

WHAT POSSIBLE TRANSFORMATIVE VALUES NATURE EDUCATION CAN
PROVIDE TOWARDS A SUSTAINABLE SOCIETY?
A CASE STUDY OF YUNNAN ZAIDI NATURE EDUCATION CENTRE IN CHINA

A Thesis

by

SHUANGYING YU 47-166830

in Partial Fulfillment
of the Requirements for the Degree
Master of Sustainability Science

Advisor: Associate Professor Mayumi FUKUNAGA 福永真弓
Co-Advisor: Associate Professor Motoharu ONUKI

Graduate Program in Sustainability Science
Global Leadership Initiative
Graduate School of Frontier Sciences
THE UNIVERSITY OF TOKYO

September 2018

WHAT POSSIBLE TRANSFORMATIVE VALUES NATURE EDUCATION CAN
PROVIDE TOWARDS A SUSTAINABLE SOCIETY?
A CASE STUDY OF YUNNAN ZAIDI NATURE EDUCATION CENTRE IN CHINA

© 2018 by Shuangying Yu
All rights reserved.

ABSTRACT

Environmental education (EE) in China, developing from 1972, was oriented by the government for a long time. Such formal EE is usually knowledge-based and only takes place in the classrooms. Nature education (NE), emphasizing more on experiences in the natural environment and taking a more humanistic method, has been a bottom-up trend of informal EE in China since the first decade of twenty-first century. As NE is a new social phenomenon in China, there is a lack of researches on how NE can possibly transform people and society in China's context.

The researcher uses transformative value as the key concept for analysis. Encountering with nature and education is a process to transform people and such topics go beyond the traditional discussion on values of nature, i.e. instrumental value and intrinsic value.

To find transformative values of NE toward a sustainable society, the researcher firstly depicted the history and current practices of EE in China by using expert interview, document review and participant observation. The development of NE in China has been influenced by EE from countries such as the U.S. and Japan. Besides, it has its own core based on the Chinese culture as well. After examining the history and general practices of NE in China, Yunnan Zaidi Nature Education Center was selected as a case study to investigate the details on the transformative values of NE because it covers various types of NE activities and is a typical NE organization. Semi-structured in-depth interviews toward educators, parents and children were conducted as the major research method, supplemented with literature review and participant observation.

The research results revealed that NE engagers had experienced transformations on

understanding of nature and human development. Children transformed their understanding of nature from an equal relationship with nature towards nature being more powerful than human, knowledge about nature and fun in nature. Parents developed stronger environmental stewardship. Educators developed the idea that nature is more powerful than human, as well as stronger environmental stewardship. As for human development, children gained teamwork skills, friendship, confidence, better physical health, better mental health and creativity, while parents gained better mental health and understanding of child's perspectives. Educators gained confidence. Such transformations on understanding of nature and human development led to individual environmental behavior and enhanced social recognition and impact through collective actions. Individual environmental behavior includes more adventurous with nature (children), empathy toward nature (children, educators), reduce, reuse, recycle (parents), waste segregation (parents), reducing waste production (educators), and responsible consumption (for educators). To achieve larger social recognition and impact, NE engagers conducted collective actions to raise citizens' environmental awareness, motivate citizens' engagement and cooperate with grass-roots administrations. Such individual environmental behaviors and collective environmental actions can contribute to the environmental well-being which serves as a crucial dimension of a sustainable society.

Despite the transformative values NE has as this research disclosed, it is still difficult for NE to directly exert impact on decision-makers because of the Chinese regime. However, the Chinese government has started to promote NE since 2014. While it provides new opportunities for NE, how to deepen the cooperation between bottom-up and top-down EE remains a future challenge for China.

ACKNOWLEDGEMENTS

Firstly, I would like to thank my advisor, Dr. Mayumi Fukunaga for her guidance and provision with valuable suggestions on conducting the research. Secondly, I would like to thank my co-advisor, Dr. Motoharu Onuki for his important comments. My deepest gratitude also goes to Dr. Shogo Kudo, Ven Paolo Valenzuela, Yehan Wu, Yangqing Chen and other professors and students who have lent me a hand on how to conduct a qualitative research. I would also like to thank my lab mates with whom I spent precious time discussing and studying, especially Jack Lichten for proofreading my thesis. My sincere gratitude goes to the GPSS-GLI Fellowship which has provided me with important financial support to ensure the continuous progress of my research.

