.

During the festival, there were several participants; the old and the young as well as insiders and outsiders in the procession of the straw boat around the village. From start to finish, a cooperative attempt among the participants was strongly felt (Figure 2).

(2) Meaning and Implication

Derived from collaborative workshops among disaster victims, local residents, school children, and university students, these pedagogical tools supervised by Tanaka Laboratory in 2017 contribute to disaster education not merely as an end product,

Figure 1-2:
Storytelling of flood disaster-related wisdom next to the Shinto shrine (left) and the procession of the straw boat (right) on the Water God festival day

but also as a learning process. The play session of *kamishibai* and local trump cards can be regarded as an informal form of learning that allows the participants to gain information about past disasters and responses specific to the local condition and realize the importance of cooperation among the community members.

In the production process, communication with various participants not only accounts for a deepening understanding of disasters in the area, but also brings about the re-recognition of the natural and cultural environment of the community. As Tanaka (2012) noted that making the local playing cards unveils a good prospect for active learning of living environment of which disaster education is an integral part. It can lead to empowering the community as a whole.

2. Disaster Prevention Camp

Although there have been an increasing number of educational tools, e.g. game simulations and card games, on disaster prevention in Japan, residents' participation in disaster education is relatively low. It is evident that residents who do not attend disaster prevention activities are less prepared than those who take part in (Katada & Kanai, 2008). In this regard, Kanai laboratory from Graduate School of Science and Technology, Gunma University has organized several disaster prevention camps, known as *bosai* camp (*bo* means prevention, *sai* or *saigai* means disaster), in collaboration with local schools and authorities to promote disaster risk reduction and response capacity of communities not only in Gunma prefecture, but also in neighboring regions. Disaster prevention camp in Tamamura town was held at Tamamura City Hall during July 27th – 28th, 2019.

(1) Program and Participation

The one-and-half-day disaster prevention program consisted of eight core activities. The number of participants was 20 including a university professor who acted as a disaster education expert, 7 university students and 4-5 city hall staff as facilitators, and 7 primary school students, who were the target group.

Activity 1 is about learning flood risk, evacuation methods, and evacuation sites from hazard maps. The main materials are jigsaw maps based on Tamamura town hazard map. Different color and tonal variations indicate flood depth of each area in the town. Through group discussion under the expert's advice, children were able to orientate their houses, schools, nearest evacuation sites and safe routes in-between (Figure 3). Activity 2 is about learning condition of refugee's life and rules at evacuation shelters. Rather than determined specific content, children were encouraged to decide rules that allow the disaster victims to live safely and comfortably at emergency shelters. Activity 3 is about building necessary facilities at the shelters. With the help from facilitators, children gained first-hand experience making cardboard partitions for their private sleeping units (Figure 4). Activity 4 is about experiencing emergency food, which includes pack cooking, i.e. Japanese curry rice, and pregelatinized starch, and learning to adapt daily items for emergency uses, particularly when access to electricity and water supply is limited. In this session, children were given an opportunity to cook on their own using plastic bags as cooking

Figure 3-4:
Discussion of the hazard jigsaw map (left) and production of cardboard partitions (right) at disaster prevention camp

containers and folded newspapers as bowls. Besides cooking experience, young participants were able to discuss possible solutions in case of food scarcity and learned to share limited resources with others.

Activity 5 is about speculating about troubles that might occur at the shelters. Quiz and worksheets were given to children, while the disaster education expert conveyed examples of past disasters such as the case of *Kamaishi* Miracle—a story of children in Kamaishi City, Iwate Prefecture who were safe from the Great East Japan Earthquake in March 2011 by taking advantage of what they learned from disaster prevention education. It is interesting to note that most questions have no absolute answers; they are highly contextualized, thus depend on situations and reasons derived from discussion. Activity 6 is about considering daily preparation for disasters. Through group discussion and demonstration, children were realized that preparing evacuation items should be in consultation with their family members. Activity 7 is about wrapping up all the information and experience the children have learnt at the camp via quiz rally. The last activity is about closing evacuation shelters. All participants helped each other in in-house cleaning.

(2) Meaning and Implication

Through a variety of activities, participants not only gain a better understanding of disaster prevention and response, but also learn to help each other. Under the expert's guidance, group discussion (Activity 1, 2, 5, and 6) and first-hand experience (Activity 3, 4, 8) allow them to learn the importance of life, cooperation, and preparedness, which contribute to an attitude-oriented disaster education (Katada & Kanai, 2016). It is noted that such ability is essential for adaptability in different contexts.

DISASTER EXPERIENCE AND ATTITUDE TOWARDS DISASTER EDUCATION AND COMMUNITY'S ASSETS AT THE *HUA TAKHE* COMMUNITY

The HTK community is situated in Lad Krabang district in the east of Bangkok. With a population density of 1735.25 per square kilometer, the majority of Lad Krabang residents engage in the industrial sector and agriculture sector, which unveil similarities to those of Sawa district, Gunma Prefecture. Like Goryo village, the HTK community is an old water-based community located at an intersection of waterways (Figure 5). The east-west canal, or *Khlong Prawet Burirom* – the first government-initiated canal successful in the efficient use of land development (Institute of Environmental Research, 1994, p. 9) – is an extension of *Khlong Phra Khanong* connecting the Chaophraya river and the Bang Pakong river of the Chachoengsao province. The north-south canals include *Khlong Lam Pla Tiew* and *Khlong Sisa Jarakhe* that run through the Gulf of Thailand.

As an important hub of transportation, trade, and interaction in eastern Bangkok, the community possesses rich cultural heritage, e.g. the Chinese shrines, the Taoism's and Confucianism's vegetarian halls, including the well-preserved and the adaptive wooden shophouse architecture. Besides, it is endowed with intangible assets as manifested in a variety of water-related festivity: the Thai wedding procession on boats, the Mon floating merit-making festival, the *Loy Krathong* festival, and the Chinese Thai *Loy Krathong Je* festival, or the Chinese Thai merit-making tradition during the vegetarian festival around the end of Buddhist Lent day (Figure 6-7). Interestingly, the *Loy Krathong Je* festival and the *Suijin Matsuri* reveal shared attributes in three aspects: the interrelationship between human settlement and water, community participation and the production and procession of the bamboo boats. Yet, in contrast to the Japanese Water God festival, most participants are the elderly and the indigenous knowledge of boat construction is unfortunately limited to old craftsmen.

Through its history, the HTK community has witnessed several disasters that result in not only the physical and functional change of dwellings, but also the diminishing quality of life of its dwellers. In recent years, several creative activities such as artwork made by recycled PET bottles, art workshops and exhibitions, graffiti, including a monthly garbage rowing activity, have been launched in an attempt to revitalize the community.

