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**URBAN ENVIRONMENTAL EDUCATION IN PRIMARY SCHOOL.**  
**COMPARATIVE CASE: PRAGUE AND HANOI**  
**MASTER'S THESIS**

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# CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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## DIPLOMA THESIS ASSIGNMENT

arch. Phuong Thanh Dang

Landscape Engineering

Landscape Planning

Thesis title

**Urban environmental education in primary school: Comparative case study in Prague and Hanoi**

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### Objectives of thesis

This thesis attempts to fill gaps in the literature related to the context of environmental education for children in primary levels.

1. What is the relationship between urban children and nature?
2. What are the main environmental problems that exist in Vietnam has been facing? In some big cities such as Hanoi city
3. To what extent is environmental education presented in primary school for children aged from 6 -10 in Vietnam/ What kind of environmental education has been applied in primary school in Vietnam? The strengths and weaknesses of the curriculum, teacher skills. And is there any environmental concern from agendas of the community?
4. What are the criteria for a potential location for environmental education in Hanoi and Prague? Criteria to establish such integrated program?
5. What challenges and opportunities to implement environmental education in Vietnam? What are the main factors influencing the effectiveness of environmental education in Vietnam?

### Methodology

The methodology presented in this thesis includes three parts. The first and foremost part is literature review of environment education. This part began in November 2022 to January 2023, mainly focuses on history, definition, frameworks, the situation of environmental education in Vietnam and the Czech Republic.

The second part is the approaching by a qualitative research with the participation of three schools in Hanoi city, Vietnam. In each school, students will be divided into groups with corresponding questions and tasks. Based on the cognitive and presenting ability, groups will be as follows: Group 1: aged 6; Group 2: aged 7-8; Group 3: aged 9-10. Interviews in person with these children were conducted for their opinions, acknowledgement and awareness of the environment. Group 1 was asked to draw what they understand about nature. Group 2 was asked some questions related to the environment. Group 3 was asked about describing the life of a bee. Primary schools chosen for this research are based on location – in Hanoi, and

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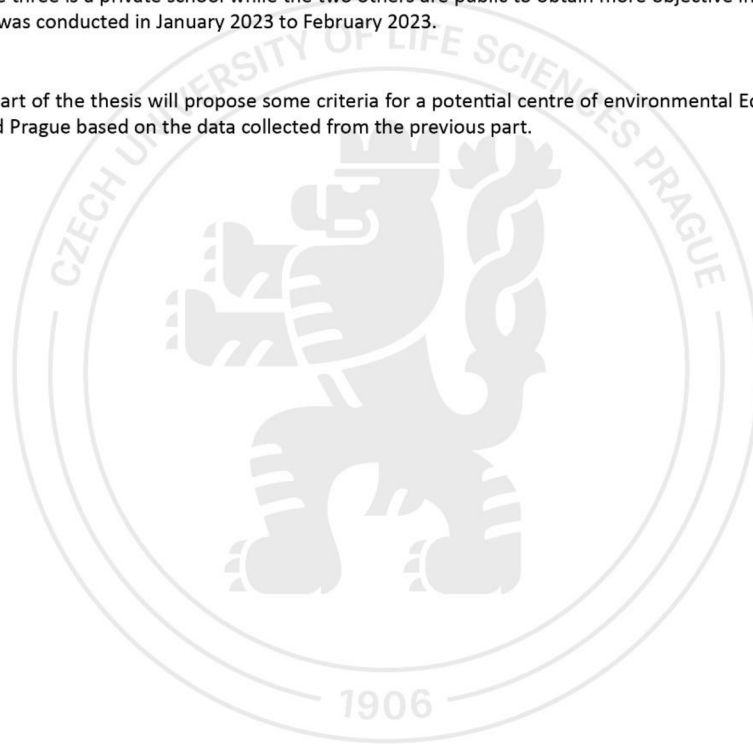
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one of the three is a private school while the two others are public to obtain more objective information. This part was conducted in January 2023 to February 2023.

The last part of the thesis will propose some criteria for a potential centre of environmental Education in Hanoi and Prague based on the data collected from the previous part.



**The proposed extent of the thesis**

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**Keywords**

Environmental education, urban, children, primary school

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In Prague, Czech Republic 30.03.2023

Phuong Thanh Dang

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## **Abstract**

Today, people are facing countless effects from extreme weather phenomena, which are the results of climate change. Their consequences are extremely serious, by realizing this, countries around the world have begun to pay attention to environmental education, even for children, since the 1970s. There is much research about environmental education, but not so much researches about the environmental education in Vietnam. Therefore, this thesis examines environmental education in Vietnam, in particular, in Hanoi city. To do that, the research questions are about the relationship that urban children have with nature; major environmental problems in Vietnam and Hanoi; how environmental education has been implemented in primary education in Vietnam, and its strengths, weakness, opportunities, and challenges. The methodology made in this thesis is the qualitative approach used to interview children in primary schools in Hanoi. Two primary schools have been chosen in the high density of population. And children will be divided into three groups, which are: grade 1, grade 2 and grade 3, grade 4 and grade 5. Each group will receive different questions based on the child's cognitive. In total, there are 421 children in two schools participated in this thesis. The findings of this thesis about the way how environmental education is applied in primary schools in Vietnam are similar. Finally, this thesis can contribute to Hanoi or other big cities in Vietnam or city planners or organizations, which have interested in the environment in Vietnam, to become a source of reference.

**Keywords: Environmental education, children, primary school, urban**



## **Abstrakt**

Dnes se lidé potýkají s nesčetnými následky extrémních povětrnostních jevů, které jsou důsledkem změny klimatu. Jejich důsledky jsou mimořádně závažné, uvědomujíc si to země po celém světě začaly od 70. let 20. století věnovat pozornost environmentální výchově, a to i u dětí. Existuje několik výzkumů o environmentální výchově, ale ne tolik výzkumů o environmentální výchově ve Vietnamu. Proto se tato práce zabývá environmentální výchovou ve Vietnamu, konkrétně ve městě Hanoj. K tomu se výzkumné otázky týkají vztahu, který mají městské děti k přírodě; velké ekologické problémy ve Vietnamu a Hanoji; jak byla environmentální výchova aplikována v primárním vzdělávání ve Vietnamu, její silné a slabé stránky, příležitosti a výzvy. Metodika vytvořená v této práci je: kvalitativní přístup, který byl použit u dotazovaných dětí na základních školách v Hanoji. Pro vysokou hustotu osídlení byly vybrány dvě základní školy. A děti budou rozděleny do tří skupin, kterými jsou: ročník 1; stupeň 2 a stupeň 3; stupeň 4 a stupeň 5. Každá skupina dostane různé otázky na základě kognitivních schopností dítěte. Celkem se této práci zúčastnilo 421 dětí ve dvou školách. Zjištění této diplomové práce o způsobu aplikace environmentální výchovy na základní škole ve Vietnamu je podobnost. V neposlední řadě může tato práce přispět k tomu, aby se Hanoj nebo jiná velká města ve Vietnamu nebo urbanistům či organizacím, které se zajímají o životní prostředí ve Vietnamu, staly referenčním zdrojem.

**Klíčová slova:** Environmentální výchova, děti, základní škola, město

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## **1. Introduction**

Urban environmental education is a critical component of primary school education, as it can help children understand the natural world surrounding them. Rapidly urbanizing world creates challenges and opportunities for urban environmental education. Introducing the environmental education to children at early ages can inculcate a strong sense of preservation and connection with the natural environment, influencing their parent in terms of environmental knowledge and behaviours (Straub & Leahy, 2017).

There are several reasons why urban environmental education is so important in primary school (Kuo et al., 2019). Firstly, it helps to promote environmental awareness among children (Suharti, 2023). Secondly, urban environmental education can help build children's critical thinking skills (Dadvand et al., 2015). Thirdly, urban environmental education can encourage healthy behaviours in children (Wells et al., 2015).

The concept of environmental education was introduced in the 1970s with the first steps were found in several national conferences or events, such as The UN Conference in 1972, the Belgrade Charter in 1975 and the Tbilisi Declaration in 1977.

Today 56% of the world's population (4.4 billion inhabitants) live in cities (World Bank, 2022). Exposure to urban pollution have been linked to increased risk of respiratory diseases and impaired cognitive function in children (Pénard-Morand et al., 2010). According to Colding et al. (2020), environmentally favourable areas play an important role in achieving sustainable societies, where public-based policies can improve urban ecosystems and enable individuals to learn more about the natural environment, stimulating affective connections and cognitive factors among individuals and nature.

Many countries (for example, the United States, China, Czech Republic, Germany, and India) have formally included environmental education in their education systems. Due that environmental education is understood from the optic of each cultural context, there are interesting differences between Asiatic countries such as Vietnam and central European countries such as the Czech Republic. In Vietnam, meeting the country's future sustainable development objectives may be challenged. Managing pollution, the unsustainable use of natural resources, and the loss of biodiversity in the context of climate change will continue to impact Vietnam's environmental resources (Schirmbeck, 2017). Furthermore, the Ministry of Education and Training of Vietnam (MOET) approved several strategies and policies for

strengthening the environmental education programs in Vietnamese schools. The directives that were implemented provide the important legal instruments for putting the environmental education activities in Vietnam's national education system into action (Uyen et al., 2022).

In the Czech Republic, the environmental education was introduced as nature conservation education, in nature protection and environmental formation (Činčera, 2007). Was introduced the term Environmental education and awareness, defined as a system, which leads to the acquiring of knowledge, skills and habits, forming a hierarchy of values and lifestyles necessary for environmental protection towards sustainable development at local as well as global scales. The strategic objective of Environmental education and awareness is the application of sustainability principles in the practice of the whole education structure of the society (Činčera, 2007).

Given the importance of early childhood for the foundation of environmental sensitivity, the environmental education has been proven as important contributor of positive childhood experiences in nature with the nascence of adult environmental concern and participation in environmental behaviours (Chawla, 2007). Nevertheless, the accumulated evidence about the impact of environmental education on children's environmental attitudes and behaviours in Vietnam and the Czech Republic is less robust. To fill this gap in the literature, the current study investigates the context of urban environmental education for children at primary levels.

## **2. Objectives of Study**

This thesis attempts to fill gaps in the literature related to the context of environmental education for children living in urban area in primary education levels. The research questions:

1. What relationship does urban children have with nature?
2. What are the main environmental problems that exist in Vietnam has been facing? In some big cities such as Hanoi city
3. To what extent is environmental education presented in primary school for children aged from 6 -10 in Vietnam/ What kind of environmental education has been applied in primary school in Vietnam? The strengths and weaknesses of the curriculum, teacher skills. And is there any environmental concern from agendas of the community?
4. What are the criteria for a potential location for environmental education in Prague and Hanoi? Criteria to establish such integrated program?
5. What challenges and opportunities to implement environmental education in Vietnam? What are the main factors influencing the effectiveness of environmental education in Vietnam?



### **3. Literature Review**

#### **3.1 History**

##### **The United Nations Conference on the Human Environment:**

It was held in June 1972, in Stockholm. This conference is considered the first national event that brought up the environmental education (Nations, n.d.).

The objective of this international working meeting is to create a foundation when considering the environmental problem of humans, and attract the attention of countries around the world to the environmental issues (The UN Conference, 1972).

Issues discussed include human settlement and resource management, how to protect the environment, considering the environment issues from the perspective of social and cultural, and the relationship between humans and nature. There are 26 principles have been made during the conference (More, 2019). Meanwhile, the action plan mentioned three major types to promote the activities of assessment and management in the world (Nations, n.d.).

##### **Belgrade Charter:**

This is a structure for environmental education approved on 22 October 1975, a result of the International Workshop in Belgrade in Serbia. This paper was designed to increase the awareness of the population about the environment and its related problems, and which has the knowledge, skills, attitudes, motivations and commitment to work separately and together toward solving environmental problems and prevent these in the future. Primary school is one of the target audiences of this paper, along with preschool, secondary, and higher education students, teachers or environmental professionals, ... (*Belgrade-Charter: A Framework for Environment Education*, 1975).

The basic principles of the education for environment are as follow (*The Belgrade Charter*, n.d.):

1. View the environment issues in several fields about ecology, politic, economy, technology, society, culture and aesthetic.
2. A constant life-long process, both in school or out-of-school.
3. The approach should involve many different fields.
4. Active participation in resolving environment issues should be emphasized.

5. Examine crucial environmental issues from a general view.
6. Focus on the current and future environment status.
7. Consider all development from an environmental view.
8. Cooperation from local to international levels, working together to come up with solutions on the environment should be focused.

*Table 1: Objectives of the Belgrade Charter (Belgrade-Charter: A Framework for Environment Education, 1975)*

Awareness	To raise awareness of the environment and its related problems.
Knowledge	To equip some basic knowledge of the environment, its issues and human responsibility and role.
Attitude	To gain sustainability toward society, interests in the environment and the motivation to take part in environment protection and improvements.
Skills	To equip the needed skills for solving environmental problems.
Evaluation ability	To help in evaluating environmental and education programs in ecological, political, economic, social, aesthetic and educational factors.
Participation	To increase a sense of belonging regarding environmental problems.

**Tbilisi Declaration:**

This is the outcome of the world's first intergovernmental conference on the topic of environmental education in Georgia in 1977. The declaration is very important because it recorded the consensus on the essential role of environmental education in preserving and improving the environment. In total, there were around 265 delegates and 65 representatives participating in the conference (*Tbilisi Declaration, 1977*).

*Table 2: The goals of environmental education according to the Tbilisi declaration (Tbilisi Declaration, 1977).*

<b>GOALS</b>	
1	to enhance the awareness of such matters in economic, social, ecological

2	to equip people with knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment
3	to establish a positive group of behaviour towards the improvement of environment.

## 3.2 Environmental education

### 3.2.1 Definition

Environmental education is the journey of recognising and clarifying concepts so that progress skills and attitudes which are necessary to perceive the relationship between people, culture and biophysical surroundings. It also involves practice in decision-making and self-development of codes of conduct on matters related to environmental quality (Resources, I. U., 1970). Besides, the environmental education is a place where environmental problems are studied, including resolving and taking measures to improve the environment (Fasolya, 2016).

Lucas in 1980 brought up that environmental education is “about the environment”, “for the environment” and “in the environment” and can be mixed between “about”, “for” and “in”. It is concerned with providing a cognitive perception of environmental problems. And directed toward environmental preservation is characterised by particular purposes or aims. (A. M. Lucas, 1980). Later, in 1998, Davies exemplified explicitly about environmental education (table 3). The purpose of this education is: to awaken the awareness of sustainability, especially in environmental issues and related problems. (Rychnovský, n.d.)

Environmental education focuses on developing the core concepts and skills that environmentally literate citizens need for responsible actions (Adkins, 2002). The goal is to aid citizens in becoming environmentally knowledgeable and above all, skilled and dedicated citizens who are willing to work, individually and collectively, toward achieving and or maintaining a balance between the life and environmental quality (Hungerford et al., n.d.)

While a small number of people doubt the importance of learning about sustainability, the presence of environmental education is underappreciated, namely the priority of such content, in general, has not been given much attention as its role (Palmer, 2002). In 2015, Heck described environmental education as a global serious problem and learning how to protect the environment is one step toward sustainable development (Heck, 2015). However, Liberty Hyde Bailey claimed that the term “environmental education” was difficult to define since it was abstract (Edward, 2006)

Environmental education can be defined as a process to impart knowledge about the function of nature and the environment, especially, to create sustainability, and what will be humans plan for taking action in the ecosystems. The term is often used to imply education within the school system, from primary to post-primary, however it is sometimes used more broadly to include all efforts to educate the public (Chris-Valentine Ogar, 2017).