Next, I would like to thank Yunnan Zaidi Nature Education Center, all the interviewees and people who provided me with important information about my research. I also greatly appreciated those who assist me with the transcription process. They really helped me relieve the pressure to process a great deal of data. My sincere gratitude also goes to my family and friends who have always supported me. Special thanks to Xiuyu Yan who was always there to cheer me up when I was in a deep anxiety.

There are many people I cannot mention here but generously providing their support to me. Sometimes they might be unconscious with their support but such support did shed light on what confused me. I really want to express my sincere thanks to all of them.

Finally, I would like to say “thank you” to myself who has gone through all the mist to see the light of dawn. This is not the destination but a new departure.

TABLE OF CONTENTS

ABSTRACT	iii
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
CHAPTER 1: INTRODUCTION: WHY ENVIRONMENTAL EDUCATION IN CHINA?	1
1.1 What is Environmental Education and generally why it is very important academically and practically	1
1.2 Environmental education in China: rising star as nature education	1
1.3 Problem statement and research question	3
1.4 Literature review and the key concepts for analysis (definition)	4
1.4.1 Values of nature	4
1.4.2 Transformative value	5
1.4.3 Environmental Education and sustainable society	7
1.5 Limitation and scope	9
1.6 Methodology	10
1.6.1 Research methods	10
1.6.2 Procedures	11
CHAPTER 2 HISTORY AND CURRENT DEVELOPMENT OF ENVIRONMENTAL EDUCATION PRACTICES IN CHINA	14
2.1 History of Environmental Education in China and its theoretical development	14
2.2 General information about NE in China	20
2.3 Current NE practices	23
CHAPTER 3 A NEW DEVELOPMENT OF ENVIRONMENTAL EDUCATION FROM THE GRASSROOTS: CHALLENGE OF YUNNAN ZAIDI NATURE SCHOOL	24
3.1 The beginning of the challenge: a history and the current of Yunnan Zaidi Nature education Center	25

3.1.1 Yunnan Zaidi Nature Education Center.....	25
3.1.2 Interviewee's background.....	28
3.1.3 Education strategy Zaidi is applying.....	32
3.2 Nature education engagers' understanding of nature education	33
3.2.1 Educators' understanding of nature education	33
3.2.2 Parents and children' understanding of nature education	36
3.3 Transformation of understanding of human-nature relationship	36
3.3.1 Parents' transformation of understanding of human-nature relationship	36
3.3.2 Children's transformation of understanding of and relationship with nature	37
3.3.3 Educator's transformation of understanding of human-nature relationship.....	38
3.4 Transformation on human development	38
3.5 Transformation of environmental behavior	39
3.5.1 Parents' transformation of environmental behavior.....	39
3.5.2. Children's transformation of environmental behavior	40
3.5.3 Educators' transformation of environmental behavior.....	41
3.6 Promotion of NE in the nature school and communities.....	42
3.7 From development toward transformation: the case of Yunnan Zaidi Nature Education Center	
44	

CHAPTER 4 CONCLUSION: HOW CAN WE CONTRIBUTE TO THE DEVELOPMENT OF NATURE

EDUCATION IN CHINA?	46
4.1 Strength and opportunities: Possibility and expectation	46
4.2 Difficulties and challenges	47
4.3 Advocacy and future study of environmental education	48
CITED REFERENCES.....	50
OTHER REFERENCES	56
APPENDIX A	57
APPENDIX B	60

LIST OF TABLES

Table 1 The history of formal EE in China based on literature reviews	14
Table 2 The main development history of nature education in mainland China..	18
Table 3 Different types of NE activities	23
Table 4 Demographic Information of the staffs from Zaidi	29
Table 5 Demographic Information of the families	31

LIST OF FIGURES

Figure 1 Trend of number of newly established nature education institutions in China.....	3
Figure 2 The theoretical framework of this study	9
Figure 3 Types of nature education institutions	20
Figure 4 Main body of institutional operations	21
Figure 5 Major targets of nature education institutions	22
Figure 6 The type of location where NE activities were conducted by Zaidi (made by the researcher)	26
Figure 7 The type of NE activities and which age group they are facing to (at the time of the end of 2017, made by the researcher).....	27
Figure 8 Map of Shicheng Nature School (from Yunnan Zaidi Nature Education Center)	28
Figure 9 Summarization of transformative values and outcomes brought by NE in the case study	44

LIST OF ABBREVIATIONS

EE	Environmental education
NE	Nature education
CNEF	China Nature Education Forum
Zaidi	Yunnan Zaidi Nature Education Center
FON	Friend of Nature
ANE	Affective Nature Education
CSNet	Japan-China Civil Society Network

CHAPTER 1: INTRODUCTION: WHY ENVIRONMENTAL EDUCATION IN CHINA?