Among schools under Bangkok's Department of Education, Lad Krabang district constitutes the largest number of students (16,240 students or 5.66%) and the second largest number of schools (20 schools or 4.58%) and teachers (773 teachers or 5.38%) (Office of the Official Information Commission, 2018). Located amidst several educational institutions, which comprise of three primary schools, i.e. *Suksa Pattana*

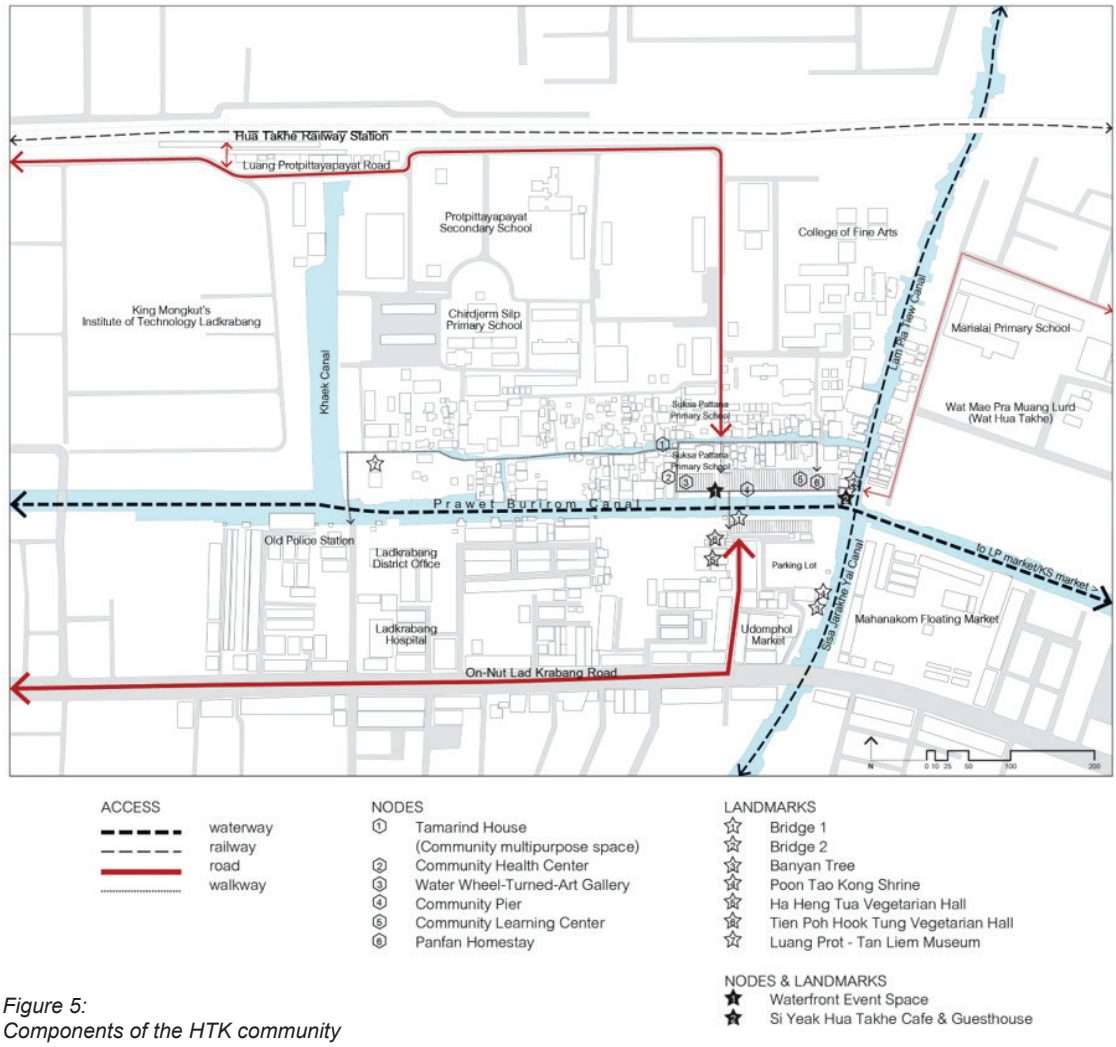

Figure 5:
Components of the HTK community
(Source: Wongphyat, 2019)

Figure 6-7:
Ceremonial ritual at the Confucianism's vegetarian hall (left)
and procession of bamboo boat (right) on the Loy Krathong Je festival

School, *Chirdjerm Silp* School, *Marialai* School, a secondary school, i.e. *Protpittayapayat* School, together with College of Fine Arts, and Institute of Technology (KMITL), the HTK community can serve as an important node of interaction between the community and the local students and between the old and the young generation. It is one of the most potential areas for the study and implementation of a disaster education and community development program.

Disasters at the *Hua Takhe* Community

According to the interviews with local residents, community working members, and disaster victims (Umbha, Choti, Ruengsak, & Veera, 2019), the HTK community has observed several floods and fires as outlined below:

1. Floods

The HTK community was hit by floods in 1983, 1990, 2002, and 2011. The 1983 flood that affected 42 provinces in Thailand and lasted for four months accounted for 200,000 damaged houses in Bangkok. At the HTK community, houses were flooded by approximately 20-100 centimeters high. After the floods, several houses underwent modifications, e.g. elevating the ground floor and changing flooring materials. The 1990 flood had an effect on numerous areas including the eastern part of Bangkok. In the community, some houses that did not raise the ground space were flooded by roughly 20-100 centimeters in height. During the 2002 flood that impacted on 58 provinces together with Bangkok, few houses in the community were flooded by approximately 20-100 centimeters high; others were safe. Despite the countrywide damage caused by the 2011 disastrous flooding that affected 65 provinces and lasted for seven months, the inundation level of the houses at the community was only 20 centimeter high. This is probably due to the fact that the community is located in the area where a number of national development projects exist, such as Suvarnabhumi International Airport, Steam Energy and Power Plant in Ladkrabang Industrial Estate.

2. Fires

The HTK community witnessed fires in 1967, 1998, 2013, and 2014. The first two incidents took place in the south, the others occurred in the north of the community. Around the beginning of 1967, a fire spark while an old resident was ironing in a gasoline trading house destroyed the entire 150 shophouses in the southern bank of the canal. Thanks to the three-day downpour, the northern side of the community was safe from the incident. In March 1998, the heat from hour long use of a cooking stove ignited a fire, which could not be stopped until the next morning. Almost two thirds of the shophouses in the south (107/150) rebuilt after the first fire were in ruins. 43 buildings were saved by a brick wall that acted as a fire buffer; however, they transformed their usage from shophouses to houses. There was a record of slight damage, e.g. ignited roofing materials, wooden components, and merchandised goods, on the opposite side of the canal due to the south-north wind direction. It is noted that male teenagers threw water-filled plastic bags to the flame. They lined up in a zig-zag position and used fire extinguishers to control the situation. While women and children evacuated to nearby schools, ten male members volunteered to help monitor fire occurrence two hours per person. Some volunteers splashed mud onto ignited products at a big grocery shop. After the fire, the HTK residents donated fire extinguishing equipment, which cost around 20,000 thb (650 usd), for communal use.

On July 21st, 2013, a quarrel between foreign laborers who rented out a shophouse caused seven buildings in the north to be burnt down. According to the inhabitants, plumbing that was installed on the floor of the front passage as well as motorcycles and potted gardens that encroached the back passage obstructed evacuation routes. It is noteworthy that this fire incident was a key factor contributing to the inhabitants' heightened sense of belonging and awareness of their living environment. In response to the unforeseen disasters, foreign laborers are no longer allowed to rent houses in the community. Revitalization programs and workshops have been launched by the community working members in collaboration with educational institutions. On November 7th, 2014—a day before the *Loy Krathong* festival, a short circuit that occurred while a flashlight was being charged wiped out five shophouses in the

Figure 8:
Fires and the transformation of the HTK community
(Source: Wongphyat, 2019)

north. A neighboring shophouse was demolished to provide access for firefighters. It is claimed that the tangled power cables and poorly organized electrical system of the community obstructed the local authorities from cutting off the electrical power. As a result, firefighters were able to enter the disaster-stricken area promptly (Figure 8).