*Table 3: In 1998, Davis exemplified explicitly about environmental education (Davis, 1998).*

Education about the environment	Learning about how natural system works
Education in the environment	Direct experiences in the environment necessary for emotional involvement
Education for the environment	The political dimension and the actions necessary to bring about change

One of the principles of environmental education is multidisciplinary. Indeed, Pachuri has specified this point and explained that it is related to a wide range of fields such as physics, chemistry, medical sciences, agriculture, public health, etc. For example, the environmental phenomenon can be explained from the perspective of physics or chemistry; or water, air, soil elements, the species and plants in the natural world or these things can be affected by the activities related to human (Pachauri, 2012). Besides, Edward suggested that the environmental education is similar to a tree which has branches and several parts, relatively with variety of field (Edward, 2006).

According to Bhandari and Abe in 2000, the approach of environmental education is the knowledge acquisition process, in which people gain the knowledge, attitudes, skills, values and motivation to achieve a sustainable society through positive environmental impacts. Accordingly, the term refers to education for a sustainable future, the environment and sustainability (Bhandari & Abe, 2000).

In 1989, Angela Rumbold, UK Minister of State for Education and Science made a speech about Environmental education, she indicated that a good environmental education should help children go from the perception to the next steps such as experiences. She believed that the first thing a pupil should learn was about natural phenomena to acknowledge environmental problems. Due to the environmental long-term effects, and the environment is often considered to be the future problem for children, then it should be considered in a proper view. (Neal & Palmer, 2003)

Environmental education aimed at raising human awareness about environmental issues and an understanding of personal values by approaching into attitudes and beliefs and then help learners to assess and determine their knowledge about the environment and how they contribute to environmental problems. Environmental education is also considered as the practical education, where students can learn how to plant a tree, or and minimizing the impact on the environment when growing crops. And ultimately, environmental education emphasized on skills and actions of people to connect locally to internationally. The objectives of such education is to improve environmental quality and to prevent environmental problems in the future. It is information education, which improve environmental knowledge in students. For example, they can learn about the warming of the Earth, or solid waste; or the negative consequences of environmental degradation; especially emphasize on their role in creating and preventing environmental problems. (David & Judy, 1993).

### **3.2.2 Environmental education in the world**

There are several problems that even developing and developed countries faced, such as budget deficit, teachers were not equipped with sufficient knowledge, which eventually affect to the environmental education (Resources, I. U., 1970).

Several problems even developing and developed countries faced, such as the budget deficit, and teachers were not equipped with sufficient knowledge, which eventually affect the environmental education (Brabec, n.d.). Serious environmental problems in the world can be mentioned as Fossil fuel and nuclear energy dangerous to human health and environment, Global warming, Forest/wildlife degradation and disappearance, climate change, ozone depletion and water pollution, etc (Chris-Valentine Ogar, 2017). Therefore, it is necessary to pay attention to environmental education from the beginning of education.

In this thesis, some countries will be chosen as an example of the implementation of environmental education in primary schools. The first country is the United States. Along with the strong development in the economy, the US in 2023, is at 52nd in the Climate Change Performance Index (*US – Climate Performance Ranking 2023 | Climate Change Performance Index, 2022*), and stood at number 2 in top 10 polluters in releasing CO<sub>2</sub> in 2019 (Vanessa, 2021). Meanwhile, China in 2019, is the biggest country producing the CO<sub>2</sub> in the world (Vanessa, 2021). Similarity, in 2021, India was among the world's most polluted countries (Igini, 2023). While Germany is one of the pioneering countries in Europe, researching and applying environmental education (Schleicher,

1996), and also one of the best examples of an environmentally friendly country (*Most Environmentally Friendly Countries*, n.d.)

#### The United States:

Education in the United States is not about connecting with the nature of one's being, but about the attempt to control the future of environment by balancing people's need with the natural environment (Peckover, 2012).

What children learn at schools is only tools, and the type of learning is precise as training more than education. Peckover took English, Music, and Math to prove this point. He asserted that after training in these subjects, students now can start discovering or creating. For example, after learning the instrument, and read the sheets, students can start the creative process. And that is the real true learning (Peckover, 2012). Therefore, when it comes to the environmental education in schools, after getting knowledge about the environment, children now can decide what they are going to do for the environment.

The Environmental Protection Agency played an essential role in environmental education movement in the United States since 1970. Besides issuing regulations and environmental standards, the Environmental Protection Agency also created an Office of Environmental Education with objectives to develop and implement environmental curricula, educational materials and training programs for both pupils and adults; to organize seminars, conferences and discussions on urgent environmental issues; cooperate with other departments to ensure a sustainable improvement of environmental education in the US (Fasolya, 2016).

In the United States, it is common that if a person does not know the concept of environment and does not understand his or her attitude to the environment, he or she is considered to be illiterate. Because Fasolya explained that the main aims of environmental education in the country are to: establish a close connection between people and nature, form a friendly behaviour toward the environment, link a concept of nature with economic and social linkage, and engage students in local environmental issues (Fasolya, 2016). According to Peckover, the relationship between human and the nature in the United States is becoming increasingly distant (Peckover, 2012).

#### China:

China was the first of economically developing countries to follow the United Nations' Agenda 21 (McBeath, n.d.). Among four levels of environmental education, the level for primary education

lies on the Basic Environmental Education, while the other can be listed as: Higher Environmental Education of Adults Environmental Education, etc (Jiazhen, n.d.). At this primary level, it is important to pay attention to subject as Natural Sciences and Social Studies, mentioned in the General Teaching Outlines for Primary and Junior Middle Schools, in 1994 (Wasmer, 2005). Since the late 1980s, environmental education has got more attention at primary level, in the second phase of environmental education in China, which can be explained in the below table.

*Table 4: The development of the environmental education in China had gone through three phases, from 1972 to 2005 (Wasmer, 2005).*

<b>FIRST PHASE</b> <b>1972 - 1983</b>	<b>SECOND PHASE</b> <b>1983 – 1992</b>	<b>THIRD PHASE</b> <b>1992 – 2005</b>
<p>The beginning was based on the Stockholm Conference and the First National Meeting on Environmental Protection in Beijing in 1973.</p> <p>In 1981, The Decisions on Enhancing Environmental Protection Work at Present Time was released and become the foundation for environmental education.</p> <p>Environmental education in schools was not popular.</p>	<p>The focus of environmental education located at raising the awareness about environment with pedagogical approach. The curriculum of environment education was integrated in primary and secondary schools since 1987.</p>	<p>Through the influence of the UN conference in Rio de Janeiro in 1992, the Chinese government made several positive steps towards the environment, such as: implementing new curriculum guidelines in schools or issuing the National Action Guideline for Environmental Propaganda and Education (1996 - 2010), etc. A lot of projects have been applied in schools places along with training programs for teachers.</p>

China is facing two major problems causing environmental issues, which are: the lack of environmental awareness of the public and the lack of an effective mechanism in existing policy and economic system (Jiazhen, n.d.). Based on a study and interviews made by Beijing Normal University, Wasmer believed that the issues about environment are not highly considered even for teachers and this is accompanied by their gap in environmental knowledge (Wasmer, 2005).

Besides, the lack of curriculum resources is also an obstacle to the implementation of environmental education (McBeath, n.d.).

There are several cases and experiences in China when it comes to environmental education for children, such as China Green School Project, 1000 Environmental Friendly Youth Ambassadors Action Program, and China BELL Project, ... The China Greenschools project is a national-level project in 1996, to target children in kindergarten, primary school and secondary school. By the establishment of this project, it planned to spread knowledge of environmental education, sustainable development, awareness of environmental issues, etc, to both children and teachers. Not only the notion above, it is also destined to encourage children to participate in environmental protection in the future. Till 2012, there are around 35,000 green schools in China in all three levels (Jiazhen, n.d.).

One successful example of environmental education from China is the Beijing Zoo brown bear project, which was organized around a young brown bear to educate pupils to love animals as friends of human beings. Pupils were asked to provide new names for this bear. Then the Zoo replaced the old board with new names and filled the board full of views of these animals. China's "Hand in Hand Global Village" Program is another noteworthy example. Its motto is "Hand in hand to pick up hope, and protect the large Earth by small actions." Its targets are both urban and rural children. The program was initiated by Ms Lu Qin, a volunteer. It began in 1996 when the Yucai Primary School put forward an appeal to the China Children Newspaper for children to recycle cans, papers, newspapers, batteries and plastic bags. The proceeds were used to build a "Hand in Hand Environmental Protection Primary School" in a poverty-stricken region of Jiangxi Province. In 1998, the proceeds were used to build another primary school in Anyi County, Jiangxi Province. The "Hand in Hand Global Village Program" is becoming popular in many Chinese primary schools. Every village now has a council hall, an information desk, a recycling station, a radio station and a small bank. Children are responsible for participating in these departments. In this way, children can now be a part of the process of solving community problems (Bhandari & Abe, 2000).

#### Czech Republic:

In the Czech Republic, the first idea of environmental education can be found in nature conservation education, nature protection and environmental formation during the 1950s to 1970s (Činčera, 2007).



In 2016, the Ministry of Environment issued a basic guide to objectives and educational examples for teachers, educators and public administration. In the guidelines, the document pointed out several good examples to practice such as small aquatic animals can tell us about the quality of water, building a water wheel and seeing how much energy needed to stand the flow of water, creating eco-school, etc (Ministry of the Environment of Czech Republic, 2016).

The degree of environmental education applied in primary schools is influenced by the category of educational institutions (National School or General School). However, since 2007, Environmental Education and Awareness became an indispensable part of the primary education (The Capital City of Prague, 2006, p. 2).

Every school uses the Czech national curriculum to prepare its School education programme, which includes compulsory content related to environmental education. This content is to be implemented at primary and secondary schools, and integrated in all subjects to resolve environmental issues. There are various educational activities of not only specialised sites (environmental education centres – such as Lipka, Chaloupky, Sluňákov etc. the Pavučina association) but also professional organisations providing further education of teachers (Rychnovský, 2010).

#### India:

The Stockholm Conference on Human Environment in 1972, the Belgrade in 1975 and the Tiblisi in 1977 are considered the first factors to motivate environmental education in India, including the education levels and the general public. The content of environmental education contains basic concepts of quality of life plus environmental knowledge, awareness, attitudes, skills and participation. In 1981, the First International Conference on Environmental Education was held in New Delhi and after that four years, the Second Conference. This proved that the India government also paid special attention to environmental issues (Anil & Arnab, 2007).

In the National Curriculum Framework issued in 1988, in the Curricular concerns, the framework emphasized the protection of the Environment and Conservation of Natural Resources and pointed out the impacts of humans on the environment. And the school curriculum should indicate measures to protect and care for the environment, prevent pollution and save energy (NCERT, 1988). This framework marked the first concerted and systematic effort to bring environmental education into the school curriculum (Sonowal, 2009).

During the first two years of primary school, children can study the environment through Sciences, Social Sciences. Encourage children to explore their surroundings to increase their awareness of

the environment. And by the last years of children in primary school, they have begun to have a foundation for nature. Besides, the environmental messages are also addressed through Art education, aiming at raising the awareness of children toward the beautiful nature and environment surrounding (NCERT, 1988).

#### Germany:

From the 19th to the early 20th, environmental education was faintly formed under the concept of nature conservation. In the 1970s, a new environmental movement appeared and aimed attention at criticism of nuclear power and so on (Rieckmann, 2019). Environmental education was first mentioned in early 1972 in the Conference of Education Ministers, however, the effect that it leaves is not remarkable, especially for children at school. And after a few decades, education has been developing in a positive direction (Tapia, n.d.). It is worth mentioning that Germany is one of the earliest nations in Europe to spread the idea of environmental education and environmental awareness (Schleicher, 1996).

In general, there are three generations of environmental education from the 1970s. The first generation of environmental education in school life around the 1970s was not very interesting and was narrowed to unmoving pictures pinned on walls. In the second generation in the second half of the 1970s, there was an achievement of reforming educational science. For example, a young researcher in the grade of 3 could seek animal tracks and remove soil samples, work with microscopes, etc. The third generation of environmental education was in the 1990s, which showed that the subject should include all areas of society by mentioning “general ecology” or “socio-ecology”. According to Agenda 21, sustainable development is never apart or against nature. Pupils stood at a point of a company seeking much lower consumption of natural powers by answering questions, such as: how is the heating energy used and where is it being wasted, how much energy is needed to bring the teachers and the pupils to the school, etc. The Ohm Gymnasium was the first European school to receive the Eco-Management and Audit Scheme certificate. (Tapia, n.d.)

When it comes to environmental topics, from 1985 to 1991, there was a wide range of subjects embedding environmental education elements, such as biology, chemistry and social science subjects. Meanwhile, the teaching structure – interdisciplinary – became appropriate and popularity (Schleicher, 1996).

### **3.2.3 Environmental education in primary schools**

From the previous research about the activity of adults towards environment, Chawla stated that connectedness with nature in early childhood is an important factor contributing to their adulthood activities (Chawla, 1998). Similarly, Wetering believed that children are one of the potential agents when it comes to resolving environmental issues in the future (van de Wetering et al., 2022). Similarly, David and Judy in 1993 also suggested that children are very important since they are the future generation using natural resource. And in some cases, children can influence parents and other community members (David & Judy, 1993). Richard Louv found that a child without a connection with nature does not mean that he or she does not have a curiosity about nature (Richard, 2005). Therefore, taking into account environmental education, arousing curiosity about the environment at the early age is very important.

What dominates the National Curriculum concerning science education, especially for students of the age range 5 to 11 years, is the learning of science process skills, and an analytic/instrumental rationality (Hadzigeorgiou & Skoumios, n.d.).

In 1977, Elizabeth Perrott showed that teachers are one of the chief factors influencing schools. Environmental studies-related required the inter-disciplinary nature connection and the participation of pupils – which is a feature of primary school. And the interest in environmental education was less likely to increase in secondary school due to the fact of limitation time period, which was more suitable for subject specialists. Besides, an individual investigation for about 2 to 3 hours led by a teacher is very important in inspiration, providing knowledge and even other skills such as problem-solving. (Gakenheimer, 1977)

There is no right or wrong way to impart environment knowledge to children (David & Judy, 1993) at the primary schools. But one important thing that should be considered is that the practical experience of the environment in the curriculum and embedded environmental information to such as mathematics, and geography could increase the curiosity in children. Several criteria should be considered to make a group of children in the class: size, a composition such as personality, interest, teamwork ability, and monitoring of outcomes. Teachers – who are in charge of leading the class should take into account: the style of interaction, the kind of question, the way of teaching knowledge, and the balance between consistency and flexibility (Neal & Palmer, 2003). And to promote the effectiveness in learning, the topics should concern phenomena close to children, in which they can be involved (Bayrhuber & Mayer, 2000).

There are three essential elements were classified in the model: personal experience in the environment, personal concern for the environment, and personal action for the environment. And therefore, the intent of lectures and exercises should deliberate these three (Neal & Palmer, 2003). This method has been applied in many countries for environmental education in the world.