1.1 What is Environmental Education and generally why it is very important academically and practically

Before an explanation of the problem statement, the researcher will shortly look back the general definition of Environmental Education (EE), internationally known as:

“EE is a learning process that increases people’s knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action.” (Tbilisi Declaration, 1977)

The necessity and significance of EE was firstly agreed internationally in Stockholm Convention in 1972. It is generally agreed that EE helps individuals, communities and organizations learn more about the environment, and develop necessary skills and capabilities to respond to environmental challenges through individual behaviors or collective actions (NAAEE, 2016).

EE can also help build critical thinking skills, foster teamwork and leadership qualities, cultivate problem-solving skills, and contribute to students’ academic performance and healthy development (NEEF, 2018).

1.2 Environmental education in China: rising star as nature education

China, with the largest population in the world, is facing various environmental issues.

Serving as a crucial solution toward environmental degradation, EE in China can trace back to 1972 when Stockholm Declaration directly impelled the start-up of EE in China. Until the beginning of the 2000, EE in China was mostly government-driven (Huang, 2003).

Governmental-driven EE activities included introducing contents about environmental protection into the textbooks of relevant subjects in basic education, offering elective courses on environmental protection in high schools, launching “Green School Program”, etc. (Wang & Xie, 2013; Tian & Wang, 2016). Compared to the EE in other countries, the feature of such government-oriented EE in China is that it emphasized more on knowledge about the environment or skills for monitoring and treating pollutions (Huang, 2003).

If we call such government-driven EE in formal education system as formal EE, then grass-root organizations including non-governmental organizations (NGO), social enterprises and other private companies have contributed largely to informal EE since 1994 when the first environmental NGO *Friend of Nature* was established. Since 1992, China has experienced an economical transition from planned economy toward market economy, which provides motivations and room for NGOs to grow without much interference from the central government (Deng, 2012).

Such grass-root organizations have facilitated the rise of nature education (NE) in China since the beginning of twenty-first century, especially after 2010. NE is a type of education promoting a more harmonious relationship between human and nature through nature experiencing activities.

Figure 1 Trend of number of newly established nature education institutions in China

NE is a bottom-up type of EE differentiated from the government-oriented EE so far. It has provided essential sources of informal EE for transforming lives and society. It has the assumption that direct interaction with nature rather than mere environmental knowledge can achieve better behavior changes. has shown that since 2012, there has been a boom of newly-

established NE institutions (according to the Report on Nature Education of 2016 written by Wang & Liu).

Figure 1 Trend of number of newly established nature education institutions in China

NE is a bottom-up type of EE differentiated from the government-oriented EE so far. It has provided essential sources of informal EE for transforming lives and society. It has the assumption that direct interaction with nature rather than mere environmental knowledge can achieve better behavior changes.

The study can contribute to the overall understanding of NE in China, a country obligated to play a significant role in improving the global environment.

1.3 Problem statement and research question

The goal of EE is to transform people and society (NAAEE, 2016). Outcome of EE has been explored much in many developed countries, but almost no such research has been done in China. How NE can transform the society of China is different from that in most western countries because of the uniqueness of China's regime and the different development route of EE. Hence, the study wants to answer the research question: what transformative values nature education can provide toward a sustainable society?

To answer this research question, three research objectives are proposed:

1. Explore NE engagers' understanding of NE;
2. Investigate what transformations NE engagers have experienced;
3. Discuss how such transformations contribute to a sustainable society.

The researcher is mainly going to use in-depth interview, participant observation and literature review to answer these questions.