Attitudes Toward Disaster Education at the *Hua Takhe* Community

Based on questionnaire surveys conducted during May-June 2019 with all the shophouse owners residing in the northern side of the community and the community working members (37 respondents in total), the study of disaster experience and attitudes toward disaster education at the HTK community comprises of five main parts as outlined below:

About the Respondents

The ages of the respondents range from 31 to over 71 years old. The majority of the respondents are aged around 51-60 years old (29.7%), followed by 41-50 years old (24.3%), and 61-70 years old (21.6%). The ratio between female respondents (51.4%) and male respondents (48.7%) is comparatively equivalent. Almost evenly distributed, the period of residency of the respondents can be divided into three groups: over 50 years (32.4%), between 20-50 years (32.6%), and less than 20 years (35%). The respondents who belong to the first group are those who might observe the first disaster at the community, while the newcomers in the last group are those who did not witness, nor had direct experience in responding to the 1983 and 1990 floods and the devastating fires in 1967 and 1998. Comparing the source of distributing disaster-related information with the period of residency, it is clear that while social media is a popular tool among most new residents (83%), it is rarely used by the old residents (10%). Therefore, it is manifested that there is a gap in communication between the old and new community members.

Regarding educational background, the survey result shows that more than half of the respondents received bachelor's degrees or higher, half of which are community working members and volunteers. However, while the respondents who received bachelor's degrees (43.2%) comprise of the largest proportion of the total residents surveyed, those who graduated at primary education level (29.7%) constitute the second largest one. Of this portion, almost 60% are the elderly.

In terms of building usage, most respondents utilize their shophouses as integrated shop and dwelling units (70.3%), as they did in the past. However, there are other types of usage; occasional residence (8.1%), shop building with no residence (13.5%), and occasional shop space (8.1%). When relating the period of residency and the type of usage, it is noteworthy that about two thirds of the new residents (69.2%) no longer utilize the shophouses as regular homes. They are modified to serve as galleries, guesthouses, restaurants, and cafés. It is crucial to note that an increase in visitor capacity and electric load can lead to unforeseen incidents such as collapsed buildings and fires.

Past Disaster Experience

Among disasters at the HTK community, the 2014 fire comprises of the largest number of the disasters the respondents witnessed (64.9%), followed by the 2011 flood (56.8%), and the 2013 fire (54%). Although the recent fires in 2013 and 2014 caused less damage, when compared to the 1967 and the 1998 fires, these incidents marked a turning point for the community—they helped raise the inhabitants' sense of belonging and awareness of their living environment. In collaboration with the KMITL, the HTK community held a workshop on lessons learned from past disasters in 2013.

In response to floods, lifting up furniture (54%), is the most common preparation, followed by piling up sandbags (29.7%). There were also those who did not do any preparation (16.2%). Approximately three fourths of the respondents' houses have experienced floods. Flooding at a height of 20-100 centimeters (37.8%) comprises the largest portion of the flooded houses, followed by flooding with a height under 20 centimeters (27%) and flooding outside the houses (24.3%). After floods, roughly 80% of the respondents' houses underwent slight modifications such as elevating the ground floor of the shop space (62.2%), changing flooring materials, usually from old to new wooden floor, (46%), and heightening the position of electrical sockets (27%).

During fires, helping family members and neighbors (54%) comprises of the largest amount of individual response, followed by moving out valuable belongings (48.7%), and helping extinguishing fires (46%). Apart from one's own house (51.4%), schools (27%) and a relative's or a friend's house (24.3%) are frequently served as evacuation places. As schools are frequently utilized as the community's evacuation sites, such concerns as evacuation and rescue routes, supporting facilities for emergency usage, and school personnel's disaster response knowledge and experience are of importance. Roughly 30% of the respondents' houses were affected by fires: two thirds of them were severely destructed. Most damaged houses underwent different degrees of modifications ranging from repairing entire structural and building components (10.8%), repairing some parts of structural and building components (8.1%), repairing some parts of building components (5.4%), changing building components into fire-proof materials (5.4%), to installing fire extinguishers (10.8%). Therefore, it is evident that floods affected a larger number of houses with slight damage; fires impacted a smaller portion of houses with severe destruction.

Opinions Toward Future Disasters

The ratio between the respondents who think there is a possibility of floods in the community (51.4%) and those who believe there is no chance of floods (46%) is more or less equivalent (Figure 9). Major possible causes include shallowness of waterways (37.8%), poor water management by national authorities (32.4%), and low maintenance of the community's drainage system (21.6%). Possible consequences are damage to houses (37.8%), obstacles to daily life (37.8%), loss of income (32.4%), food shortage and water contamination (16.2%), and disease outbreak (10.8%).

By contrast, most respondents (94.6%) believe that there is a possibility for the occurrence of fires (Figure 10). Among several factors, or "risks," short circuit (67.6%) and deterioration and lack of maintenance of the community's electrical system (67.6%) rank first possibly due to the cause of the most recent fire together with the incidents at a neighboring dormitory in 2001, 2015, and 2018 (P. Suwat, personal communication, May 16, 2019), and the recurring news of fire accidents in old communities countrywide. Other contributing causes are negligence in using gas stoves (59.5%), smoking (43.2%), and use of flammable materials, e.g. wood (43.2%). Loss of lives, properties, and houses (86.5%) comprises the highest potential consequence, followed by loss of income (56.8%), obstacles to daily life (51.4%), emigration (32.4%), slight injury (29.7%), and severe injury (27%). When

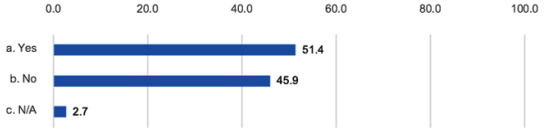

Figure 9:
Possibility of future floods

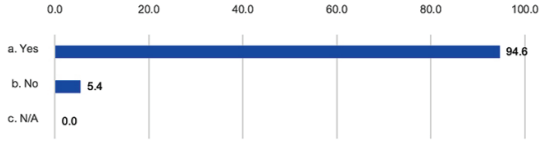

Figure 10:
Possibility of future fires

relating the responses to past disasters (e.g. helping family members and neighbors) and the possible consequences of future disasters (e.g. loss of lives), it is affirmed that a high possibility of fire occurrences that could bring about serious damage requires community cooperation.