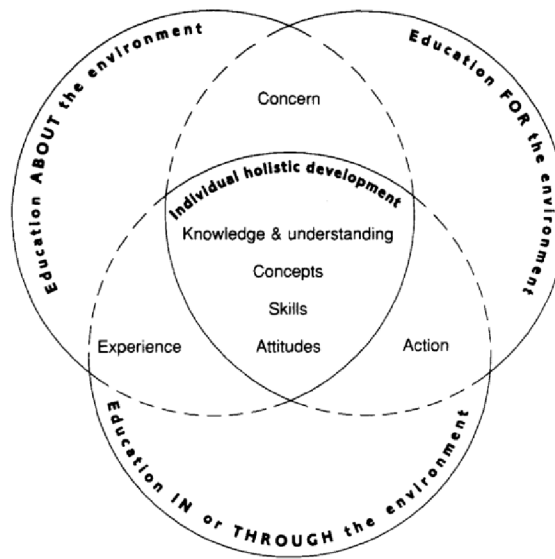


Figure 1: Model for teaching and learning in Environmental education (Neal & Palmer, 2003)

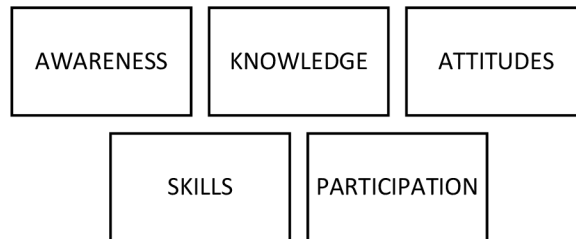
Table 5: In primary schools, it is necessary to classify ages of students as: Grade 1 – 3 and grade 4 – 6 (Wasmer, 2005).

	Grade 1 - 3	Grade 4 – 6
Content	Contact with nature to develop a sense to be awareness of nature. Besides, reinforcing knowledge about nature and daily life work together – this is a first step toward the environmental protection.	Find out about the environmental problems in the local area. Find out what are the impacts of humans on the natural environment. And establish environmentally friendly behaviours.

Two principles of play-based learning have been determined to handle environmental education for children in their early childhood, which were: evaluate different type of playing for participating toward environmental education; establish a collection of play-types for better involving (Cutter-Mackenzie et al., 2014). By pointing out the principles related to playing, it is crucial to mention that playing can wake the curiosity of children, which then helps them to memorize information longer and better. Because play is centre to child development and, as the American anthropologist George Dorsey (1868 - 1931) said, play is the beginning of knowledge (Whittaker et al., 2016). Education outside of schools in many countries is a part of the curriculum and can be very useful

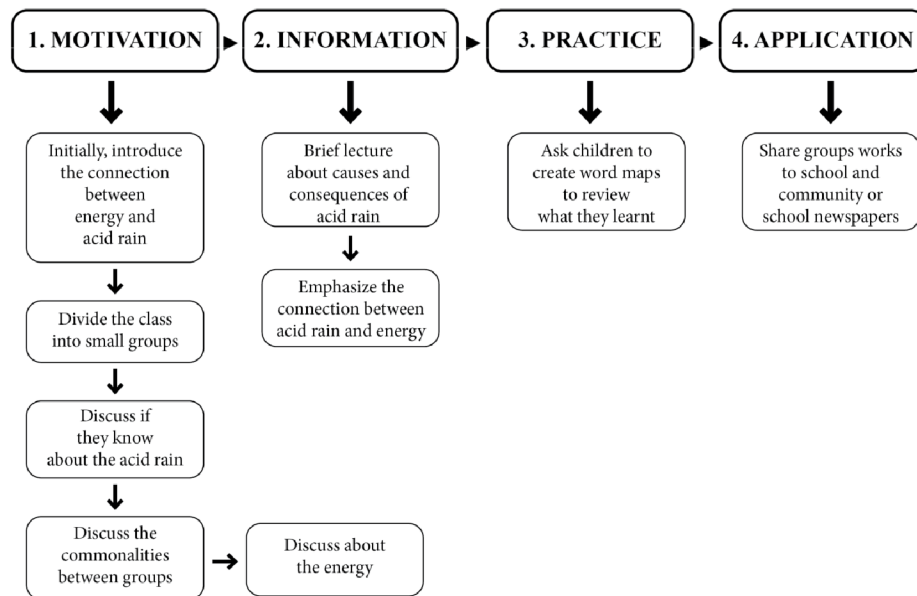
when the place is located in nature, farms, public plants, etc. This brings a lively and remarkable lessons to children (Larsen, 2008).

### 3.2.4 Framework/ Model/ Methods



*Figure 2: Five objectives ratified by The UN Conference on Human Environment in Sweden and Tbilisi in Belgrade*

The UN Conference on Human Environment in Stockholm, Sweden in 1972 and the Tbilisi in Belgrade in 1977 ratified five objectives of environmental education (David & Judy, 1993)

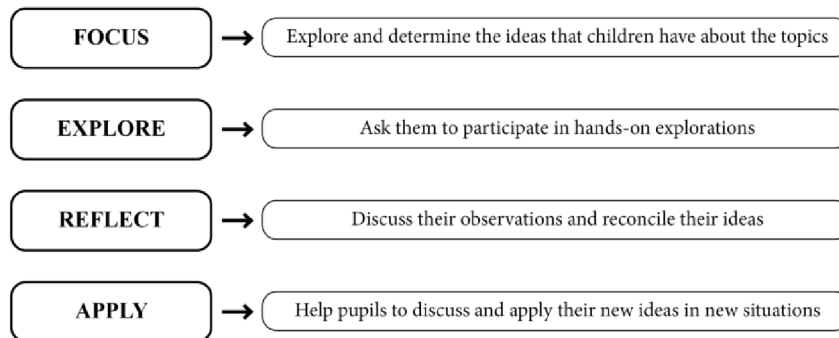


*Figure 3: 4MAT system in environmental education (David & Judy, 1993).*

Awareness is to raise awareness of environmental problems, including the enhancement of the ability to understand environment issues. Knowledge is equipped to support children to gain some basic information about the function of the environment, the solution should be taken when it comes to the environmental crisis. Attitudes are to improve the motivation and commitment of children in

terms of environmental maintenance and protection. Skills are very important in dealing with environmental matters. Participation uses the knowledge and skills and takes an action towards the environment (David & Judy, 1993).

Or there is another learning cycle namely “focus-explore-reflect-apply”. The table below is taken concrete experience as an example.



*Figure 4: Another learning cycle namely “focus-explore-reflect-apply”. The table is taken concrete experience as an example (David & Judy, 1993).*

*Table 6: Chris-Valentine Ogar agreed with Abubakar Saddiq Usman that along with the conventional way of teaching such as lecture and discussion, the effectiveness of environmental education can be improved by such methods above (Chris-Valentine Ogar, 2017)*

Reconnaissance Survey	It is necessary to have a well planned to handle an environmental issue. There, it should include equipment used at the field, a topographical map.
Measurement of Environmental Attitude	Through the parameters of vegetation, soil and its color, slope, elevation, species, etc.
Laboratory Analysis	Teacher should encourage students to analysis their sample to get a proper result.
Collection of Data and Statistical Analysis	Teacher should pay attention on students when they collect, code, analyse the data. Since these things should be in an orderly manner.

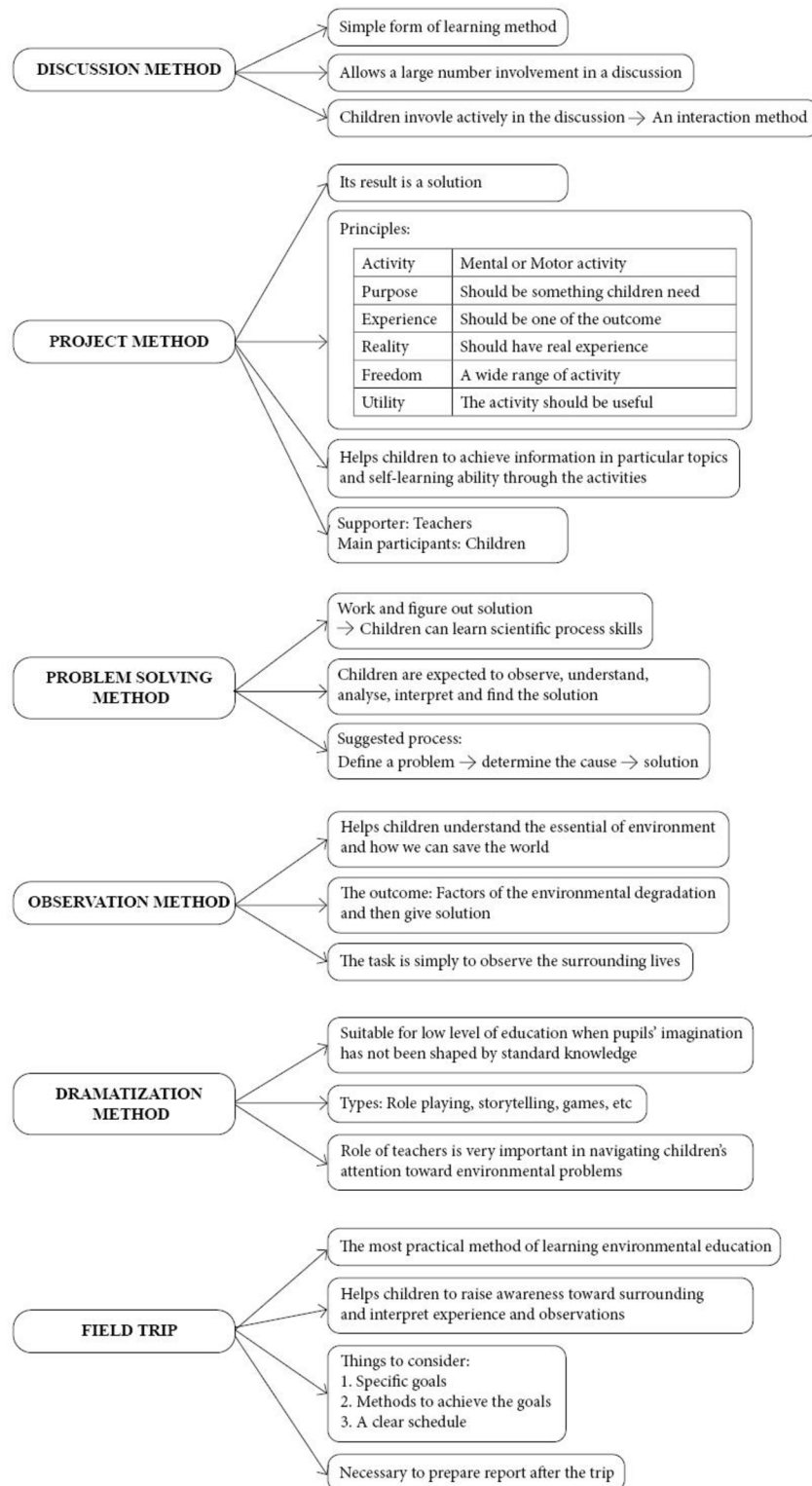


Figure 5: Different methods of environmental education (N.C Environmental Education, n.d.)

### **3.3. Relationship of nature and children and its benefits**

#### **3.3.1 Children in aged of primary schools**

In the Czech Republic, when it comes to children aged from 6 to 9, the World Health Organization reports: almost all children are actively playing for at least one hour per day – 98.3% - topped the list of 25 compared countries; 44.5% of children exclusively used active transport (walking or cycling) to get to and from school; 36.9% of children who were not members of sports/dancing clubs or did not practise sports (World Health Organization, 2020). The report was made to clarify the Physical activity habits of children aged from 6 to 9 in the WHO European region. In the report, several countries are participating, for example, Russia, Denmark, Spain, Poland, France, Turkey, Kazakhstan,... All 25 countries have more than 50% of children actively playing for at least one hour per day. While the percentage of children not involving in any sport is high in terms of Kyrgyzstan (85.6%), and Turkey (83.1%). WHO also recommends that children aged from 6 to 9 average 60 minutes of moderate to vigorous-intensity physical activity every day.

#### **3.3.2 Benefits**

The strong development of high technology nowadays is one of the main reasons to keep children away from the nature environment (Hadzigeorgiou & Skoumios, n.d.). According to the Ministry of Environment in the Czech Republic, the more children are outdoors, the more they support taking care of the environment as adults (Ministry of the Environment of Czech Republic, 2016).

Fernández-Barrés et al. did research in 2022 about the urban environment and health behaviours in children in 6 European countries, focusing age group 6 to 11 years old. In their findings, they suggest that areas with more vegetation, more building and facility density, less population density and without major roads may be good for more physical activity and less sedentary behaviours, more sleep and more active transport (Fernández-Barrés et al., 2022).

In 2011, The London sustainable development commission made a report about children and nature – a quasi-systematic review of the empirical evidence, stating that connecting with nature during the time of childhood could increase children's healthy development and a good attitude towards the environment. For example, immersion in the natural environment can help children gain the feeling of being connected with the natural world or a powerful sense of place. Or, children in a neighbourhood with a high ratio of green space are of greater physical activity since they have chances to access places offering to play. Also, several positive effects on mental health and emotional regulation were proved (*Children and Nature - A Quasi-Systematic Review of the*



*Empirical Evidence*, 2011). In addition, Robin Moore and Clare Cooper Marcus point out that children nowadays have been at risk of sedentary lifestyle or attention deficit disorder. However, spending time in nature can help children in improving mental, social and physical issues (Moore & Marcus, n.d.).

Environmental education promotes critical and creative thinking skills and inspires children to become more engaged with their community (*Why Environmental Education Is Important for Kids | Rubicon*, 2021). A group of researchers in Turkey made a test to examine Critical thinking and Environmental education with 346 students ranging from low socio-economic status to high socio-economic status. The finding showed a positive result in the critical thinking skills (Arslan, 2012). However, children in public schools, which are more economically disadvantaged than in other schools, tend to be positively affected by programs that promote environmental protection (Jaime et al., 2023).

The positive effect of greenspace has been showing in the wellbeing, of society. A research group in Scotland pointed out that physical exercise in green spaces can reduce psychological stress or emotional disorders in children (Bell et al., n.d.). In 2013, Fischer made a research to examine the relationship between a forest-immersion program and children's use with two groups. The difference between the two groups is there was one group had applied to a forest-immersion program. The outcomes showed the group that applied the program generated a great number of ideas and creative ability was also highly considered (Fisher, 2013).

Although no evidence increased environmental awareness in young children has an impact on families or parents, many studies have shown that these children themselves have changed noticeably and in a positive way when they grow up (Jaime et al., 2023).

### **3.4. Environmental issues and environmental education in Vietnam**

#### **3.4.1 Environmental issues in Vietnam**

Vietnam is a coastal country located in Southeast Asia with heterogeneous topography. One of the struggling disasters is flooding influencing a dramatic result for almost 70% of the population who live in coastal areas and low deltas (Lan Huong et al., 2022). Nowadays, Vietnamese people tend to care more about the environment than many years ago, the most are a woman and elder people (VnExpress, n.d.).

### **3.4.2 Environmental education in Vietnam**

Currently, environmental education for children at the primary level is not separated into an independent subject, but integrated into the subject content and children's activities. The content of environmental education in primary schools is not intensive, but children are expected to be equipped with the most basic scientific knowledge of environment-related issues. Although there are many environmental protection organizations in Vietnam, such as the Vietnam Association for the Protection of Nature and Environment or the Organization of action for the environment, they do not get the attention of the vast majority of people. And especially for primary school students, most of the environmental knowledge is only imparted at school.

In 2023, The Hanoi Department of Education and Training has just issued a plan to propagate and educate about environmental protection and response to climate change for the period 2022-2025. The purpose of the plan is to raise awareness, equip children with knowledge and skills about the awareness of environmental protection and response to climate change in schools so that each children is both a person with a sense of conservation. environmental protection, as well as an active propagandist mobilizing families, relatives and society to join hands to protect the environment and respond to climate change. Promote the movement of students in the capital to practice urban civilization (Thurong, 2023).

Degradation of infrastructure, pollution, low walkability, low-quality green spaces can generate environmental risks that may result in unhealthy behaviours and subsequent risks of the Non-Communicable disease and health inequalities (Houshmand E., 2017).