1.4 Literature review and the key concepts for analysis (definition)

1.4.1 Values of nature

Generally, nature is deemed to have two kinds of values: one is intrinsic value, while the other is the value we human can acquire from nature, or say instrumental value. These two values are related to two schools of human-nature relationships. One school is anthropocentric and the other is anti-anthropocentric. Paradigms based on anthropocentric view believes that culture, technology and intelligence have made human a unique creature in nature. Such paradigm has faith in science and technology which can support unlimited resource development, economic growth, and consumption demand. In this paradigm, nature worth considering because how to treat nature has different consequences for humans (Wu, 2011). In other words, nature has instrumental values for us humans. Ecosystem services divide values that an ecosystem can provide us into four categories: supporting services, provisioning services, regulating services, and cultural services (MA, 2003). Ecosystem services try to quantify all those values into economic terms for people to easily comprehend the value of an ecosystem. Some people criticized that the concept is anthropocentric, whereas others argued that it went beyond instrumental value.

Paradigms based on anti-anthropocentric view focuses on the impact and limitation exerted by the environmental factors on the human society. It believes that the society consists of many inter-dependent biomes, and human is merely one of the species. In ecocentrism, nature should be considered because it has its intrinsic values. Ecocentrism thinks that “compared to the undoubted importance of the human part, the whole ecosphere is even more significant and consequential: more inclusive, more complex, more integrated, more creative, more beautiful, more mysterious, and older than time” (Rowe, 1994). Deep ecology, a stream of environmental ethic, and ecological psychology believes that anthropocentrism which

centers around human value or utilitarianism is the root cause of many environmental issues.

R.E.Dunlap (1980), professor in environmental sociology at Oklahoma State University, believes that to solve environmental issues, humans need to achieve a paradigm shift from anthropocentric to ecocentric. Such paradigm shift has been seen through those international conventions, from the Stockholm Conference of 1972 to World Charter for Nature (1980) and then the Agenda 21 (production of Earth Summit of 1992) (Shastri, 2013).

1.4.2 Transformative value

However, the idea of “intrinsic value” is not as well comprehended as the idea of “instrumental value” which can be calculated and well-conceptualized. Based on this, Bryan Norton developed the idea of weak anthropocentrism that “countenances not only occurrent human desires but also ‘ideals’, like living in harmony with nature, which represent patterns of considered desire” (Weston, 1985) and “avoids attributing intrinsic value to nature” (Norton, 1984). Such new stream of environmental ethic is environmental pragmatism.

Norton (1984) explained two major differences between weak anthropocentrism and the traditional strong anthropocentrism. Firstly, strong anthropocentrism emphasizes on the values which satisfies individual’s felt preference. Weak anthropocentrism, on the other hand, supports values which are explained by reference to satisfaction to some felt preference, or by reference to determinant elements to form considered preference. Here, a felt preference is any need or desire of a human individual that can at least for a short time be satisfied by some specific experience of that individual. A considered preference is any need or desire that a human individual would express after careful consideration, by judging that such need or desire is corresponding with a rationally adopted world view. Such world view includes sufficiently supported scientific theories and a metaphysical framework explaining those theories, and a set of rationally sustained aesthetic and moral ideas. Weak anthropocentrism

realizes that felt preference can be both rational or irrational. Secondly, weak anthropocentrism places value on human experiences which provide the basis forming their values. Because weak anthropocentrism places value not only on felt value, but also on more rational human values which are formed through contacting with natural objects and experiences in undisturbed places, to some extent, environmentalists can say that values are formed or understood through interacting with nature. Therefore, nature not only possesses fixed value to satisfy human's consumption, but meanwhile it is a teacher for guiding human values and becomes an essential inspirational source to form values.

The latter value entailed by nature is designated by Norton as "transformative value" with a concept of "a value capable of transforming preferences in accord with a higher ideal" (Afeissa, 2008). Transformative value is neither an instrumental value nor an intrinsic value. Norton thinks these two values cannot express all the values human can attribute to nature, so instead of accepting such a bipartite attribution, Norton proposed to accept the plurality of the values nature has and position them into a continuum, ranging from the values originating from consumerism to atheistic, spiritual and other similar values. Such transformative value, then, is close to the cultural services in ecosystem services which require human experiences in nature and may transform along with the experiences.