Disaster Preparedness

Considering that fires are more likely to occur in the community when compared to floods, individual and communal preparation for future disasters specifically focuses on risk mitigation and response to fire incidents. Individual preparation concerning fires comprises 63.3%, while preparation for floods constitutes 12.2%. It is noteworthy that over 80% of newcomers whose period of residency is less than 5 years have not done any preparation. Of the fire disaster preparedness, installing fire extinguishers and/or fire hoses (24.3%) ranks first, followed by attending fire drills (10.8%), looking after the community's members (10.8%), and investigating and repairing electrical sockets (8.1%). The community's preparedness for future disasters emphasizes solely on fire incidents, which includes enhancing awareness and collaboration among the community members (37.8%), preparing fire extinguishers, fire hoses, fire pumps, and a fire boat (35.1%), attending/organizing fire drills (24.3%), and holding the community's meetings (13.5%). However, according to the respondents' remark, it seems that such activities are inconsistent and not taken into serious account. Based on field surveys, it is surprising to note that although the fire extinguishers are installed not only in almost every house, but also at the community center, most residents do not know how to operate them; some residents are not able to locate where the equipment is kept. In addition, maintenance of the community's fire boat is relatively low with limited technical expertise.

When asked whether there is disaster training in the community and how many times, more than half of the respondents (51.4%) answered that there is training, but they are not able to specify the frequency. When asked whether they have ever participated in the training either held at the community or elsewhere and how many times, almost half of the respondents (48.6%) have attended the training 1-5 times, while 40.5% of the respondents never took part in the activities (Figure 11). When looked closely, two thirds of the old residents have undergone drills, while over half of the new residents have no disaster training experience. Hence, it is apparent that older residents are more well prepared than the newer ones. This figure connotes that past experience has an influence on the degree of preparedness for disasters. Considering that the new residents have a lack of experience in disasters and related trainings, they are more likely to be at risk when disasters occur.

Although the workshop on lessons learned from past disasters co-organized by local educational institutions and authorities and the HTK community in 2013 unveils an attempt to cope with future disasters, it is significant for the community to have disaster-related learning and training consistently and inclusively.

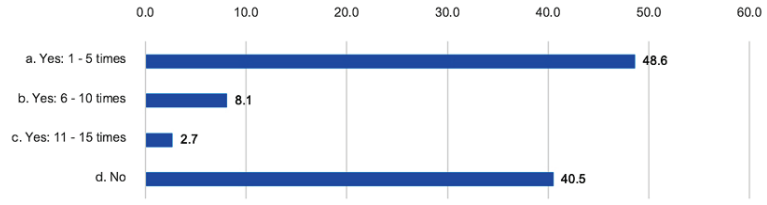

Figure 11:
Participation in disaster trainings

Attitude Towards Disaster Education

Despite the fact that almost 60% of the respondents are unaware of the current National Disaster Prevention and Mitigation Plan, most of them (89.2%) want to share their experiences about disaster preparedness and outcomes to the younger members in the community. The prevalent reason is to be able to prepare, prevent, and respond to disasters (51.4%), followed by to help look after one another (8.1%), to respond to disasters without panicking (5.4%) and because the community is at risk (5.4%) (Figure 12). Composed of both the old and the new residents, 80% of the respondents who do not want to share information concerning disaster response think that they have no experience in disasters. On closer examination, these respondents have witnessed disasters in the community only 1-3 times; only half of them had direct experience in a fire disaster once. In addition, three fourths of them are those who never participate in the drills. Hence, it is noteworthy that, regardless of the period of residency, the direct experience in observing disasters and attending disaster drills plays a key role in the respondents' opinion on sharing disaster-related account.

There are other reasons worth mentioning. For example, a seventy-eight year old man, who is one of the oldest residents, wants to let the young know the collaborative attempt of the older generation. An ex-firefighting volunteer wants to share his experience to those who come to help about the adaptive use of equipment at hand for putting out a fire. Another resident who has witnessed most disasters in the community wants to share his observation on the disaster response-related wisdom but is anxious whether he is qualified considering his appearance.

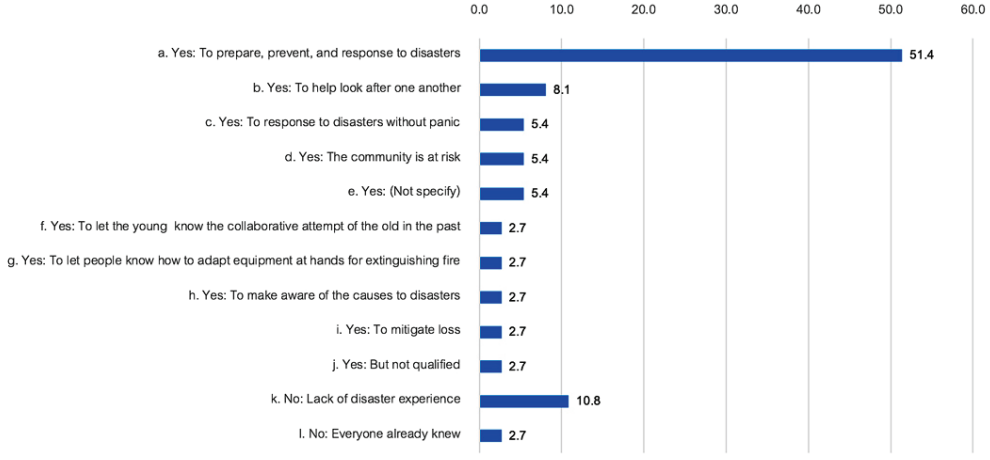

Figure 12:
Attitudes toward sharing past disaster experience

Concerning the disaster prevention program at the community, community leaders and committee comprise the largest proportion of those who should be responsible for initiating the process, followed by local authorities, and every stakeholder. When asked who should be involved in the next step to improve the community's disaster prevention, more than one third of the respondents comment that everyone should be engaged in the process. In this respect, building a platform for sharing the inhabitants' disaster experience and co-creating the CBDRM plan is indispensable.

An Intergenerational Perspective on Community Assets

The survey of intergenerational opinion on the tangible and intangible aspects of local heritage at the HTK community is divided into four categories; places, products, activities, and impressive stories. Each category is composed of two open-ended questions—be it, what and why. The questionnaire survey forms were collected from 115 respondents during May-June 2019, including 37 adults, 36 young teenagers, and 42 children, all of which either live, work, or study in or near by the community.

Physical Environment

Among the physical environment in the HTK community, *Si Yaek Hua Takhe* Café and Guesthouse comprises the largest number of the places impressed by multigenerational inhabitants, followed by waterfront shophouses, *Na Lad Krabang* Café, *Kin Di* restaurant, and machine shop-turned-noodle restaurant (Figure 13). While the top three are liked by the respondents of all ages, the others seem to be favored either by one or two generational members.

On closer examination, it is evident that the *Si Yaek Hua Takhe* Café and Guesthouse and the *Na Lad Krabang* Café are liked by the adults and the youths with similar reasons, which include good ambience and beautiful wooden architecture. While the waterfront shophouses are much favored by the adults and children; however, their key reasons are different. The adults appear to focus on the aspects of place, such as traditional architecture, comfortable living, convenience, including the residents' sense of rootedness; the children concentrate on the quality and variety of merchandised goods.