Emily Heck in 2015, during her research about Environment Education in Vietnam, reports there are two ways to environmental education in primary school in Le Loi primary school in Hue, Vietnam. The first is called "teaching and learning". This means that environment messages are conveyed in regular academic subjects such as Science, geography, and civics. Heck points out that several books about Environment Education were used to help teachers in Le Loi primary school teach the environment in Hue City, such as Education about Environment at a Primary Level in Art Classes and Education about the Environment at a Primary Level in Social Studies Classes. These activities listed in the books are a wide range. For example, children make a draw about animals in the jungles and discuss the severe decline of forests due to deforestation. Or another activity is a lesson about how to keep the environment clean by simple behaviour in keeping home, and public spaces clean. The second way of teaching the Environment is through social activities. Each class from age 6 to 10 will have a group of children participating in a Green Volunteers Club with its

activities such as cleaning the garbage around the school, watering or pruning the trees, plants and flowers, etc. Or doing an art project to convey environment messages (Heck, 2015).

*Table 7: Three level of environmental education in Vietnam (Heck, 2015)*

The first level	The most related of teaching, that spends the entire lesson for discussing the environment issues and environment-related topics.
The second level	The environment content will be used in at one part of the lessons. That is an extra time to raise a question about environment related to the subject matter of the day
The third level	This type is mostly integrated or link with other subjects such as Geography, Art,...

Dinh Thanh Huong researched environment education for children based on natural resources. She proposes Da Nang city – located in the middle to the south of Vietnam, has diverse natural resources, especially forest, river and sea resources, of which the most prominent are two nature reserves of Ba Na, Nui Chua and Son Tra. It has great potential in using natural resources in Environmental education. She also mentioned the model for teaching environment in primary school by 3 approaches: education in the environment, education about the environment, and education for the environment. She believed the most comprehensive and effective way is the combination of these three to help each build and develop children’s understanding of the environment, and interact with the environment so that the children can use knowledge and skills to protect the environment. When it comes to the case of Da Nang city, she proposes a scenario:

*Table 8: A proposal scenario for a case of environmental education in Da Nang city ('ENVIRONMENTAL EDUCATION IN SCHOOL BASED ON LOCAL NATURAL RESOURCES', 2020).*

Natural resources as the objective of environmental education activities	Children will be equipped with knowledge about the surrounding environment and natural resources in their own locality – this is a practical, creating foundation for children about perceiving and awareness of the environment in where they live.
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Natural resources as the materials and means for environment education	Children will have opportunities to explore locally forests, rivers, mountains, beaches,... and the on-going environmental issues such as pollution or deforestation
Protection of natural resources as a goal of environment education	From the knowledge and experience in local natural resources, and awareness of environmental issues, children tend to protect the environment.

*Table 9: Suggestions for Environmental education using local natural resources in primary school ('ENVIRONMENTAL EDUCATION IN SCHOOL BASED ON LOCAL NATURAL RESOURCES', 2020).*

Environmental education about Son TRa Nature Reserve	Bringing knowledge about environmental education into subjects such as Vietnamese, Science, Geography, History, Arts, etc. For example, in Literature, children can be asked to give their opinions about Son Tra forest, plants and animals there. Or in History, it is possible to convey information about the history of Son Tra. Besides, it is also advisable to organize excursions and picnics to Son Tra nature reserve.
Environmental education for Son Tra Nature Reserve	<ul style="list-style-type: none"> <li>- Organize practical activities to protect the Nature Reserve such as: picking trash, planting trees, spread the environment messages to people and avoid unfriendly behaviour towards the environment.</li> <li>- Organize games such as: <ul style="list-style-type: none"> <li>+ Giving a situation: pretend to be a forest ranger in the Son Tra, what to do to stop the hunting wild animals?</li> <li>+ Make hand-made products by using natural material or recycle materials to enhance both creativity and awareness of natural resources</li> </ul> </li> </ul>
Environmental education in the Son Tra Reserve	Organizing field trips to the site can allow children to gain useful insights into the values and benefits of the reserve. See the diverse beauty of animals, plants or the unique sounds given by the natural world.

In the document used for teachers in primary schools by the Minister of Education in 2008, it mentioned the three approaches: Education in the environment, education about the environment

and education for the environment. According to the document, integrating environmental education into primary school subjects has three levels: the full level, the partial level and the related level. Environmental protection education is educational content in primary schools. Due to its particularity, environmental protection education can use a variety of teaching methods such as group discussions, games, project methods, role plays, etc. At the same time, environmental protection education also uses specific teaching methods. of subjects (Vietnamese Ministry of Education and Training, 2008).

The document also suggested some plans for each age of children, particularly for Vietnamese subjects. However, the main topics listed are around such topics: the beauty of nature, Food sources, biodiversity, wildlife, or mention the booming population, depletion of natural resources, deforestation, through lessons related to Urban, Health problems, disasters, etc. The sophisticated level is accordingly to the grade of children (Vietnamese Ministry of Education and Training, 2008).

With the overall curriculum of Primary, Secondary, and even University currently in Vietnam, it is difficult to have room for Environmental Education. So the solution to not increase the teaching and learning time, nor change the current curriculum at all levels, is to integrate environmental education content into the academic subjects. The goal of environmental education is to take action to make the environment better. And it will be a failure if education does not produce a behaviour change. According to the author, for primary school, it is necessary to create conditions for children to immerse themselves in the surrounding natural life, to feel and understand the diversity of organisms (for children in the countryside), or the harmful effects of waste (for children in the city). This method helps students realize the reality of the environment where they live, and raise their consciousness to change behaviour to have a better environment. He also proposed that environmental education should be systematic, and linked to all levels of education from primary schools to high schools (Ho, 2014).

### **3.5 Environmental issues and environmental education in Czech Republic**

#### **3.5.1 Environmental issues:**

The Czech Republic is located in Central Europe, famous for being a land lock country. It borders Poland, Germany, Austria, and Slovakia. The capital and largest city is Prague. The Czech Republic is a member of the European Union since 2004 ('Czech Republic', 2023).

The state of the environment in the Czech Republic is the fifth-worst in the EU and the main problems are high emissions of greenhouse gases and other substances and soil particles (*Czechia's Environment Has Been Ranked among the Worst in the EU – Here's Why*, 2022).

### 3.5.2 Environmental education in Czech Republic

Environmental education in the Czech republic has more than fifty years of history. The goal is to enhance the knowledge, skills and attitudes towards the environment. In the document made by the Ministry of Environment, it stated that environmental education helps to develop a relationship with nature, a relationship to a certain place, an understanding of nature and the ability to investigate it, the ability to resolve problems and conflicts related to the environment, the readiness to act on behalf of the environment (Ministry of the Environment of Czech Republic, 2016).

There is a system applied in the Capital city of Prague aiming at raising awareness of especially children and youth in environment named Environmental bring-up, education, and awareness by reinforce environmental knowledge, skills, behaviours which is essential to protect the environment not only at local scale but global scale (*PRAGUE - Sustainable Development Indicators*, 2007).

The decreasing in the population due to the short-term economic downturn in the 1990s and the collapse of Communism led to economic insecurity which is all affect to population and the natural increase. Since 2003, the economy showed signs of growth. There is a growing population of children in Prague, then considering environmental education for the small one is necessary (Brabec, n.d.). As can be seen, the number of children tends to increase. Therefore, universalising environmental education for these young children makes a great contribution to the conservation and preservation of the environment.

There are numerous localities of different level of environmental protection on in Prague, which is: 4% specially protected areas, 20% nature parks (*PRAGUE - Sustainable Development Indicators*, 2007).

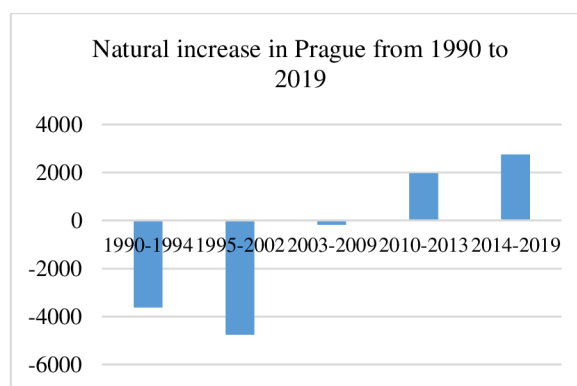


Figure 6: A chart showing the natural increase in Prague from 1990 to 2019 (Brabec, n.d.).

Non-governmental organizations also make great contributions to the implementation of environmental education activities, especially for children and youngsters. There are about 30 national or local organizations that are active in this field. For example the Eco-Centre Mycelium and Environmental Centre/Centre of Environmental Education of the City of Prague Toulcův dvůr, the Association of Young Nature Conservationists and its Centre for Children and the Youth, and the Association Tereza (The Capital City of Prague, 2006).

*Table 10: Several Non-governmental organizations are actively in environmental education in Prague (The Capital City of Prague, 2006).*

1	The Eco-Centre Mycelium	Offer over 30 interesting topics and updated issues. In 2006, 2000 children passed the educational programmes and the seminars were attended by 40 teachers.
2	Association TEREZA	Offers to teachers at kindergartens, elementary and secondary schools concrete programmes (educational programmes, long-term projects, teaching materials, worksheets, ...) for the implementation of environmental education at schools. In 2006 this offer was used by over 500 schools of the whole Czech Republic, out of that number 100 were from Prague.
3	The Centre of Environmental Education of the City of Prague "Toulcův dvůr"	Their objective is to bring up all age groups of the Prague population by means of experience to friendly relation to our environment.

The application of environmental education in primary schools in the Czech Republic is more or less influenced by the educational program chosen (National or General School). However, since the academic year 2007/2008, environmental awareness education has become an integral part of primary schools. Almost half of the primary schools in Prague have participated in the long-term projects of the Association for the Environmental Education TEREZA, the project On tour after NATURA, ... or became members of environmental clubs (The Capital City of Prague, 2006).

### **3.5.3 Nsev Kladno – Chabárna – Kladno Environmental Education center**

#### a. Introduction:

Nsev Kladno – Chabárna is a beneficial company connecting various fields for a better quality, healthier life towards a friendly environment, located in Kladno, and has been operating since 2001. The building of the Environmental Education Centre offers so many environmental activities. For example several science programs for kindergartens, primary schools, secondary schools and special schools, or science clubs for children, beekeeping clubs for children and adults (*NSEV KLADNO - CHABÁRNA, 2023*).

Especially, there are much friendly environmental behaviour has been applied in the building of environmental education. For waste management, people are trying to prevent the generation of waste by limiting single-use products and reducing paper consumption; the waste will be classified into types for further steps. For hygiene and cleaning, instead of using cleaning agents with high effectiveness but harmful to the environment, cleaning agents based on vinegar, soda or citric acid have been used. Since it is believed that such ingredients will not bring negative effects on health or eliminate bacteria in biological wastewater treatment plants. For energy saving, people are trying to save energy in daily operations even though the building was built based on a low-energy house. For water management, the organization conserve water from the rain from all the roofs of the building into an underground tank. The entire system not only helps to save drinking water but also to maintain water in the landscape. The building is connected to a small biological wastewater treatment plant, which can remove biological pollution, but not most chemicals (*NSEV KLADNO - CHABÁRNA, 2023*).

#### b. Curriculum for primary level:

**For the half-day programs** are the 3-lesson programs, conducted in the form of games. It is a talk and discussion about a given topic with the active participation of children. Many programs include science-oriented games, creative activities and experiments. The minimum number of participation is 15 and the maximum is 30 children, then they have to choose an appropriate activity (*For Schools | NSEV KLADNO - CHABÁRNA, n.d.*).

*Table 11: A wide range of activities environmental education in Kladno considering the age.*



1	Winter in nature	From 1 December to 15 March, partly outside	Children will get to know the events in the winter nature. The program is supplemented with interesting experiments.
2	Transformations of the forest	Partly outside	The program is devoted to forests (animals and plants). Working with binoculars and get to know the animals of our forest.
3	Man and animals	Partly classroom, partly outside	Children will become rescue station workers, try rescuing injured animals. They will also learn what a proper rescue station should have and what it needs to operate.
4	Inventions of nature	From 4th grade – only in classroom	The program will show students scientific inventions that are inspired by natural phenomena.
5	Bird world	From 3rd grade, partly outside	Children will go to the amazing world of birds, get to know the interesting features of the bird's body, bird's habitats.
6	Life and around water	Only from 1 March to 31 October – only outside	Children try out the role of researchers. They will explore the life in the small streams. Children are divided into groups and take turns at individual stations.
7	How to make it easier for nature?	From 4th grade – only in classroom	Learn how each of us can prevent the creation of waste, for example it is possible to save packaging when buying not only food. They will learn how to make soap and bath salt at home.
8	Are we sorting correctly?	From 4th grade	Learn how to properly sort and find out how waste can be recycled and further used. Learn to read the symbol on labels on the packages, play a quiz, disassemble the landfill and there are several question will be asked.
9	Life on the meadow	Partly classroom and partly outside	Introduce children to the insect and plant kingdom of nature in a creative and playful way. They will learn about some insects, plants and their importance for the nature and humans.
10	Garden for all	Only from 1 April to 31 October	Children will play the role of garden architects. From this, children will acknowledge the principles of permaculture division and

			sustainable relationships between humans and the environment.
11	With a drop of water underground	For 1st and 2nd grade – Only outside – from 1 April to 31 October	A journey not only underground, where we will explore how important water is, meet soil animals and plant roots, and finally get back out to the surface. The program includes experiments that children can try themselves and maybe even get dirty.
12	Look around the forest	For 1st grade – 2nd grade – Only outside	Go to the forest to track down its inhabitants. Children will learn to recognize their signs of residence, will get to know the world of forest plants.
13	Water over gold	From 3rd grade - NEW	Think about the drought in our landscape. Try to figure out the causes and with the help of practical experiments we will find out the consequences not only for nature, but also for us humans.
14	It's a hit and there will be more	From 4th – grade - NEW	Think about whether climate change is a natural process, or whether humans are helping it with their activities. Then then try to figure out how to slow down this change on our own.

**Walks and excursions:** These are walks or tours of the given locality combined with expert interpretation. There are several options that children can choose.

*Table 12: Several trails are available.*

1	Education trail I	2 – 3 hours	Pass around the Small and Great Floods, visit a water lily pond and stop at the remains of a horse-drawn carriage track.
2	Education trail II	2 – 3 hours	Walk around the Kalspot wetland, talk about the mining of sandstone called "Žehrovák" and about animals and plants in flooded quarries.
3	Vinařická mountain	2 – 3 hours	Walk the educational trail on the hill, get to know the local life and the geological origin of the hill.
4	RONNA heap	1 – 2 hours	Walk through the heap of the former Ronna mine, get to know the biotope strongly influenced by man, focus mainly on succession, natural features and the landscape.

5	Passion track and Libušín hillfort	2 – 3 hours	Walk through part of the protected area Pašijová draha - an interesting forest ecosystem of a mixed forest, visit the remains of the former hillfort in Libušín and talk about forest management.
6	Excursion at the AVES Rescue Station	1 hours	Guided tour of the AVES Rescue Station with the possibility of feeding farm animals.

**Comprehensive residential program:** This is a one-week ecological-educational stay. The content is based on the curricula of several subjects - biology, national history, primary education, natural science, ecology, etc. The programs follow on from the Framework educational program in the areas: Man and his world, Man and Society, Man and nature and in the cross-cutting topic of Environmental education. (*For Schools | NSEV KLADNO - CHABÁRNA, n.d.*).

The program is focused on topics related to the influence of man on nature during our daily life. Find out the activities by which humans harm nature the most. For this, the surroundings of the eco-centre and directly the things that the children have with them and that they use during their stay will be used. Throughout the week children will explore, learn, debate, play, create and work independently. The program will end with a children's conference, showing the results of the week's work. Children will receive a final certificate and materials with which they can continue to work at school and as inspiration for parents (*For Schools | NSEV KLADNO - CHABÁRNA, n.d.*).