Sarkar (2005) explained transformative value by using the concept of "demand value". In the book *Biodiversity and Environmental Philosophy: An Introduction*, Sarkar further explored the transformative value of biodiversity. The traditional economic value based on individual preferences, as he called demand value, can be measured by willingness to pay, an economic concept. Transformative value is the capability of certain item to transform the demand value of such item and even its related items (Newman et al., 2017). Sarkar thinks biodiversity has transformative values because the encounter with it can change our demand value to it. In other words, such encounter transforms the content of our preference, so that

influences our willingness to play to satisfy our preference. For instance, a person indifferent about rainforest found himself in a rainforest out of some reason, and he was entirely overwhelmed by its variety and fantasy, so his former indifference transformed into a strong preference of preserving it. Once going back home, he immediately donated to the Nature Conservancy.

In NE activities, people directly experience with nature, and interact with local people and culture. Such experiences may transform their preferences or values toward nature and other relevant things, and thereby leading to behavior changes which would contribute to a more sustainable society.

1.4.3 Environmental Education and sustainable society

Except for the internationally accepted definition of EE from the Tbilisi Declaration, many literatures (Edward, 2015; Yin, 2009) have referred Lucas (1972)'s tripartite environmental education model for understanding the comprehensive meaning and practices of environmental education, i.e. education about, for, and in the environment. The first two, education about and for the environment suggests the purpose of environment education. Education about the environment refers more to transmitting the knowledge about or skills to explore the environment. Education for the environment aims more to raise the awareness or change people's behavior to protect the environment. Education in the environment is a pedagogic means, emphasizing that a real environment can be a good classroom for environmental education. For instance, by learning water pollution, monitoring water quality in a river can achieve better educational effect than just learning from the textbook in a traditional classroom.

According to the online coursera of environmental education outcomes provided by Cornell University (2017), the mainstream outcomes of EE are collective action and

individual environmental behaviors.

Environmental behavior or pro-environmental behavior is environmentally responsible behaviors conducted by individuals (Cornell University, 2017). For instance, taking shower instead of bath, using fewer plastic bags, such behaviors intending to save natural resources and reduce environmental pollution are typical environmental behavior. To achieve large impact on a bigger scale, a group of people take action together based on a collective decision and toward a common goal, which is called **collective action** (Cornell University, 2017).

Collective action is divided by two types, one is direct collective action which results in physical change people can see and touch, e.g. people littering garbage on the sea shore result in cleaner beach. On the other hand, indirect actions are expected to result in structural change by influencing policy makers, for instance, making a demonstration or writing a joint letter.

For example, being part of a group that chooses to plant more trees to improve the environment means being involved in a collective action (Cornell University, 2017).

Sustainable Society Index suggests that a sustainable society should include three dimensions:

- Environmental wellbeing: include nature and environment, climate and energy and natural resources
- Human wellbeing: include basic needs, personal and social development and health
- Economic wellbeing: include transition (e.g., organic farming) and economy (e.g., employment) (Sustainable Society Foundation, 2017)

The major outcomes of EE suggest that EE is expected to enhance the environmental well-being, thereby contributing to building a sustainable society.

Based on the literature review, the researcher proposed a theoretical framework (Figure 2):

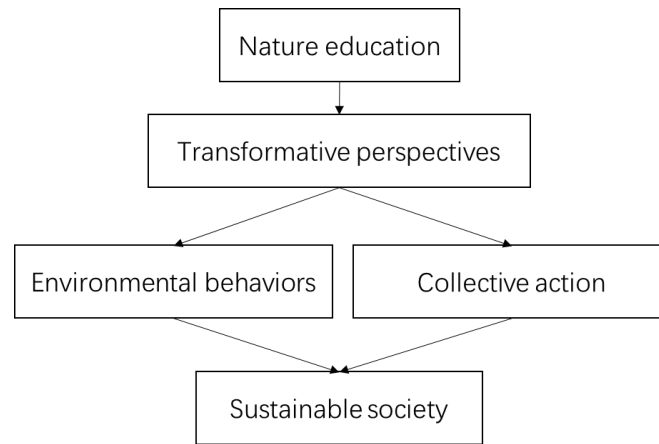


Figure 2 The theoretical framework of this study

The hypothesis is that NE can bring transformative values which can result in environmental behaviors and collective action leading toward a sustainable society in the case study.