When looking at an outlined result of each respondent group, it is interesting to find out that the physical environment impressed by the adults

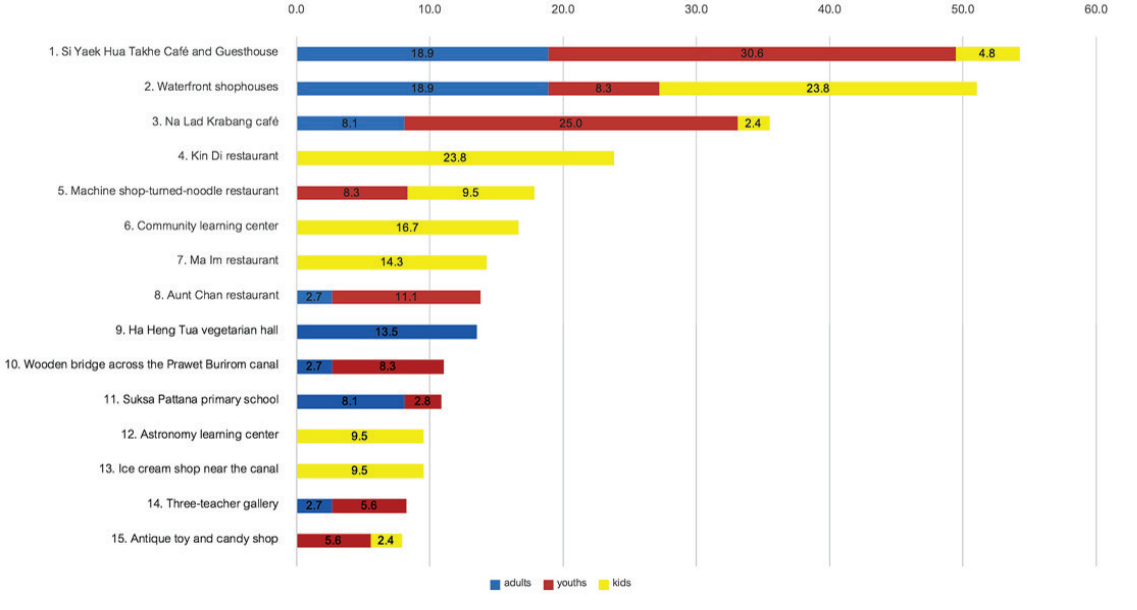

Figure 13:
Places impressed by multigenerational residents

consists of not only the old places with collective and private dwellings, but also the new places with good ambience. In contrary to the adults, the youths' favorite physical environment focuses on the new places, either the adaptive buildings with a good atmosphere or the partly modified ones with delicious food. As for the children, it seems that they are more likely to favor a familiar environment or frequently visited places. Given the above-mentioned account, it seems plausible, albeit unfavorable, that no such historical sites as the *Ha Heng Tua* vegetarian hall highly respected by the old HTK residents and has enshrined the *Loy Krathong Je* festival, nor the *Poon Tao Kong* shrine where alligator skulls are sanctified and thus related to the origin name of the community, is mentioned by the young generation members.

Products

Among the HTK products, assorted traditional Thai desserts comprise of the largest number of the products favored by the respondents of all ages, followed by artwork made of recycled PET bottles at the *Suksa Pattana* school, Pad Thai at *Aunt Chan* restaurant, Thai sweets made from red water lily stems, and Chinese pastries and leaf-shaped cakes (Figure 14).

Instead of the agriculture-related machinery and wooden craft products of the past, it is noteworthy that the current majority of popular products liked by intergenerational residents are the assorted Thai-style desserts for their original taste, good price, and ability to support the community economy. The *Aunt Chan* restaurant's Pad Thai is liked by the adults and the youths for its good taste and cleanliness.

However, while the nascent artwork made by recycled PET bottles gains popularity among the children and is favored by the adults because it helps reduce waste, make efficient use of time, and create income, such local products as the Thai sweets made from red water lily stems unique to traditional water-based communities and the Chinese pastries and leaf-shaped cakes famous among the old Chinese Thai residents are largely unknown to the teenagers and the children. Therefore, it is interesting to note that the adults tend to focus on uniqueness and identity of the community. Nonetheless, quite similar to the case of the physical environment, the children tend to prefer familiar products, most of which are food and snacks.

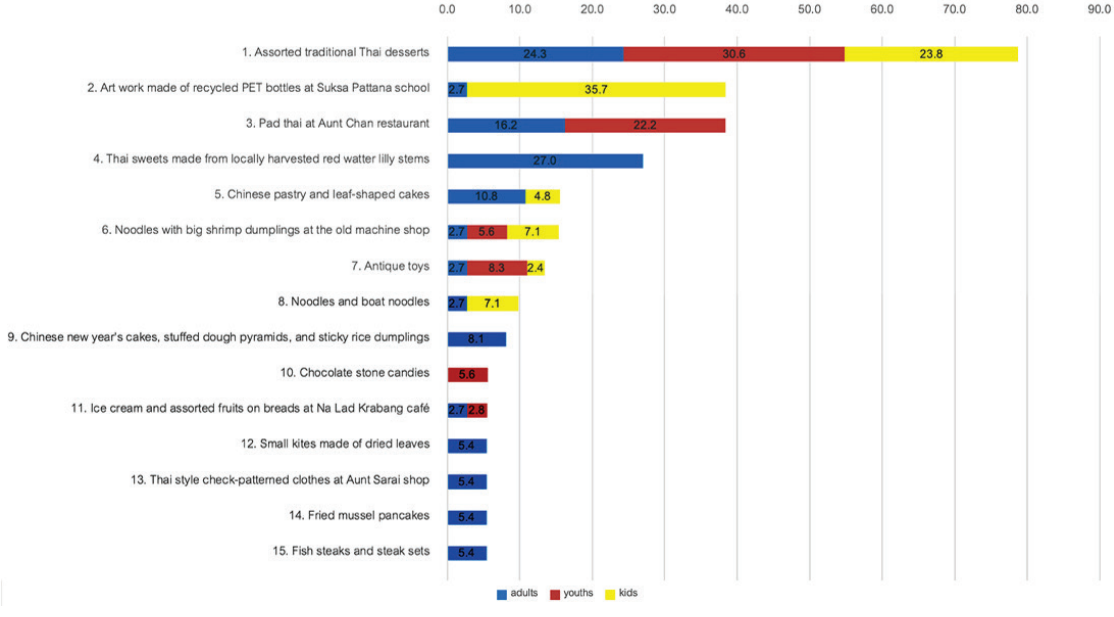

Figure 14:
Products impressed by multigenerational residents

Activities

Of the activities at the HTK community, the *Loy Krathong* festival comprises the largest number of the events liked by the majority of respondents, followed by the *Songkran* festival, the monthly garbage rowing activity, the market's merit-making event, and the Mon merit-making event on boats (Figure 15).

It is obvious that the *Loy Krathong* festival is liked by all ages, albeit with different reasons. It appears that the adults pay attention to social interactions, the youths focus on people and place, and the children concentrate on people and activities. The *Songkran* day is the favorite event shared by the adults and the children for it allows the old and the young to meet together. The HTK revitalizing activities are much-awaited among the youths and the children because these art and creative events offer a variety of products. The monthly garbage rowing event is liked by the adults and the youths because it is good for the environment.

Nonetheless, it is unfortunate that several traditional festivities, e.g. the market's merit making event, the Chinese merit-making event, together with the *Loy Krathong Je* festival, and the wedding procession along the canal, which has its root from the Chinese Thai culture and the agrarian society that aptly portrays the community cooperation, is rarely known among the young members of the community.