#### **4. Methodology**

Choosing several primary schools as case studies to explore how environmental education is applied at the primary level and compare the effectiveness of children learning environmental education in chosen primary schools. I strongly believed that the comparison will bring a more realistic and objective result that can affect decision-making about the implementation of environmental education for children aged 6 to 10 in Vietnam. Therefore, this research brought up research questions:

1. What relationship urban children has with nature?
2. What are the main environmental problems that exist in Vietnam has been facing? In some big cities such as Hanoi city.
3. To what extent is environmental education presented in primary school for children aged from 6 -10 in Vietnam/ What kind of environmental education has been applied in primary school in Vietnam? The strengths and weaknesses of the curriculum, teacher skills. And is there any environmental concern from agendas of the community?
4. What are the criteria for a potential location for environmental education in Hanoi? Criteria to establish such integrated program?
5. What challenges and opportunities to implement environmental education in Vietnam? What are the main factors influencing the effectiveness of environmental education in Vietnam?

I believed that the approach of qualitative research perfectly fits to address the research questions since it will give me an opportunity to deeper understand about children's perception by asking how or why questions, and expanding these question for better valuating.

The data collection process was faced with some difficulties. I contacted several primary schools in the Hoang Mai district during November 2022, however, there is a fact that if there is no connection between me to the schools, then it is very hard to get acceptance from these schools to work with or ask for information. Fortunately, three primary schools agreed to work with me, including Thinh Liet Primary School, Bach Mai Primary School and a private school, I got acceptance from one of the teachers in these schools.

I reached Hanoi city in late January 2023, and it was a Tet holiday in Vietnam and the collection process would be delayed till the middle of February 2023. During that time, I contacted the three schools and proposed how the process will be and what I would like them to support. Finally, in

early March 2023, only the Thinh Liet Primary School and Bach Mai Primary School agreed to what I proposed.

For the data collection process. I divided it into two parts. Part one is when I went to primary schools to research children's perceptions of environmental elements. The second part is when I asked children about playgrounds and interviewed a few teachers.

#### **4.1 Overview of Vietnam**

Vietnam is located in Southeast Asia, in the tropical climate zone, with an S, a long narrow shape, with a long coastline in the East. It borders China, Laos, Cambodia (*World Bank Climate Change Knowledge Portal*, n.d.). In 2022, the total population in Vietnam was estimated about 98,186,856 (*Vietnam Population Growth Rate 1950-2023*, n.d.). There are three big and important cities in Vietnam: Hanoi city – the capital city, Ho Chi Minh City and Da Nang city.



*Figure 7: Location of Vietnam in the world. Source: Author.*

Vietnam is famous as an agricultural country. However, during the 1900s and 2000s, its agricultural economy significantly turned to higher-productivity manufacturing and services (McCaig & Pavenik, 2013). Therefore, it remains as an agricultural country but its agricultural production activities are no longer developing as strongly as many years ago.

Regarding the environmental issues, it is estimated that there are about 12 million people, around 12,37% of the total population will be directly affected by the sea-level rise, in the Mekong Delta. Since Vietnam is one of the world's most vulnerable countries to that matter (World Bank Group & Asian Development Bank, 2021) due to its geographical features with several transboundary river basins and low-lying coastlines, and large annual storm frequency (*Adaptive Measures for Increasing Sea Level Rise in Vietnam*, 2021). The raise of sea level is one of the most concerning environmental problem in Vietnam currently.

The environmental issues are seen clearly in many big cities in Vietnam, where the proportion of green places is outweighed by concrete and buildings. Scientists in a study called General Monetary and Multisectoral Macrodynamics for the Ecological Shift found that the highest increase of temperature was seen 1986 – 2018 for about 0.23<sup>o</sup>C per decade (News, 2022). While the World Health Organization suggests a minimum green index for one person in urban is about 9 m<sup>2</sup>/person in an urban, and the Vietnam General Department of Forestry, is only 2 – 3 m<sup>2</sup>/person in big cities in Vietnam. This fact shows that the actual proportion of urban greenery in big cities in Vietnam is only at 1/5 to 1/10 compared to the standard index (Hội 1, 2021). In the past, 35<sup>o</sup>C was considered a high temperature but in the future, it could increase to 40<sup>o</sup>C to 45<sup>o</sup>C. The high-temperature increase could lead to serious consequences for not only the agricultural industry but also human life (*Economic damage increases gradually with temperature rise*, 2022).

Vietnam has been ranked among the five countries to be most affected by climate changed (World Bank Group & Asian Development Bank, 2021). Several factors affected the environmental degradation in Vietnam. They are the exponential growth in industry field and urban sprawl, high agricultural intensification and continuous deforestation (Asian Development Bank, 2013). More than 800,000 industrial production companies and about 80 industrial parks in Vietnam, however the main source of pollution comes from the small and mid-size enterprises in the field of cement, fertilizer, metal plating, etc (KIZUNA, 2022).

Deforestation affected directly to human life. Among the top 20 countries has the most abundant and diverse forests, deforestation, shifting cultivation and the consequence of the war in the middle of the 20th century have seriously degraded forest diversity. The role of forests in Vietnam is for economic uses, source of food or medicine and as protecting the country from natural disasters (Le, 2015). In the table below, the tree cover lost situation period from 2001 – 2021 has been counted as follows:

Table 13: Vietnam deforestation and tree cover lost rate (Vizzuality, 2023).

No	Category	Period of time	Rate
1	Primary forest loss	2002 - 2021	Lost 11% of humid primary forest and 22% of its total tree cover loss
2	Tree cover loss	2001 - 2021	Decrease 20% in tree cover
3	Annual tree cover loss by deforestation	2001 - 2021	79%

#### 4.2 The study sites



Hanoi city is a big city with a total area of 3328.9km<sup>2</sup> with an estimated population of about 7.68 million people, and the high density is around 2300 people/km<sup>2</sup> (*Hanoi Population 2023*, n.d.). The city of Hanoi is located in the Northern part of Vietnam and was built on the bend in the Red River. When it comes to administration, Hanoi has 12 urban districts, 1 town and 17 suburban districts (*Hanoi GOV*, n.d.). The capital city is a political, cultural and scientific and technological centre of Vietnam.

Figure 8: Location of Hanoi city in Vietnam map.

Source: Author.

The rapid population growth in Hanoi from 1998 to 2016 has led to a large number of people from the village to the city to work. As a result, urbanization brought effects on the environment and directly affected the quality of life of people (Nguyen et al., 2019). Since the main transportation in Vietnam is a motorbike and the public transportation is not working effectively, the air pollution

in Hanoi has become a hot topic recently (VnExpress, n.d.) because of the large amount of emission from vehicles. Hanoi ranked world's 7<sup>th</sup> most polluted capital city in 2019 (*Hanoi Air Quality Index (AQI) and Vietnam Air Pollution | IQAir, 2023*). On days when the fine dust concentration are very high, people are recommended to staying inside their home and avoid participating in traffic, especially children, elder people (*Current Situation of Environment in Hanoi - Vicoen - Environmental Technology, n.d.*). Not only that, the urbanization went along with a booming population, put a hard pressure on infrastructure, where the soil waste and household waste were not treated at the standard level, leading to water pollution (*Hà Nội Strives to Improve Environment Quality, n.d.*). Therefore, unfortunately, most rivers in Hanoi are polluted (News, n.d.). Socially, the proportion of land devoted to social issues such as area for infrastructure, has not yet met the real demands of people (*The process of urban development and its effects on the land environment in Hanoi, 2020*).

This study was conducted in two urban districts in Hanoi city: Hoang Mai District and Hai Ba Trung District. They are both located in the developing and urban area and a place of transfer between the city centre and suburban area. Hoang Mai district covers about 40,32km<sup>2</sup> with population density about 9,05 thousand people/km<sup>2</sup>. While Hai Ba Trung district area is around 10,09km<sup>2</sup> but with a remarkable density about 31,31 thousand people/km<sup>2</sup> (Việt, 2021) only after the density of Hoan Kiem district 40,22 thousand people/km<sup>2</sup>.

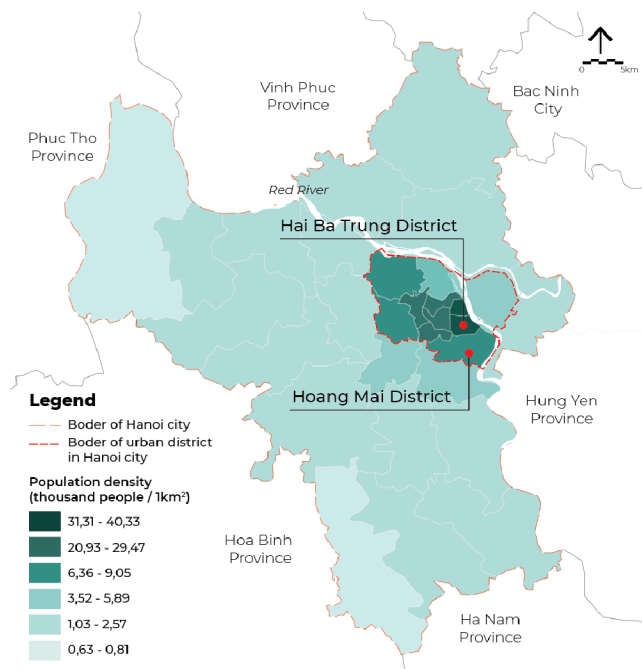


Figure 9: Location of Hoang Mai district and Hai Ba Trung district in the population density map of Hanoi 2021. Data from (Việt, 2021)

Currently, the index of greenery in city centre only reaches 1m<sup>2</sup>/person while it is expected to increase to 7m<sup>2</sup>/person according to the master plan of Hanoi city to 2030, with a vision to 2050. Thanks to the support of the Vietnam government and Hanoi City, during 2021 – 2025, the city is trying to plant 1 billion trees to improve the environment. Including: striving to plant 200,000-



250,000 new shade trees and timber trees on urban traffic routes of the city; 200,000 fruit trees; new planting, additional planting from 50-80ha of forests; taking care of 3,546 ha of the planted forest; managing and protect 6,483 ha of protection forests and special-use forests (*Hanoi: Focus on increasing the percentage of trees in urban areas*, 2022). However, according to Tran Huy Anh of the Hanoi Association of Architects, to improve the city's quality, it should be focused on quantity, not quality. Therefore, the prioritization of public green and green space is really important (NLD.COM.VN, 2021).

The amount of green space in a residential in Hanoi is very small, only some were still remained from the French's colony, located in some districts of city centre (Lê, 2022). Hanoi has a few big urban parks such as Thong Nhat Park, Yen So Park, Hoa Binh Park, Thu Le Park, etc. However, the amount of such big parks is not enough for children in the city, as they are not walkable for every child in the city. For example, Yen So park has two sides surrounded by a highway, therefore it is not safe for children to go without their parents' supervision. Another reason that might prevent children from going to the park is that it is not free to go inside. For example, Thong Nhat park requires one to pay an entrance fee.

When it comes to a city for children, Hanoi is lacking of playground in general ('Public Playground for Under-5s in Hanoi', n.d.). However, there is an organization called Think Playgrounds!, established in 2015, to create playgrounds for children in the city to bring children opportunities to play and a space for creativity and relaxation. Play equipment is all from recycled materials. This organization also offers some activities called Playday to raise people's awareness, workshops to expand the network of participants, and coordinate with the media to seek support from the government's permission (*Think Playgrounds!*, n.d.).

### **4.3 Selection of primary schools**

In general, in Hanoi or other big cities in Vietnam, each ward in the urban district has a primary school. And children in the ward study at the primary school in the ward. However, there are also cases where children study in a different ward than the ward they live in.

Regarding education in Vietnam, from primary school to further levels, all students are very serious about their studies. Besides attending in class at school during the day, they have to go for an external study by private tutors or learning centres to gain outstanding rank in class and school (*Hanoi Population 2023*, n.d.). Mostly, children will pay attention to Mathematics, Literature and lately, English. Since they are the main subjects to evaluate the standard of a student in Vietnam.

After consideration, two primary schools have been chosen, all located in the developing part of Hanoi city. They are Bach Mai Primary School and Thinh Liet Primary School. The two: Bach Mai Primary School and Thinh Liet Primary School are public primary schools. Thinh Liet Primary School is a school located nearby Yen So Park – the biggest urban park in Hanoi, and Hoang Mai district also has several playgrounds made of Think Playgrounds! While, Bach Mai Primary School is located in a high-density of population and the closest park is Tuoi Tre Park – which has been abandoned for many years and there are not many activities for children. Besides, there is no playground made of the Think Playgrounds!.

In general, the way to build primary schools in Vietnam follows a multi-storey system, with an outdoor schoolyard. Schools include several blocks such as classrooms, blocks for teachers, medical, etc. Some schools will integrate physical education at the schoolyard, or have their infrastructure for sports rooms. The area of the schoolyard depends on the size of the school. The schoolyard is the place where collective activities take place, such as the school's performance for special occasions or to inform children about important information. This is also a place for children to relax during break times. It is mostly tiled or concrete. The plant pots are arranged in blocks. The schoolyard also has shade trees, so children can sit and play during their break times. However, the density of the green is not a big amount.

Recently, study facilities in classrooms have been improved significantly. Apart from a big green board, it is equipped with several types of equipment such as projectors, and a secondary board which can be flexible open and close when needed. Or there are many decoration elements or spaces to storage the results of creative activities.

Primary education in Vietnam focuses on education for children aged 6 to 10, from grades 1 to 5, respectively. The objective of primary education is to form the initial basis for the development of moral, intellectual, physical, and aesthetic ability for children. Primary education is carried out for 5 school years, from grade 1 to grade 5. The age of children entering first grade is 6 years old (*The Latest 2019 Education Law*, n.d.). The role of primary education is to ensure children gain basic and necessary understandings of nature, society and people. Children are equipped with basic skills such as listening, speaking, reading, writing, and calculation in math. In addition, there are good personal habits such as physical exercise, hygiene, knowledge or passion about singing, dancing, music, and fine arts will also get attention (Dai Hoc Dong A, 2021).

### Thinh Liet Primary School:



Figure 10: Location of Thinh Liet Primary School. Source: Author.

Thinh Liet Primary School is a high-quality primary school, located in Thinh Liet Ward, Hoang Mai District. According to statistics of Hanoi in 2020, the population in Hoang Mai district is one of the most densely populated of the 12 urban districts (VnExpress, n.d.-b), this has put pressure on not only aspects of life in general but education in particular. Principal of the school, Ms Nguyen Thi Huong shared that due to being located in an area with a large population, the average number of children is currently 53 children per class (*Accomplishing the goal of building a national standard public school: Need a synchronous solution*, n.d.), much higher than the regulation, fewer than 35 children per class, according to the Ministry of Education and Training (MOET, n.d.). The total number of students at Thinh Liet primary school is 2456 children. During the day, school starts at 8 am to 11 am and 1.45 pm to 5 pm. The timetable for children in each grade will be different, however, it still guarantees study time that is six days per week. For example: instead of a day off being Sunday, it could be Thursday. Due to a large number of children in the area, Thinh Liet Primary School has 2 campuses, located quite close to each other, with a walking radius of about 400m. The main campus where collective activities are regularly held, runs grade 1, grade 3, and grade 5, and was built in 2011. Meanwhile, the secondary campus, with a smaller area, runs grade 2 and grade 4, were rebuilt in 2019. In general, the physical campus of the schools is well-maintained.