1.5 Limitation and scope

The study is going to explore one case study due to the limitation of research time. One case study is limited to generalize the research result to the whole China as it has its own uniqueness. The research will look at the overall history of EE in China but the main part of research will not go beyond the case study. Besides, the study is focusing on the transformative values NE can provide and the outcomes such transformations led to but will not focus on the process how such transformative values generated.

1.6 Methodology

1.6.1 Research methods

Document/literature review and expert interview are mainly used to understand an overall picture of the situation of NE in China, supplemented with participatory observation.

Literatures and documents include academic papers, articles published on the online platform of China Nature Education Forum and some main NE organizations, and documents the researcher acquired from the key informants. Experts the researcher interviewed include Wang Yu, one of the initiators of Yunnan Zaidi Nature Education Center and Mr. Jiang, one of the initiators of Zhejiang Shanye (literally means mountains and plains in Zhejiang). Besides, the researcher attended the fourth China Nature Education Forum (CNEF) held in Hangzhou, China, and observed others' conversations and chatted with some important NE engagers. Additionally, the researcher participated in a nature school tour in Japan facing Chinese NE engagers and observed how Chinese NE engagers learn about NE from Japan. Other means for acquiring information include attending online EE and NE webinars and discussions.

As for the case study of Yunnan Zaidi Nature Education Center (Zaidi), the main research methods are in-depth interview and participatory observation. Document review and participant observation were used to gain the background information of Zaidi. Semi-structured in-depth interview was used to gain a detailed understanding of NE engagers' perceptions, experiences and transformations during NE activities, supplemented with participatory observation and document review. In-depth interview is "useful when you want detailed information about a person's thoughts and behaviors or want to explore new issues in depth" (Boyce & Neale, 2006). It gives participants an opportunity to thoroughly explain their experiences and express their viewpoints.

These contents were used for analysis: transcriptions of interviews, fieldwork notes, children's diaries in the summer camp the research observed.

1.6.2 Procedures

All the interviews were conducted face to face using a semi-structured style. The interview protocol was developed based on literature review, the researcher's own thoughts,

and feedback from some pilot interviews. The interview protocol covered a broad range of questions related to their perceptions on nature and experiences in NE activities. For instance, some common interview questions for educators, children and parents were: What does nature mean to you? What do you think about an ideal relationship between human and nature? How do you understand NE? What's your acquirement in NE activities or did you recognize any development of yourself? There were questions only for educators, children or parents. For instance, for the educators, the researcher asked their motivation to join Zaidi, the most important objective of NE in their opinion, and their observation of other peoples' transformations. For the children, the researcher asked about their hobby and lifestyle, such as things when they are doing they feel happiest, how they spend free time, their dream or things they want to do in the future. For the parents, the researcher asked about their expectation of their children, their observation of their children's transformations, and their contribution for the collective environmental behaviors/actions. During each interview, the researcher also asked additional questions according to each participant's response.

All the interviews were conducted in Chinese. Most interviews for educators were conducted in the office or the nature school of Zaidi. The researcher interviewed all the educators one-on-one. The length of each interview for staffs varies from 20 minutes to 70 minutes. Four out of the six interviews for families took place in their residence, while one took place in the nature school, and the other one was conducted in a public place. For five families, the interview for children and parents were conducted together. For the rest one, the researcher conducted interview for the child and the father separately. The length of each interview for families (sum of the interviews for both the child and parent) lasts from 40 minutes to 100 minutes. All interviewees except one agreed to have their interviews recorded. The researcher completed all the interviews within half year (i.e. during August of 2017, October of 2017 and January of 2018).

Apart from interviews, participant observation was also used to collect data. The researcher observed different types of programs by serving as a voluntary assistant. Besides, the researcher lived in the nature school for three weeks to observe the ordinary lifestyle there. In August and October of 2017, the researcher participated in weekend courses occurring in a botanic garden, the nature school, and a village near Kunming city, and two camps taking place in a nature reserve and the nature school. The nature reserve camp was conducted in the western part of Yunnan, which is about 350 kilometers (about one-hour flight) from Kunming. In this camp, the researcher participated in all the activities for both students and educators as a voluntary staff, especially the researcher took part in the everyday discussion among the educators. As a participant observer, the researcher was able to observe closer and in details, which a non-participant observer was not able to do. Yet, the researcher paid particular attention on keeping some distance from “being a real staff” to stay as objective as possible. In all the programs the researcher observed, there were about fifteen to twenty participants for each. All the participants consisted solely of children (though for different courses, the age groups were different). Besides, the researcher took part in a trial run of one class (For NE activities, trial runs are often conducted ahead of a new project for educators to get familiar with the environment and design specific activities) and some of their internal meetings. The researcher explained the research purpose and acquired permission from Zaidi before observing the courses.