Impressive Stories

The community members and mutual help among them comprises the highest amount of the respondents' positive impression about the HTK community, followed by the lifestyle and atmosphere of waterfront dwellings, the well-preserved physical environment of the community, the liveliness of the market and community revitalization activities, along with the waterfront restaurants and foods (Figure 16).

Impressed almost evenly by the respondents of all ages, the community members and mutual help among them is ranked first among the HTK impressive aspects for their generosity and solidarity. The lifestyle and atmosphere of waterfront dwellings is favored by the multigenerational inhabitants, especially the youths due to its simple way of living, the coexistence between old and new environs, and the interrelationship between people, place, and culture. The well-preserved physical environment of the community is specifically liked by the young generation members because of its unique architectural feature, history, livability,

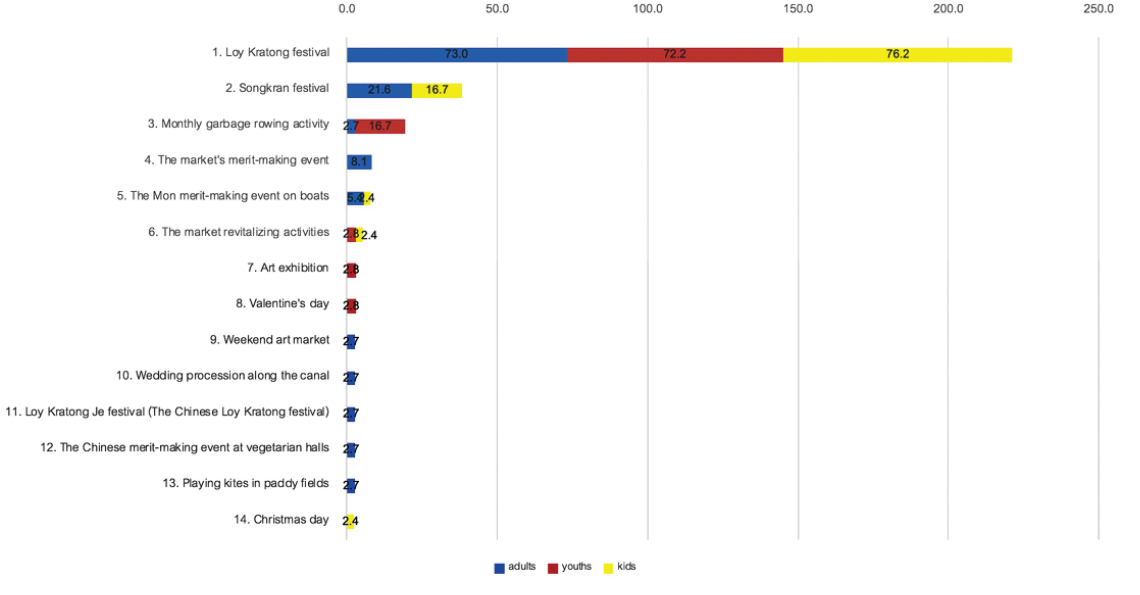

Figure 15:
Activities impressed by multigenerational residents

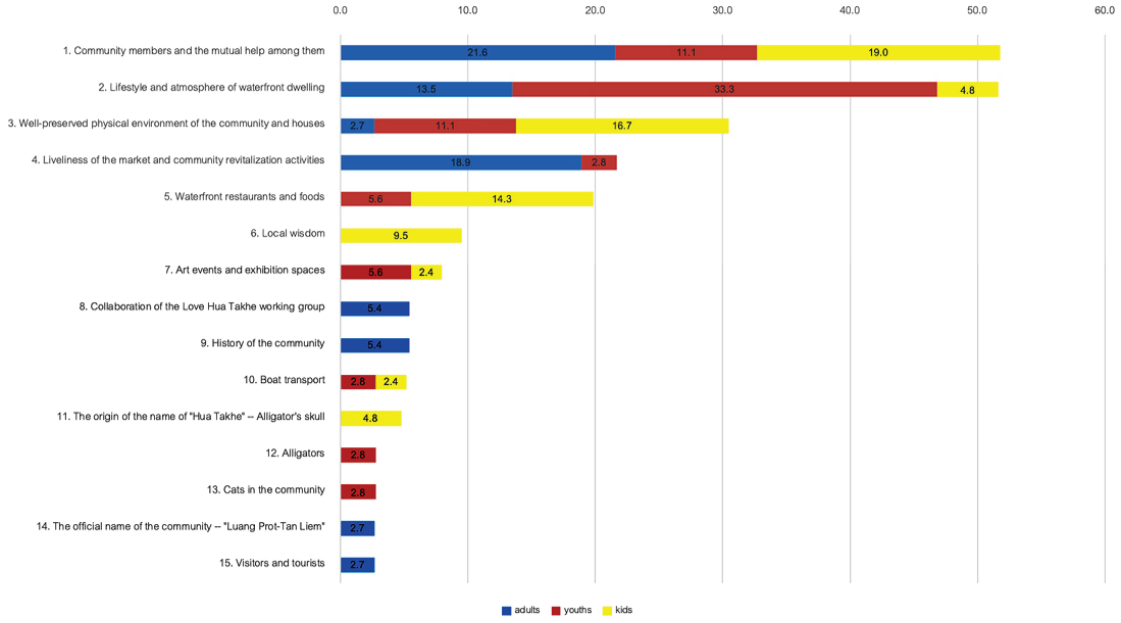

Figure 16:
Stories impressed by multigenerational residents

and resourcefulness for learning. When used appropriately, these positive aspects can be employed as an important mechanism in an informal yet integrative learning environment, which contributes to the sustainable development of the community.

A PROSPECT OF DISASTER EDUCATION AND COMMUNITY DEVELOPMENT AT THE *HUA TAKHE* COMMUNITY

A Prospect of Disaster Education and Community Development

It is evident that the type and degree of disasters together with advancement of disaster-related knowledge and practice between Japan and Thailand are significantly different. These result in the differing degrees of preparedness both at collective and individual levels. Based on the analysis of questionnaire survey results, field observations, and interviews with the community leader, the working members, and the HTK inhabitants, the SWOT analysis of a prospect of disaster education and community development of the Thai case study is outlined below:

Strengths

(1) Solidarity: Community cooperation is strongly felt both in the disaster response and the community's festivals, especially among the old generation, which can be a good example for the young generation members.

(2) Human resources: In general, more than half of the inhabitants are well educated. In particular, the old inhabitants have knowledge about local wisdom and cultural heritage as well as the experience in disaster response that can be shared among the HTK residents.

(3) Cultural resources: The community possesses both the tangible assets, e.g. traditional and contemporary architecture and product, and the intangible assets, e.g. festivity and local wisdom, which reflect the interrelationship between people, place, and culture, and thus are resourceful for learning.

(4) Educational resources: The community is nestled among six academic institutions ranging from elementary education to university education. The close proximity to schools and the close rapport between the community and the educational institutions would allow for future collaboration in disaster education and community development activities.

Weaknesses

(1) Disaster prevention resource limitation: When compared to the Japanese case, the Thai community has no disaster prevention map or hazard map, either provided by national or local authorities, which is a fundamental tool for understanding the community's living environment and identifying potential risks when disasters occur.