*Figure 11: Thinh Liet Primary School in the context of building and greenery. Source: Author.*

### **Bach Mai Primary School:**

Unlike most primary schools in Hanoi city, Bach Mai Primary School is located in a small but crowded alley in Bach Mai Ward, Hai Ba Trung district. The total children in Bach Mai Primary School is about 820 children. The total teachers are about 40 people. The number of children in each class meet the requirements of the Ministry of Training and Education, which is fewer than 35 children. Unlike Thinh Liet Primary school, Bach Mai Primary school runs five days per week from Monday to Friday. It starts from 8am to 11am in the morning, and from 2pm to 4.10pm in the afternoon.

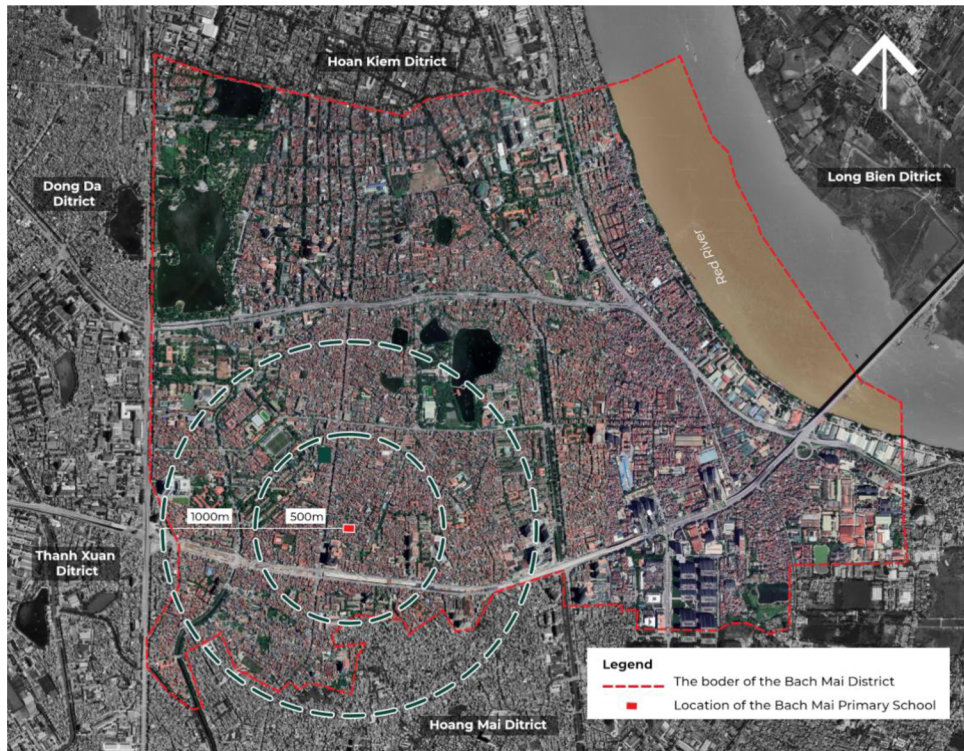


Figure 12: Location of Bach Mai Primary School. Source: Author.

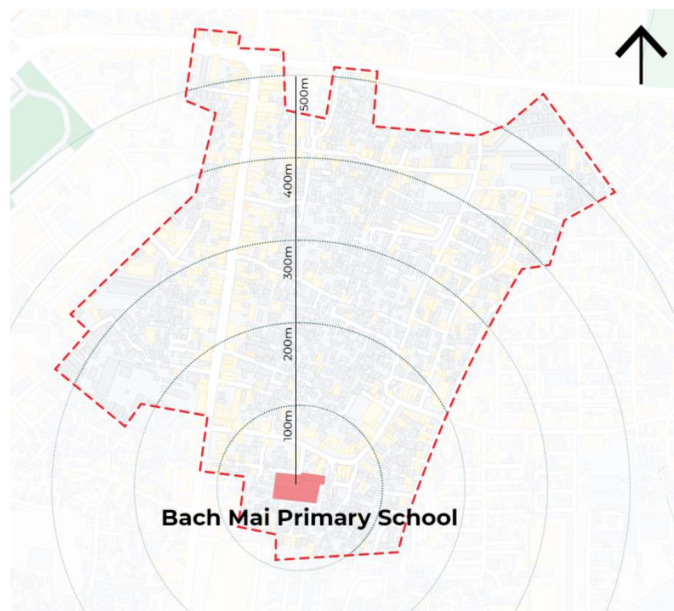


Figure 13: Bach Mai Primary School in the context of building and greenery. Source: Author.

#### 4.4 Data collection process

As mentioned above, one class of each grade will be chosen and will be classified into three groups. Group 1: aged 6 – grade 1; Group 2: aged 7-8 – Grade 2 and Grade 3; Group 3: aged 9-10 – Grade 4 and Grade 5. Division of children by categories will bring more specific and varied results because children’s cognitive skills are different at each age.

After dividing the children into groups, I came up with specific tasks for each group. To do that, I used the textbook officially used in the primary education system, meaning all the primary schools in Vietnam use such textbooks, which is very useful in my case. In previous research about environmental education in Vietnam, which can be found in chapter 3, I was aware that the Ministry of Training and Education stated that education about the environment would be integrated into mostly all subjects. Finally, I found that the content of environmental education was most focused on the following subjects:

*Table 14: Subjects which include environmental education and their main contents.*

<b>Grade</b>	<b>Subject</b>	<b>Content of subject</b>
<b>Grade 1</b>	Fine Arts	Directing children to activities of recognition, practice and creativity with colours, shapes and lines. With familiar and friendly topics such as animals or nature. The content of the lessons brings the beginning of the journey of discovering and creating art for students, directing them to activities of recognizing, practising, creating, exchanging and sharing aesthetic feelings; helping students learn and experience art knowledge and skills based on topics that are close, familiar and suitable for age psychology.
<b>Grade 2</b>	Natural and Social	Help children learn and discover the wonders of the natural and social world around them, through 6 themes: Family, School, Local Community, Plants and Animals, People and Health, Earth and sky.
<b>Grade 3</b>		
<b>Grade 4</b>	Sciences	Support children's knowledge about basic information of sciences, answering simple scientific phenomena in life. The topic covers Humans and health, Materials and Energy, and Plants and Animals.
<b>Grade 5</b>		

After narrowing the subjects in each grade, I went through all chosen textbooks (Arts, Natural and Social, and Sciences), especially the content of each book. For each textbook, I paid attention to the topics that might have environmental education content.

Table 15: Environmental education was integrated in several topics in textbooks.

Grade	Subject	Content of subject
Grade 1	Fine Arts	Animals, Nature
Grade 2	Natural and Social	Plants and Animals: <ul style="list-style-type: none"> <li>• Plant and animal habitat</li> <li>• Protect the habitat of plant and animal</li> <li>• Seminar: Learn about the plant and animal habitat</li> </ul>
Grade 3		Plants and Animals: <ul style="list-style-type: none"> <li>• Parts of plant and its functions</li> <li>• Parts of animals and its functions</li> </ul>
Grade 4	Sciences	Materials and Energy: <ul style="list-style-type: none"> <li>• Water: Water cycle, how cloud or rain is created, protect and save the water; water pollution</li> <li>• Air: Where wind comes from? Air pollution; protect the air</li> </ul> Plants and Animals: <ul style="list-style-type: none"> <li>• Plants: What do plants need to live? Metabolism in plants</li> <li>• Animals: What do animal need to live? Metabolism in animals</li> <li>• The food chain in nature</li> </ul>
Grade 5		Energy using: <ul style="list-style-type: none"> <li>• Energy: Solar energy, Wind, water power; use safely and save the energy.</li> <li>• Plants and animals:</li> <li>• Plant reproduction</li> <li>• Animal reproduction</li> </ul>

After the above processes, I ended up with specific tasks that will be asked for each group. Group 1 will be asked to draw since the children at age of 6 cannot write well, so answering by picture is a good option in this situation. While the two other groups will be asked to answer the question on the paper.

Table 16: Main tasks the author was using to ask children aged in the primary schools.

<b>Group</b>	<b>Grade</b>	<b>Age</b>	<b>Task</b>
<b>GROUP 1</b>	Grade 1	6	Draw a picture of: What to do to protect the environment
<b>GROUP 2</b>	Grade 2 – Grade 3	7 – 8	<p>Answer main questions:</p> <ul style="list-style-type: none"> <li>• If you see a lot of fish died on the lake surface, why is that?</li> <li>• Answer secondary questions:</li> <li>• Where do fish live?</li> <li>• Is there any species living together with fish?</li> <li>• Name some of them?</li> <li>• What the cause of water pollution?</li> <li>• What will be the effect if a lot of fish dying?</li> </ul>
<b>GROUP 3</b>	Grade 4 – Grade 5	9 – 10	<p>Answer question: How do you understand about a bee?</p> <p>Secondary question:</p> <ul style="list-style-type: none"> <li>• What role of bees?</li> <li>• Is there any species having the same life as bees?</li> </ul>

Before visiting the schools, I had prepared not only materials but also manage to get a friendly impression with children. For the materials, I used A4 paper for the children to draw as well as to answer the questions. For managing myself, before conducting an interview or asking a question, I would always introduce myself by name and the reason why I came to the class is not related to evaluating their study but only wanting to understand their perception of such given topics. Because I am aware that all children in Vietnam's education will be scared of rank and marks.

### **Thin Liet Primary School**

Since I come from this area, and was a pupil at Thin Liet Primary School several years ago, I got acceptance by the first contact. I met Ms Vu Thi Hien – a teacher with many experienced years working in this school, during my first visit to Thin Liet Primary School at the main campus, she was eager to share a bunch of general information about the school. I was surprised by how things



have changed over the years. The Thinh Liet Primary School, when I was learning, was located in another place, but still in this ward. This campus was newly built in 2011.



*Figure 14: A picture of children cleaning trash to give a clean environment. Source: Author.*

At the very beginning, I could see some elements of environmental education in this school. Two big mural paintings could be seen when entering the school, and let the parking area. The murals describe children sweeping garbage and throwing it in the right place. Nearby is a bin also decorated with flora patterns.

The schoolyard is clean and tidy. Several shady trees align the blocks of schools, and flowers and plants are growth in pots along the corridors. Along with the stairs to go up, several pictures drawn by children from the school, emphasizes special days, such as Vietnamese teacher's day, Woman day, ... and especially, I saw some pictures drawn about children cleaning trash or taking care of tree activities.



*Figure 15 - Figure 16: Picture drawn by children showing cleaning activities to maintain the school. Source: The Author.*

After showing me around the school for a quick tour, she showed me the exact classes chosen to work with me. Due to her hectic schedule, she was only able to show me these classes, after that she had to go back to her work.

## Bach Mai Primary School



*Figure 17: Image of Bach Mai Primary School. Source: The Author.*

After contacting Bach Mai Primary School, I was assigned to work primarily with Ms Thu Ha Vu, who would support me during my research at the school. I visited the school after the Thinh Liet Primary School for a few days. Ms Thu Ha Vu showed me around the school to have the first images before conducting my work.



*Figure 18: A creative activity about recycling on Environmental Day 2022. Source: Ms. Thu Ha Vu – Bach Mai Primary School.*



*Figure 19: Recycle bins located in the entrance of school and next to the parking for school staffs. Source: The Author.*

My first impression of the school is that it is smaller than primary schools in Hanoi. And there was a poster about World Environmental Day 2022 with the hashtag OnlyOneEarth. The content of the poster was about “participating together to conserve nature, regulate climate and reduce pollution”. I asked Ms Thu Ha Vu if there will be some activities for Environmental Day, but she said that the poster was for last year's activities, but nobody took it down, and there will not be an environmental activity for that day this year. However, at that event last year, children were asked to recycle old materials such as plastic bottles, rain coats or newspapers, etc. After that, she also showed me several pictures as a result of the recycling activities.



*Figure 20: A poster about Environmental day 2022 enclosed in front of the school gate. Source: The Author.*

The schoolyard is smaller due to the small size of the school. It has only a few trees but they do not provide shade for children. Instead, the school uses permanent and long-lasting roof system, which is different from Thinh Liet Primary School. Flowers and plants are also grown in pots along with the corridors. In general, the school is clean and well-maintained.



*Figure 21: A picture of Sea World, hang on the stair way. Source: The Author.*

Due to the time limitation and depending on learning schedule of children and teachers, I visited grades in the two schools not in order. However, in general, the content of what I did for the research in each school will be presented as below:

## **THE FIRST VISIT**

### **GROUP 1: Grade 1**

After greetings, the children were so excited about the task “What to do to protect the environment”. I gave them each one an A4 paper and the limit time is 15 minutes to finish the picture. During that time, I went around the class to see how they draw. Some children focused on what they were drawing. But some children had no idea of the topic. I acknowledge that children at this age, sometimes cannot draw for what exactly they need, I suggested if they cannot draw a thing, just write down what they wanted. For example, a child asked me if he cannot draw the police, and I told him to write: Police in a circle. After 15 minutes of drawing, I reviewed all the pictures and interviewed some of the children. The total amount of time was about 30 minutes.

### **GROUP 2: Grade 2 and Grade 3**

I drew a fish on the board and ask what is this. They all said “Fish!”. Then I gave them some secondary questions before the main task, the secondary questions are: “Where do fish live?” “And are there any species that live together with fish, name some of them?” “Do you love to fish?” In the same time when they were answering, I drew the water bubbles, my purpose was to indicate the fish is alive, with water wave and other species as the children gave in their answer, such as crab, prawn, etc. After that, I cleaned the water bubbles and drew an X at the fish’s eyes. This was to indicate the fish is not alive, I asked the children “What does this mean?”. They all said “The fish has died”.

Then I gave them the main question: “If one day, you see a lot of fish die like this fish on a water surface such as a lake or river, why is that?” 5 minutes were given to set as limited time. After that, I reviewed several answers and started asking secondary questions: “What is the cause of water pollution?” “What will be the effect if a lot of fish die?” It was about 25 minutes in total for this discussion.

### **GROUP 3: Grade 4 and Grade 5**

Firstly, I drew a bee on the board, and children started saying that it was a bee or a fly even before I asked what was this. I gave them compliments to say that they are very potential for the upcoming task so that they will not feel pressure about the task. Then I gave them paper and told them the task is: “How do you understand about a bee?” the limit time is 10 minutes. When the time ends, I reviewed quickly and asked them a few more questions about the role of bees and is there any species which has the same characteristics as bees? The total amount of time was about 20 minutes.

## **THE SECOND VISIT**

The second visit to each school did not take much time as the first. The purpose of this visit was to examine and classify the group of children who went to environmental education centres. This time, the questions were all the same for all grades.

All the children were excited to see me again. After greetings, I went directly to the question, without warming such as drawing as in the first time. I asked them firstly: “Do you know some environmental education centres in Hanoi?”. I showed them several pictures of Playgrounds! to examine if they know about the existence of the organization. Especially, I chose one photo taken of a playground made by the Playgrounds, created in Yen So Park – located in the Hoang Mai District, which can be accessible for children from the Think Liet School. The next questions were: “Why did you go there?” “How often do you go there?” “How do you feel about the place?” and “What thing you can learn from this place?”.

### **Interviewing teachers**

Along with getting to know the students, I also had conversations with the teachers to better understand how they teach children about environmental topics. For example: “Did you integrate some interesting activities to catch children attention about the environmental topics during the class?”, “Do you feel the environmental topics are interesting and do children feel it is interesting?”

## 5. Results

### 5.1 Results from the cases

The total amount of visit time was four including Think Liet Primary School two times and Bach Mai Primary School two times. The following is the results of research process in the two primary schools in Hanoi:

#### THE FIRST VISIT:

Table 17: Total children in two primary schools involved in the research.