When analyzing the data, the researcher read all the interview transcripts and field notes to obtain an overall idea of the data. Next, the researcher perused each transcript and made codes to identify recurring themes with the highlight of relevant passages. Then the researcher grouped passages with the same theme into one broad category. Lastly, the researcher tried to find the relations between each theme with each research question.

CHAPTER 2 HISTORY AND CURRENT DEVELOPMENT OF ENVIRONMENTAL EDUCATION PRACTICES IN CHINA

2.1 History of Environmental Education in China and its theoretical development

After reviewing several literatures (Lee & Tilbury, 1998; Huang, 2003; Tian, 2008; Wang & Xie, 2013; Tian & Wang, 2016) on the development of EE in China, four phases can be divided during the history of EE in China (Table 1).

Table 1 The history of formal EE in China based on literature reviews

	Time period	International event	Domestic event	Feature of EE
1 st phase: start-up of EE	1972-1983	Stockholm Declaration (1973)	China has started environmental protection and environmental education	Knowledge was regarded as the key to environmental protection, which encouraged teachers at schools to offer a strong knowledge-based environmental education (Lee & Tilbury, 1998).
2 nd phase: formation and development of EE	1983-1992	World Charter for Nature (1980)	Environmental protection was established as a basic national policy of China in the Second National Conference on the Work Concerning Environmental Protection conducted by the State Council (Huang, 2003).	This ensured that public education played a crucial role in environmental protection.
3 rd phase: upgrade and	1992-2002	the Agenda 21 (production of	In 1994, the State Council approved	- Environmental education started to

sublimation of EE		Earth Summit of 1992)	China Agenda 21 in which EE was considered as an important means to enhance China's sustainability (Tian, 2008).	integrate with educational innovation, social transformation and people's life (Huang, 2003). - The emergence and active participation of non-governmental organizations has significantly contributed to environmental education (Huang, 2003).
4 th phase: reorientation of EE to ESD	2002-	the Agenda 21	The Notion of Scientific Development (NSD) declared by the Chinese government in 2003 envisions the construction of an ecological civilization (Tian, 2016).	EE in China has been practically immersed with ESD

Such EE is mostly government-oriented and appeared in the formal education system, or in other words, a top-down system. This type of EE is tightly related to the national policy on environmental protection. China started to realize the negative consequences of environmental destruction after 1972, that is why initially China started environmental protection and education. Therefore, such EE is highly political and has explicit objectives. According to Huang (2003;2008), the conceptual framework of environmental education guided by the Chinese government can be summarized as “a kind of activity to spread knowledge of environmental sciences”.

However, this kind of top-down EE showed some problematic features.

Firstly, from the perspective of ideology, Tian (2004) pointed out that public EE was turning more utilitarianism oriented. People often concern about environmental issues from an anthropogenic aspect. This related to a trend of examination-oriented which appeared in the

current education system. Lee (1998) regarded China's examination system as a major obstacle of EE. He referred Zhu (1995b)'s argument that: 'There is popular demand for schools to emphasise the teaching of the entrance examination courses and thus those such as Environmental Education which are not examined, are marginalized ... Environmental Education, if included at all, is usually accorded low priority and something only to be concerned with after examination courses are ensured'. Tian (2008) pointed out that in basic education, students' interest in environmental issues decreases with the up-going of grades. It also indicates that in an examination-oriented education system, it may be difficult for students to keep the interest and concern toward the environmental issues. Such utilitarianism also influences the evaluation of students' environmental learning. Rather than the real purpose of EE, some superficial features such as the frequency and range of activities and the number of awards or prizes won in competitions were more valued (Lee, 1998). This may lead to the situation that EE becomes a mere formality and deviates from its original purpose. Besides, formal education system also fails to nurture humanistic and scientific spirits for forming environmental awareness among Chinese citizens (Tian, 2004).