(2) Gap in communication and interaction: The old and the new residents rely on different types of disaster-related communication. The old and the young inhabitants focus on different aspects of the community's assets and activities. Considering the gap in communication and interaction among the residents, a platform for sharing the disaster-related information between the old and the new residents as well as knowledge dissemination of the community's assets between the old and the young generation members is necessary.

(3) Lack of systematic disaster management: Disaster-related meetings and trainings are organized inconsistently. A more consistent schedule is essential to encourage more involvement. Such a plan can be achieved by integrating the disaster prevention and management activities with the extracurricular activities in a school's calendar and/or with the community's festivals.

(4) Low participation: Women and newcomers, who are not the community working members, rarely participated in the disaster prevention activities. As a result, they are less prepared for handling an emergency situation. Considering that the female residents are those who stay home and often engage in cooking and the new residents have a lack of disaster experience, they are more likely to be at risk than others in times of disaster.

Opportunities

(1) Collaborative learning: The collaboration between the community and local schools can bring about an innovative learning of disaster risk management and cultural heritage that are appropriate to the context.

(2) Integrative learning: The content of disaster education and community's assets can be integrated to help the residents gain a deeper understanding of their living environment and enhance a sustainable development of the community.

(3) Inclusive learning: Resourcefulness of the old inhabitants and volunteering spirit of the new inhabitants, many of whom are community working members, can contribute to an informal and inclusive learning of disaster prevention education, which helps the CBDRM activities become more participatory.

(4) Better quality of life: The participatory process of disaster education and community development program can help raise the inhabitants' awareness in their living environment, which contributes to the enhanced quality of life.

Threats

(1) Changing usage of buildings: Newcomers are more likely to engage in food and beverages and guesthouse business. The growing number of restaurants and cafés may increase the chance of floods due to the shallowness of waterways, which is ranked first among the possible causes of floods, by littering in the canals. In addition, there is a possibility of fires because of the negligence in using gas stoves and the use of flammable building materials, which constitute the second and the third highest portion of possible fire causes respectively.

(2) Unbalanced development: Focusing more on commercial profit and less on communal purpose may affect the community in a manifold way. The waterfront space that served for communal use, such as the community's special occasions, e.g. the *Loy Krathong* festival, the *Songkran* festival, the market's merit-making event, together meeting and workshops helps enhance social interaction

among the inhabitants has been subdivided and replaced by waterfront restaurants and cafés thereby decreasing communal space which can influence social ties. In addition to the tangled power cables, the increasing density of buildings may bring about a delay in the provision of immediate assistance when disasters occur.

A Proposed Program for Disaster Education and Community Development

In spite of such differences between Japan and Thailand, the key essences of disaster education learned from the Japanese cases can still be transmitted. These essential components include the attitude-oriented disaster prevention education through group discussion, which contributes to the in-depth understanding and adaptability to contextual situation, and the community cooperation through participatory process, which accounts for the informal yet inclusive learning community. It is crucial that the community is at the center of the process leading to disaster resilience. Therefore, the prospected participants include local students, teachers, the HTK residents, and the community working members. The program is composed of two phases, which can be adopted and organized by the community in collaboration with local schools and universities. As disaster education should be a continuous process (Takeuchi, Mulyasari, & Shaw, 2015), each phase constitutes a reflection session for future improvement.

Introduction to Disaster Education Workshop

As children are among the vulnerable members in the community and schools are frequently used as evacuation sites, the first phase of disaster education workshop will primarily focus on children in a local school, named *Suksa Pattana* school. Situated in the middle of the HTK market, the school is flanked on both sides by old shophouses. Its main structure and materials are made of wood, similar to the shop buildings. At present, there are approximately 50 students at the school. Despite such a small population, it is acclaimed to be the pioneering school in Lad Krabang district to have a foreign teacher in the English class. In addition, their PET bottle artwork has been renown not only in the community, but also in the district.

The half-day disaster education workshop consists of seven activities. The expected number of participants is approximately 30 including 2 university instructors, 3 university students, 2 schoolteachers, and 20-25 school children. Its goals are to provide the students an outlined history of disasters in the community and local wisdom concerning disaster prevention and response, to make them aware of the physical environment and cultural heritage of the community, and to offer a platform for exchanging opinions with peers. As Shiwaku (2009) pointed out, disaster education can be transferred to parents and community, so it encourages the discussion on disaster management plans with families. Ultimately, it aims to engage children as active participants in community development. The program is listed as follows:

Activity 1 is about learning the local assets and the disasters of the community. Through a brief lecture, the participants will gain an outlined understanding of the community's heritage and harm as well as their interrelationship. In addition, the sharing of the result of questionnaire survey#1 on disaster education and community development, which includes past disaster experience, opinions toward future disasters, disaster preparedness, and the attitudes toward disaster prevention activities, and the result of questionnaire survey#2 on the community's heritage, which comprises of four topics, i.e. places, products, activities, and impressive stories, through illustrative charts to provide them with specific instances and help motivate discussion among them.

Activity 2 is about learning the physical environment of the community. By relating images of the important places, products, activities, and impressive stories selected from the survey#2 to the satellite map of the community, the participants will be able to recognize the location of these aforementioned items as "nodes" or "districts" or "landmarks." Accordingly, jigsaw maps with labels of places, canals, roads, and railways will be distributed to each group of participants. Through discussion with peers, they will be able to put together the entire map and orientate their houses, school, and other familiar places in their daily life, along with the connecting routes between them. In contrast to the Japanese hazard map that focuses on terrain and flood level due to its geographical setting, this jigsaw map is employed as a means to ensure that the students

will be able to relate the surrounding environment into a two-dimensional image and to capture the key elements composing the image of their community.

Activity 3 is about surveying the community and identifying disaster prevention-related components. After the jigsaw map, A2-close-up line maps will be given to each group (Figure 17). Each group will be assigned to investigate one of three components, which include (1) the points where fire hydrants, fire extinguishers, and a fire boat are kept; (2) the paths that could be used as evacuation routes and rescue routes in case that fire occurs near a school and their frequently visited places; and (3) the places that are considered risk zones, safe zones, and potential evacuation sites (Figure 18). Each category should be accompanied by a note of problems and/or suggestion on how to enhance the existing conditions. Through observation and conversation with the HTK residents, they will gain a better understanding of their living environment.

Activity 4 is about presenting the survey result using maps and drawings. Through discussion with peers and facilitators, each group will mark the points, the paths, and the places on the base maps. Furthermore, drawing what the participants have learnt during the workshop will allow them to examine the disaster prevention-related components closely. As an end product, these drawings are anticipated to be used as an educational material, i.e. local trump cards that integrate the knowledge of disaster education and community's assets, which can be distributed to academic institutions and local communities. As a process, the exchange of perspective and the discussion of format and items to be used for this educational tool, at a later stage, will bring about a mutual learning that encourages the community engagement and makes the community development program more participatory.

Activity 5 is a storytelling of the disaster prevention and response-related wisdoms of the Japanese case, i.e. Goryo village, and the Thai case, i.e. Chiang Mai's Nong Hoi municipality. Though different in geographic condition, these cases unveil a shared meaning—the important role of the community cooperation. Activity 6 is about summarizing the key points the participants have learnt from the workshop. The last activity is about evaluating the activities using reflection sheets.