Group	Grade	Think Liet Primary School	Bach Mai Primary School
Group 1	Grade 1	60 children	34 children
Group 2	Grade 2	42 children	30 children
	Grade 3	48 children	32 children
Group 3	Grade 4	52 children	35 children
	Grade 5	55 children	35 children
Total		257 children	164 children
<b>Total children: 421 children</b>			

#### Group 1 – Grade 1

Table 18: Summary of task and answers of children in group 1.

	Think Liet Primary School	Bach Mai Primary School
Total children	60	34
Number of children does not have answer or it is not clear	5	15
Draw a picture with a topic: What to do to protect the environment	<ul style="list-style-type: none"> <li>• Throw the garbage into the bin with family, friends or teachers. Some children even included the farmers as participants. Or include polices.</li> <li>• Taking care of tree, do not hurt the tree, protect the tree is of protect the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Throw the garbage into the bin. Participants: only children themselves.</li> <li>• Do not cut the tree.</li> </ul>

	<ul style="list-style-type: none"> <li>• Propagate and remind people around to keep the environment clean: do not littering.</li> <li>• Drawing pictures to spread the idea of protecting the environment.</li> </ul>	
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Example of pictures drawn by children:



Figure 22: "You should throw the garbage into the bin" – "OK".



Figure 23: Friends cleaning the environment together



Figure 24: Painting to spread the idea of protecting the environment.



Figure 25: Pupils and teachers are taking care of trees together



Figure 26: Throw the garbage into the bin

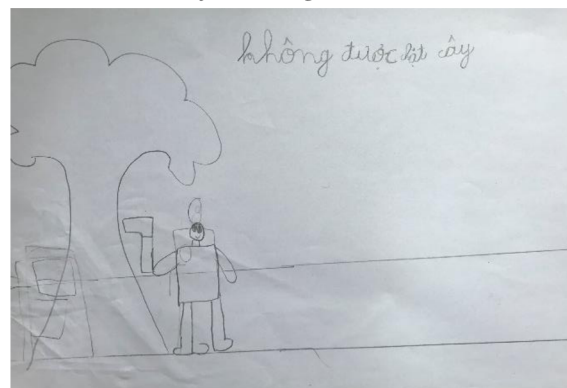


Figure 27: Do not cut the tree

## Group 2: Grade 2 and Grade 3

### Grade 2

Table 19: Summary of questions and answers of children in grade 2.

	<b>Thinh Liet Primary School</b>	<b>Bach Mai Primary School</b>
Total of children	42	30
<b>Questions and answers</b>		
Where do fish live?	Water, river, aquarium, ocean	Lake, river, ocean
Any species live together with fish, name some of them	Crab, prawn, mussels, shark, etc.	Crab, prawn, snail, etc.
Do you love fish?	Yes!	Yes!
Main questions: The reason why a lot of fish died on water surface such as lake or river?	<ul style="list-style-type: none"> <li>• Water pollution</li> <li>• Drought</li> <li>• Because there is no water anymore (the children misunderstood I was asking the fish died in aquarium)</li> </ul>	<ul style="list-style-type: none"> <li>• Water pollution.</li> <li>• Water is not clean.</li> <li>• Fighting with other fish.</li> <li>• Fish died because they are old.</li> </ul>
What cause of water pollution?	People throw the garbage into water	People throw the garbage into water
What will be the effect if a lot of fish died?	<ul style="list-style-type: none"> <li>• People eat these fish can lead to some health problems.</li> <li>• People breath in the smell of dead fish will affect to their health.</li> <li>• Ecological imbalance since the fish is also a food source of another species in water environment.</li> </ul>	<ul style="list-style-type: none"> <li>• People eat these fish can lead to some health problems.</li> </ul>

### Grade 3

Table 20: Summary of questions and answers of children in grade 3.

	<b>Thinh Liet Primary School</b>	<b>Bach Mai Primary School</b>
Total of children	48	32



<b>Questions and answers</b>		
Where do fish live?	Lake, river, ocean, water	Lake, river, ocean
Any species live together with fish, name some of them	<ul style="list-style-type: none"> <li>• Another fish, crab, prawn, squid, octopus, snail, etc.</li> <li>• Seaweed, coral, etc.</li> </ul>	Prawn, crab, snail, etc.
Do you love fish?	Yes!	Yes!
Main questions: The reason why a lot of fish died on water surface such as lake or river?	<ul style="list-style-type: none"> <li>• Water pollution</li> <li>• Lack of oxygen because of litter.</li> <li>• Fish eat garbage thrown by people.</li> </ul>	<ul style="list-style-type: none"> <li>• Water pollution</li> <li>• People do not protect the environment, fish eat contaminated food will die.</li> </ul>
What cause of water pollution?	<ul style="list-style-type: none"> <li>• People throw the garbage into water.</li> <li>• Wastewater from family, industry, hospital were discharged directly into the water environment without proper treatment.</li> </ul>	People throw the garbage into water.
What will be the effect if a lot of fish died?	<ul style="list-style-type: none"> <li>• People eat these fish can lead to some health problems.</li> <li>• People breath in the smell of dead fish will affect to their health.</li> </ul>	People eat these fish can lead to some health problems.

### **Group 3: Grade 4 – Grade 5**

#### **Grade 4**

*Table 21: Summary of questions and answers of children in grade 4.*

	<b>Think Liet Primary School</b>	<b>Bach Mai Primary School</b>
Total of children	52	35
<b>Questions and answers</b>		

How you understand about a bee?	<ul style="list-style-type: none"> <li>• Bees are in yellow and black, hard working.</li> <li>• Is an insect, live in hive and nest. Two colours in its body: yellow and black.</li> <li>• Is an insect, has wings. It makes honey. It uses its mouth to extract nectar from flowers, and brings it back to nest to make the honey.</li> <li>• The queen bee is very important in reproducing, and often bigger than the other bees in the nest.</li> </ul>	<ul style="list-style-type: none"> <li>• Its body has yellow and black. It has a stinger to protect itself from dangers. It has black stripers.</li> <li>• Bees fly with hive to take the nectar. Once they sting, they will die. Honey is sweet.</li> <li>• There are many types of bees. There is only one queen bee, and are so many bees in the nest.</li> <li>• Is an insect, very hard working. They live with hive and nest around big trees and flowers.</li> </ul>
Species have the same characters as bees?	Butterflies	Butterflies

## Grade 5

Table 22: Summary of questions and answers of children in grade 5.

	Think Liet Primary School	Bach Mai Primary School
Total of children	52	35
<b>Questions and answers</b>		
How you understand about a bee?	<ul style="list-style-type: none"> <li>• The bee is an animal which is smart; bees have wings, stingers; bees take honey from flower; bees sting people.</li> <li>• Looking for honey and take it, fly, build nest and they have hive. They are in yellow and black; hard working insects, play important role in human life which helps people to create honey; bees help flowers more beautiful</li> <li>• Their nest is high, many species, take honey from</li> </ul>	<ul style="list-style-type: none"> <li>• It has yellow and black in body, a sharp stinger. It lives in nest and goes out, looks for nectar. Bees are hard working.</li> <li>• Bees live in mountain, forest, live in hive. They go around to take the nectar.</li> <li>• If someone is bitten by a bee. He or she should use a bottle to take the stinger.</li> <li>• They fly very fast, a smart insect. They have stingers to protect themselves,</li> </ul>

	<p>pistil. They can sting, after that they will die. They help pollinator and make their own nest.</p> <ul style="list-style-type: none"> <li>• Is an insect, take honey from flowers, have hive. There is only one queen bee to reproduction, the other bee is helping to build the nest and all are male.</li> <li>• They can fly, take honey and bringing back to their hive. They will not sting if people do not poke. The stinger is to protect the bee. They are in yellow and black. Several species: wasp, bumble bee, etc.</li> <li>• If a bee stings human. It will die because human skin is high elastic while the bee stingers connects with intestine.</li> </ul>	<p>once they sting, they will die.</p> <ul style="list-style-type: none"> <li>• There are so many types of bees. They fly with hive. They live mostly around places have flowers such as forests, gardens but fewer people.</li> <li>• Bees take nectar from flowers. They live with hive. There is only one queen bee, the rest is male. The queen is in charge of reproduction while the others help to build the nest.</li> </ul>
Species have the same characters as bees?	Butterflies	Butterflies

Example of answers by children:

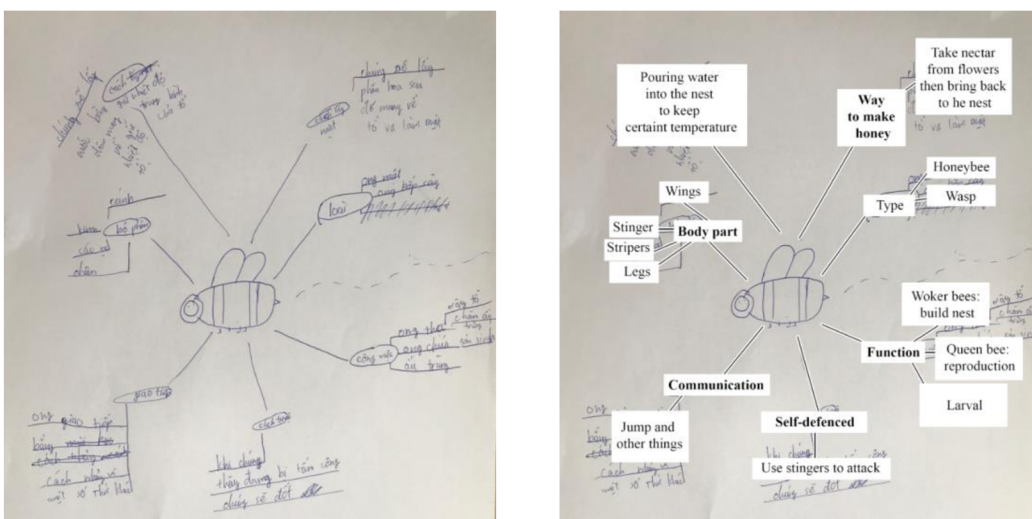


Figure 28: A diagram about the bee.

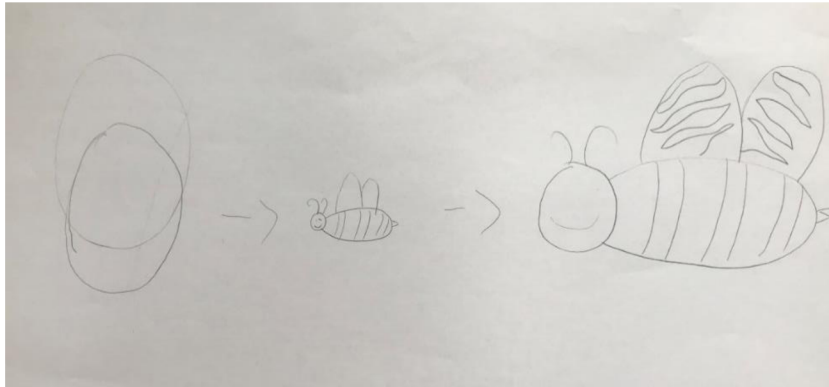


Figure 29: The process of the bee.

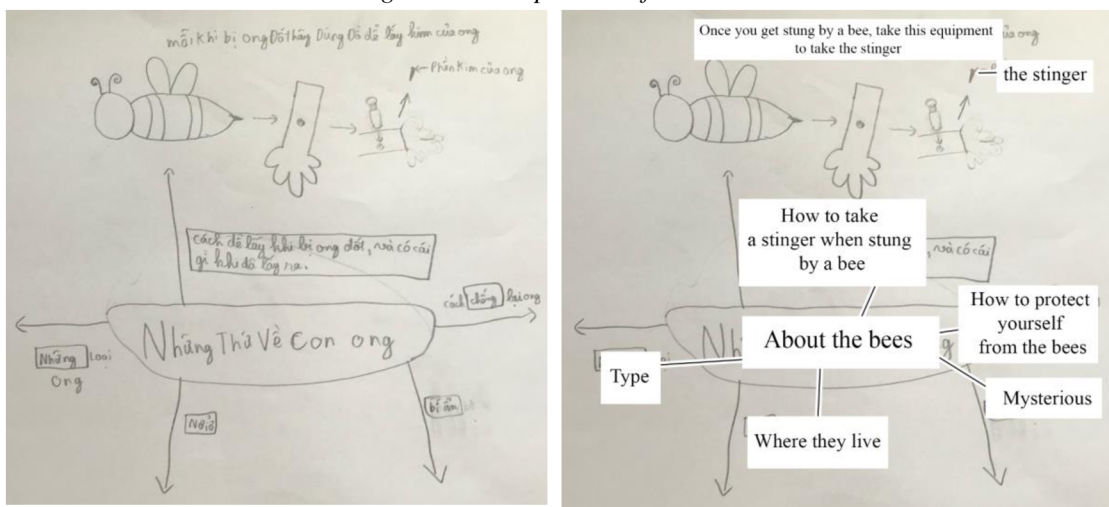


Figure 30: About the bees

In general, although the number of children in classes in Thinh Liet Primary School is more than children in classes in Bach Mai Primary School, the children from Thinh Liet tend to engage actively during the research. They tried to give unique and constructive answers while the children from the Bach Mai tend to base there on the first answers, and were less enthusiastic about participating in this activity.

## THE SECOND VISIT

Table 23: Total children in two primary schools know about the playground.

Group	Grade	Thin Liet Primary School	Bach Mai Primary School
Group 1	Grade 1	0 children	0 children
Group 2	Grade 2	5 children	0 children
	Grade 3	3 children	1 children
Group 3	Grade 4	6 children	2 children
	Grade 5	1 children	0 children
Total		15 children	3 children
<b>Total children: 18 children</b>			

For children go to the places:

Table 24: Questions and answers for children to go the playground.

No.	Questions	Answers
1.	Why did you go there?	<ul style="list-style-type: none"> <li>• Picnic with family in the weekend</li> <li>• Go with friends</li> </ul>
2.	How often do you go there?	<ul style="list-style-type: none"> <li>• Once per few weeks</li> <li>• Often – 1 per week</li> </ul>
3.	How do you feel about the place?	<ul style="list-style-type: none"> <li>• Very like – hang out with friends and family</li> <li>• It is large – space for playing</li> </ul>
4.	What thing you can learn from this place?	No answer

For children know about the place but do not go there. I interviewed some of them, and the answers have similar contents. I asked them “Is there any reason why you did not go to that wonderful place?” But most of the time they could not give me an answer.

### Interviewing the teachers:

Due to the short amount of time, I could not ask all the teachers I meet in the two schools. However, I managed to ask few of them. And here are the questions and the answers:

**1. Did you integrate some interesting activities to caught children attention about the environmental topics during the class?**

**Ms. Hau Nguyen Thi:** I prepared and followed the content written in the textbooks mostly, and it does not contain such interesting activities such as drawing, you did.

Before the end of the meeting in the class, she asked children if they like the activity that I made or would like to have it next time. The children all said Yes.

**Ms. Duong Thuy:** I would like to make the lessons to be more interesting to children, but to be honest, to balance between what we have to taught and making the lessons to be more interesting is very difficult. Because we just have only 45 minutes per lessons, and children are crowded.

**2. Do you feel the environmental topics are interesting and do children feel it is interesting?**

**Ms. Thu Ha Vu:** Yes, the environmental problems are global problems. I think it is very important to take into account. However, children in that age are too small to understand such problems while the information about environmental protection is all about discussion on News or newspapers and the information in the textbooks is really theoretical and has less to do with practical activities...

**Ms. Ngoc Ly Le:** Well, I hope that they – children – have some interest in such environmental problems, because you know, caring about the environment is very essential. However, during my time teaching here, children do not show a special concern for the content. Probably because of the way how we teach them was too much theoretical?