Disaster Education and Community Development Workshop

Considering that community cooperation is a key factor in disaster risk management, the second phase of the disaster education and community development workshop aims to engage multigenerational inhabitants. The one-day workshop is scheduled on the community's festival day, i.e. the *Loy Kratong Je*, in an attempt to bridge the relationship between the old and the young members, and encourage the integrative learning between disaster education and community's assets.

The one-day disaster education and community development workshop comprises of nine activities. The anticipated number of participants is approximately 35-40, including 2-3 university instructors, a CBDRM expert, 3-5 university students, and about 30 HTK residents including the head of the HTK community, the HTK working members, ex-volunteers, disaster victims, and intergenerational residents. Its objectives are to share perspectives and experiences on disaster preparedness and response among the community members, to make the participants aware of the interrelationship between disaster prevention and sustainable development of the community, and to promote the CBDRM in the community. The program is outlined below:

Activity 1 is about learning the disasters and the local assets in the community emphasizing the result of questionnaire survey#1 and #2 and the preliminary hazard map of the first workshop. Through charts, maps, and drawings, the participants will understand an overall picture of the past and present the condition of disasters, the opinion towards disaster education as well as the different perspectives on the community's heritage among intergenerational residents. A brief talk about the community festival, i.e. the Loy Krathong Je, that represents the old HTK residents' cooperation will be highlighted. In addition, the survey result executed by the children will help motivate the participants' awareness in their living environment and preparedness for disaster risk reduction.

Activity 2 is about sharing the disaster-related experience and response by the HTK residents, e.g. the elderly, the ex-volunteers, and the disaster

victims. The platform will offer detailed accounts of the old residents' response to disasters, causes, and consequences. Besides, this lesson learnt conversation will shed light on the importance of solidarity, the sense of belonging, and the situation-based disaster response measures that contribute to the sustainable development of the community.

Activity 3 is about surveying the community and identifying the disaster-related risks. Unlike the survey in the first workshop, each group composed of multigenerational members will investigate all components—the points, the paths, and the places, identify risks that might contribute to fires and floods and consequences, which constitutes one of the social resilience attributes, together with possible solutions. Participants are allowed to row boats to inspect the community's waterways. Through discussion with peers and other residents, they will gain a deeper understanding of their physical environs and the disaster risk reduction strategies.

Activity 4 is about presenting the survey result through maps, photos, and drawings with a focus on identifying risks and proposing risk-reduction measures. Like the first workshop, the drawings and other materials will be used for the production of the local trump cards on disaster education and community development.

Activity 5 is about learning the living conditions and troubles that might occur at evacuation shelters together with the rules that allow disaster victims to live safely and comfortably. A quiz will be given to the participants, while examples of the Japanese cases are conveyed. This session aims to encourage discussion and contextualized reasons.

Activity 6 is about learning the CBDRM. The CBDRM expert will give a brief talk on program, process, and participation, and exemplify the Thai cases. Subsequently, the participants will be encouraged to discuss and exchange ideas on the community's CBDRM plan.

Activity 7 is about wrapping up the key points of the workshop. Activity 8 is about participating in the *Loy Krathong Je* festival. The evening event begins with having a vegetarian meal prepared by the community members together, then praying the Chinese deities, walking the seven-meter-long boat from the vegetarian hall to the shrine, performing a ceremonial ritual at the shrine, putting the boat on the canal and setting fire, and floating small vessels. Through first-hand experience, the participants, especially the young, will be able to understand the meaning of community cooperation. The last activity is about evaluating the workshop using reflection sheets.

Figure 17-18:
Example of a base map for the surveying of the community's living environment (left) and a narrow passage and a shallow waterway at the back of the community (right)

CONCLUSIONS

This paper sought to examine the Japanese informal form of learning on disaster preparedness and response together with the disaster experience and attitudes toward disaster education of a Thai case study. It aimed to analyze the prospect of disaster education and community development in the HTK community and to propose a program appropriate to the Thai context.

To begin with, the research expounded on the program and participation as well as the meaning and implication of the Japanese disaster education activities in Tamamura town, Sawa district, Gunma prefecture. There are two disaster education-related activities in the Water God festival. While the play session of storytelling and local card game conveys the information of past flood disasters, local assets and wisdom, including the meaning of the festival, the production of these educational tools contribute to disaster education both as an end product and a learning process.

Participated in by local school children, the disaster prevention camp consists of eight activities. The program includes learning the flood risk along with the evacuation sites and methods by the hazard maps; understanding the condition of refugee's life and the rules in evacuation shelters; building cardboard partitions for private sleeping units at the shelters; experiencing emergency food and learning the adaptive use of daily items for emergency situations; speculating the possible troubles at the shelters; considering the daily preparation and evacuation items; wrapping up the information and experiences learnt at the camp; and cleaning the camp venue. Through the exchange of opinions and hands-on experience, the participants gain not only knowledge on disaster prevention, but also wisdom that allows them to realize the importance of life, cooperation, and preparedness and response to situations proactively.

Next, the paper discussed the result of the questionnaire survey on the disaster experience and attitude towards disaster education together with the perspective on the community's assets and analyzed the prospect of disaster education and community development of the Thai case study. Based on the SWOT analysis, the solidarity, the human, cultural, and educational resources constitute the strengths of the HTK community. Although the limitation of disaster prevention resources is both the national and local problems, the gap in interaction between the old and the new residents as well as the elderly and the young, the lack of systematic disaster management, and the low participation in disaster trainings are significant problems that can potentially weaken the community. While the collaboration with local schools, the integrative and inclusive learning, and the enhanced quality of the living environment and inhabitants' life can be regarded as its opportunities, the changing usage of dwellings and the unbalanced growth between commercial and communal purposes may create enormous challenges to the sustainable development of the community.

Accordingly, this paper proposed the disaster education and community development program, which includes two phases; for the local students and for the multigenerational residents. In addition to sharing the result of questionnaire surveys, the first workshop will focus on the surveying of the living environment and identifying the disaster prevention-related components for the production of the local hazard map. The second workshop will concentrate on identifying risks and their consequences along with possible measures for risk reduction. The storytelling of the Japanese and Thai local wisdom and the talk on the CBDRM will equip the children and the residents with necessary knowledge. The exchanging of ideas and sharing of experiences among the adults, the youths, and the kids will bring about a deeper understanding of condition and consequence of disasters at the community. This motivates discussions on how each household and the entire community react to disasters proactively. Through discussion and hands-on experience, these activities can be deemed as the learning processes that allow the participants to re-acknowledge and re-evaluate their physical and cultural environment that is key to disaster education. By attending the community's traditional festival, they will recognize the importance of the community cooperation. It is anticipated that the proposed program will contribute to the integration, the learning community, and the disaster resilience of Thai communities, which help fulfill the country's challenges and limitations of disaster prevention education.

ACKNOWLEDGEMENTS

This research was funded by Chulalongkorn University Grant for Short-Term Research and The Sumitomo Foundation Fiscal 2018 Grant for Japan-related Research Projects. The author would like to thank Professor Masanobu Kanai for supporting this research.

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