**5.2 Results for research questions**

**1. What relationship does urban children have with nature?**

The relationship between urban children and nature is very limited and fragile. They do not have many opportunities to access nature such as forests or even green spaces in the city. They also do not have a special interest in such green spaces or playgrounds.

During the research, I took a playground in Yen So Park, located in Hoang Mai District as an example to ask children. This is a famous place for picnicking. Every weekend, it is common to see people gathering, and preparing a picnic. However, the park is the largest in Hanoi, therefore, there are wide ranges of choices for them to choose a place, and it depends more on adults to choose where to stay.

From Thinh Liet Primary School, the main campus, it takes less than 1000m to reach Yen So Park, and it is accessible by bikes for children. However, the park is separated from the residential area by a highway, which I think is very dangerous for children to cross the highway. So that explains why it is accessible for children but they go there once per week or once per few weeks. And because of the busy study schedule during the day and extra learning after school, children do not have much time to visit the such park or the playground.

## **2. What are the main environmental problems that exist in Vietnam has been facing? In some big cities such as Hanoi city**

The second research question is about the main environmental problems in Vietnam and in some big cities such as Hanoi. Due to the location, the biggest environmental problem in Vietnam is the sea rising level, with around 12,37% of the total population will be affected. Besides, the long coastal line, and the high frequency of extreme weather events such as storms, every year, Vietnam suffers a lot of damage from floods. This seriously affects the economic development process, as well as the life of people, especially in the middle part of Vietnam. Meanwhile, in some big cities such as Hanoi, the major environmental problem is air pollution. There are several times, Hanoi is ranked as one of the most polluted capital cities. Because rapid population growth leads to the rising of vehicles which releases a large number of emissions to the environment. Another main problem is the pollution of the river. The key factor is urbanization in which the wastewater is not treated before releasing to the water's surface.

## **3. To what extent is environmental education presented in primary school for children aged from 6 -10 in Vietnam/ What kind of environmental education has been applied in primary school in Vietnam? The strengths and weaknesses of the curriculum, teacher skills. And is there any environmental concern from agendas of the community?**

Environmental education is not considered a separate subject in the Vietnam education system. But it is integrated into several subjects such as Fine Arts, Natural and Social Sciences. It depends on the grade of the children, the Ministry of Training and Education in Vietnam has different content about the topic of the environment. The topics are very close to real life so children feel familiar. For example, the topics can be related to Plants and Animals which children can find them easily in daily life, Types of environments in which children can expose or experience, etc.

Through the short conversations with teachers from the two schools, I believed that the curriculum has both advantages and disadvantages. The advantages are that children can get a certain amount

of information about environment topics, and a wide range of these topics. However, it also has several disadvantages. For example, the lessons are lacking interesting activities, which I believed that if they ever happen, will surely catch children's attention and children could remember the information better.

About the teacher skills, I also believed that they can make the lessons more interesting. However, due to the limited amount of time, they need to impart the required information first.

**5. What challenges and opportunities to implement environmental education in Vietnam? What are the main factors influencing the effectiveness of environmental education in Vietnam?**

What I found after doing the research is that the Vietnamese government and some organization is paying more attention to environmental education. However, the challenge, in my opinion, is that whether such activities created from government or the organization can bring children close to the nature or spark children's interest in this topic.



## **6. Discussion**

### **6.1 Discussion on the research process and methodology**

#### **a. Research process**

This thesis research is divided into three main phases: Literature review, Methodology and Results. At the literature review, I first brought information about the history of environmental education in the world. The first and most remarkable milestones of this education were mostly during the 1970s. For example, the UN Conference was held in the Stockholm in 1972, the Belgrade Charter was held in Serbia in 1975, and the Tbilisi Declaration was held in Georgia in 1977.

The next chapter focused on the definition of environmental education. Information about environmental education in primary school is also presented in this chapter because the topic of this thesis is children in primary school age. To better understand the topic, I mentioned a wide range of frameworks and methods of teaching environmental education. Besides, I also presented multiple countries applying environmental education around the world to bring a general overview of how nations implement such content into their education. In this chapter, not only developed countries were chosen but also developing countries. While the developed countries are The United States and Germany. The developing countries are China and India. Among these countries, Germany is among the first countries researching and applying environmental education and its environment is rated as one of the most friendly in the world. Meanwhile, the United States, China and India stand for high rankings regarding the problems related to the environment. The United States and China are two major nations contributing to high release of CO<sub>2</sub> because of economic activities and transportation. While India is considered among the world's most polluted countries.

After that, it is about the relationship between nature and children and its benefits. The benefits of nature to children are undeniable. Not only has physical benefits, but it also helps children develop spiritual values and arouses children's interest in the environment.

The next two chapter paid attention on the environmental education in Vietnam and Czech Republic. I gave an overview of the environmental problems in the two countries and the way how they applied the environmental education in the education system. An environmental education centre in the Czech Republic, named Nsev Kladno, was also brought up in the chapter.

The second phase of the thesis is about methodology, that how I conducted the research in Vietnam. There are four parts in the chapter. I would like to give an overview of Vietnam, about location, population, the ratio of greenery and especially the major environmental problems in Vietnam and

to evaluate the environmental quality. After that, I narrowed down to the study sites, where I will choose the primary schools for this thesis. This step, I went in details and described the same elements as with the overview of Vietnam, but this time, it was for the districts that I choose the primary schools. So that readers can have a general view about the context in Vietnam and in the site study. The third part is talking about the primary education system in Vietnam, and how children spend time or how the school is built, and also information of such two schools. And the last part of this chapter is the data collection process, in which I describe my process of conducting the research in details. The main methods I did during my visits to the two schools were: asking children questions related to environment after I review the national textbooks used in the primary system, interviewed teachers to understand more about the current situation of environmental education, also interview children if they go to the playgrounds, which were made from recycled materials.

Finally, the last parts of the thesis are focusing on the results, discussion and conclusion.

#### **b. Methodology**

The use of qualitative research was suitable for my thesis which is seen in the results I got. The research also taught me several helpful lessons, which will be presented below:

- It is very important to get the sympathy of children. Because it will give children a feeling of closeness and openness when sharing their perceptions and ideas. Due to the short amount of time, I faced difficulty to get to know children, especially with a class which has more children. However, thanks to the teachers in the two primary schools, they all supported me as much as possible.
- Good preparation of the scenario with predictable answers can help interviewers to control the actual situation during the interview. During the interviewing of children, some children gave me unexpected answers, and then I was confused for a second, but I found a way to get back to the trail.
- Recording the information gathered from the interview is extremely necessary and important. Because it helps in recalling the memory of the interview and also as evidence for later analysis and evaluation steps.

Another lesson I can take from this methodology is about the contracting process to get acceptance from the primary school. I was so sure that when three primary schools agree to work with me and

my thesis during the end of the year 2022 – including one private primary school and two public primary schools. However, when I came back to Hanoi from Prague, I contacted them again and present them with the scenario, detailed content and further steps to conduct the thesis, and the private primary retreated from this research. The two public primary schools remained. However, the Think Liet Primary School agrees to work with me on my research at the first contact. The Bach Mai Primary School took more time to consider after several times I patiently contacted and explained. Then the lesson here is that I should be clear in what I would like to do and would like the participants or schools to support me as soon as possible so that the participants would know certainly about whether they can help.

Overall, I found the methods used in this thesis were effective in helping me answer the research questions.

## **6.2 Discussion on the results**

To begin the discussion on results, I would like to discuss the research questions first. The finding about research question number one for me is expected since I was born and raised in the city. Hanoi city is changing every day, but when it comes to the relationship that urban children have with nature is getting distant. Living in such a place where there is less opportunity to access green spaces or nature could lead people the lost interest in nature, thereby inclined to want to learn about the natural environment.

Finding number two about Vietnam's main environmental problem is not surprised me. Since the consequences of the impact of the sea level raise in Vietnam are catastrophic, the government also propagated and disseminated to the entire people, and emphasized this is an extremely urgent problem that the country has to face. For the environment in Hanoi, the population explosion along with the inefficient operation of infrastructure and public transportation has led to air pollution. The water environment is also seriously polluted when untreated wastewater has been dumped directly into the water bodies. The unfortunate thing is all the river in Hanoi has been polluted.

Research question number three refers to the way how environmental education has been applied in primary schools in Vietnam, the strengths and weaknesses of the curriculum, and teaching skills. Before conducting the research, I thought there is no such thing called environmental education in the education system of Vietnam. Because I could not recall what I have learnt about these matters during my study time. However, during the research, I surprisingly found that the content of environmental education is integrated into the education system, even at the primary level. And compare to the previous study that Heck made in 2015, the way how environmental education is

applied in primary education is the same. Although the knowledge of the environment is combined with other subjects such as Fine Arts, Natural and Social, Sciences, or other subjects, the Ministry of Training and Education of Vietnam also issued a document to help education at all levels can integrate the content of environmental education. I believe the government is now paying more and more attention to the environment, as the consequences of climate change are increasingly affecting the lives of people. However, after conducting research in two primary schools in Hanoi, I think that it will be a long journey to see the effectiveness of environmental education in Vietnam, especially in some big cities such as Hanoi. Because most all the information on environmental education is studied in the classroom or within the scope of the school. The study in the classroom can bring benefits when teachers can impart information about the topics. However, children do not have many opportunities to visit an environmental education centre or go into nature such as forests, which I believe going on the field trip along with the theoretical lessons will be much more effective.

In terms of teacher skills, I believe that they are capable of conveying the amount of information required by the Ministry of Training and Education, but no more than that. After the conversation with teachers in the two schools, I would like to present the reasons for that: firstly, the learning volume of children is already too much, and teachers are under pressure to ensure that learning volume; secondly, the trend of children's academic interest in general in Vietnam lies in subjects such as Math, Literature or English.

When it comes to the concerns of agendas of the community, there are environmental organizations in Vietnam and Hanoi, but their activities are not mainly focused on children at the primary school level. During the research in Vietnam, I mentioned Playgrounds!, which is an organization creating playgrounds for children in Hanoi, taking into account that there are very few public play spaces for young children. The interesting thing is that all the materials they use, are recycled from the other thing. So I believe their mission is really toward a better environment. However, such places did not get the attention of children in the two schools where I conducted the research. To explain this point, I think the accessibility to such places is not strong. There is no playground from this organization in the area of the Bach Mai Primary School. While to access the playground in Yen So Park, children in Think Liet Primary School have to pass a highway, which I consider very dangerous. The results found that children in the Think Liet Primary school go to the playground in the Yen So park more than children in Bach Mai Primary School. I think the reason why children even know about the place but never go there, is because they did not have a connection with nature

since they were very young, then when they do not develop a sense of the environment or even curiosity about the environment.

The fourth question is about the criteria for a potential location for environmental education in Hanoi. However, the results after conducting research in the two primary schools showed that children aged from 6 to 10 have less time to involve in such activities. Because most of the time, they spent studying at school. And the green space or nature place in Hanoi is considered very low. Therefore, it is difficult to find a location for environmental education. However,

The fifth research question is about the challenges and opportunities to implement environmental education in Vietnam and the main factors affecting the effectiveness of environmental education. Through the research process, I realized that the Vietnamese government is gradually paying attention to environmental issues, typically the Ministry of Training and Education has issued documents to help apply environmental content in subjects at schools at all levels. Or organizations or agencies in Vietnam have begun to care more about environmental quality, such as Playgrounds! which was established in 2015. Therefore, this will be the premise for opportunities to develop environmental education for young children in Vietnam and in some big cities such as Hanoi. However, to discuss the challenges, it is whether the interest of the government and organizations will bring interest to children when learning about the environment, especially in the context of large urban areas in Vietnam, where it is difficult to access nature such as a forest. This means, that urban children can almost only learn about the environment through books or classrooms, and in my opinion, it will be less effective because of the lack of practical lessons.

In general, I think all teachers, especially those I interviewed, acknowledge the current situation, the weaknesses and the challenges toward environmental education in Vietnam, and some big cities such as Hanoi, which I mentioned above.

To discuss the perception of children aged in primary school in Vietnam toward the environment. I think children can get the basic information and knowledge, which is taught from textbooks. Through the interview questions, only a few children were able to provide more informative answers. And those children come from a place with a lower population density and also have access to green spaces or playgrounds.

### **6.3 Limitation**

Time is one of the biggest limitations during my visit to the two schools. The timetable of teachers is very limited and also the length of my research period. All the time I visited the two schools, I

was always assigned to come in the afternoon, when the timetable is less busy and lighter learning subjects. Therefore, I set the limitation time for each meeting as less than 30 minutes so that this will not take too much of the children's study time. And sometimes in the classes, I did not have enough time to review all of the answers, I only caught a few ideas from answer papers and then went to ask, and interview children after that.

Another point is that the comparison of the accessibility of children toward the playgrounds cannot fully solve the issue of environmental education at the primary level, however, this is the only idea I can find. Since there is no environmental education found in which children in primary schools spend a certain amount of time.

The other factor is that due to the short amount of time, I could not create a close relationship with my children. This is also an obstacle, as children are always afraid that they will be judged when they give a wrong answer, or a different idea from the questioner's wishes, especially for those who are not familiar with them in the education environment. This was very clear since after I started asking children in grade 1 if I did not understand the content they want to convey in their drawings, they became shy and hesitated to give me an answer. Or for older grades, when methods were asking and interviewing to understand more about children's perceptions, they could give me an answer but were very polite but also hesitated.

However, all teachers in such class were always welcome and supported me during my research. They made it as much as possible to help me when I visited the schools. And when children had difficulty communicating ideas and were afraid to share, the teachers were always enthusiastic to support me, so that I could conduct this reliable research.

## **7. Conclusion:**

Environmental education has been applied to many countries in the world. When it comes to Vietnam and the big city of Hanoi, the content of the environment is not considered a separate subject. Teachers and children do not have a strong interest in environmental education. The large study volume at school and the extra learning after school do not support children in this situation. Besides, rapid urbanization leads to many problems related to the environment and also narrowed the green space, and nature so that children are gradually losing the connection with nature. However, for the content of the subject about the environment, children still can grasp the basic knowledge.

For future research, it is necessary to take other schools which offer environmental activities such as going to environmental education for a few weeks so that the comparison between groups does not go to the environmental centre and the group does. This thesis only brought up the differences between children who go to playgrounds made of recycled materials and children who do not go. However, this comparison cannot completely resolve the environmental education issues.

Finally, it is worth mentioning that the findings of this thesis cannot be present in the process of environmental education for the whole country of Vietnam. However, they can be a source for city planners, or organizations concerning the environmental issues and environmental quality, or even the Vietnamese government for reference to create a better curriculum toward the environmental content or as a premise to build environmental education centres for children of primary school age in big cities.

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## **10. Appendix**

### **Appendix A1: Tasks or questions for children from the first visit**

#### **Group 1 – Grade 1:**

Draw a picture with a topic: What to do to protect the environment?

#### **Group 2 – Grade 2 and Grade 3:**

- Where do fish live?
- Any species live together with fish, name some of them?
- Do you love fish?
- Main questions: The reason why a lot of fish died on water surface such as lake or river?
- What cause of water pollution?
- What will be the effect if a lot of fish died?

#### **Group 3 – Grade 3 and grade 4:**

- Main question: How you understand about a bee?
- Species have the same characters as bees?

### **Appendix A2: Questions for children from the second visit**

- Why do you go there?
- How often do you go there?
- How do you feel about the place?
- What thing you can learn the place?

### **Appendix A3: Questions interviewing teachers**

1. Did you integrate some interesting activities to caught children attention about the environmental topics during the class?
2. Do you feel the environmental topics are interesting and do children feel it is interesting?