On the other hand, from the perspective of implementation, it was pointed out that the popularization, depth, and quality of EE are not satisfactory because of the limitation of EE curriculum and teachers' environmental knowledge (Tian, 2008). EE is often conducted as an infusion education in middle schools, which means it can easily turn into a pure knowledge education. Such knowledge-based EE within the examination-oriented education system result in the limitation of the impact of EE. Though the traditional thinking in EE is that increasing environmental knowledge can lead to environmental behaviors, numerous researches found that it was not always this case and have examined other variables which would possibly predict environmental behaviors (Hungerford & Volk, 1990). Experiencing in the environment and awareness enhancement are often neglected in EE. Though teachers of

subjects related to environmental issues such as chemistry, biology and geography teach relevant contents, the teaching approach is generally lecturing, which are least welcome by students (Tian, 2008). This also reflects that there is a lack of profession and capabilities of teachers teaching for EE. Besides, lack of curriculum design and appropriate teaching materials are also problems in formal EE (Ding, 2002)

Furthermore, Tan (2011) and Duan et al. (2007) advanced that public EE in China emphasized global and national environmental problems more and neglected local environmental issues. Learning materials tailoring for local characteristics are missing in many schools. There also is lack of direct experiences in the natural environment and “interaction” between teachers and students in many public EE (Duan et al., 2007).

To sum up, formal EE in basic education need improvement in both the aspects of ideology/theories and implementation. Ideology include establishing proper values regarding the environment such as ecocentrism, respecting nature, and reflecting on the current examination and utilitarianism-oriented education system. The implementation process, on the other hand, include more diverse and interactive education methods, teaching materials focusing on the local environment, more teachers professional in EE, and direct and meaningful experiences in the environment.

As shown in Table 2, informal EE started to emerge after the first environmental NGO Friend of Nature (FON) was established in 1994. Since then, member groups of FON on different themes, such as plants, bird-watching and mountain climbing were established in different places all over the country. Gradually, bird-watching association were established and developed in different places.

Since 2007, the Green Camps for College Students, which are a series of grass-root environmental activities participated by the university students across the country who love nature and concern about environmental protection, have experienced a transition from solely

for ecological conservation toward nature education (Shu, 2005). The nature interpretation training from the Society of Wilderness of Taiwan was introduced in the green camps (Wang, 2017).

Table 2 The main development history of nature education in mainland China

Time	Organization	Content
1994~	Friend of Nature	Establishment of local theme-based member groups
1997~	Development of local bird-watching associations	
2007	Green Camps for College Students	Introduced nature interpretation training from Taiwan
2008	Partnerships for Community Development	Introduced Affective Nature Education from Hongkong, which was integrated by Sharing Nature Philosophy from U.S. and Taoism
2010	Friend of Nature	Translated <i>Last Child in the Woods – Saving our children from nature-deficit disorder</i>
2012	Japan-China Civil Society Network	Introduced the concept of nature school from Japan
2014	Preparation Committee of China Nature Education Forum	First China Nature Education Forum
2015	Beijing Forestry University	First report on NE in China
2016	11 voluntary NE organizations	Establishment of a working group of talent cultivation in NE

In 2008, Affective Nature Education (ANE) from Hong Kong was introduced to mainland China and now it has been spread across the country. ANE integrated Sharing Nature Philosophy created by American nature educator Joseph Cornell and the traditional Chinese philosophy Taoism to promote the experiential learning methods. Different from the traditional EE of China, it doesn't emphasize on the acquirement of knowledge and skills, but the process of sensing nature, thinking about nature, and act for nature (Gaia Association, 2017). Flow learning, the methodology Sharing Nature promotes, divide NE into four steps: awakening enthusiasm (to stimulate learners' interest about nature), focusing attention (to

help students become attentive and receptive to nature), offering direct experience (to make deep connection with nature), and sharing inspiration (to strengthen one's experience and create a closer bond with others) (Sharing Nature, 2016). Such methodology has already become a basic methodology for many nature educators to design NE activities in China.

Last Child in the Woods by Richard Louv, a book exerting profound impact on NE, was introduced to China in 2010 thanks to FON. The book, firstly published in the U.S. in 2005, intended to arouse people's awareness on the breakdown of relationship between nature and children and problems resulting from such breakdown. Louv used "nature deficit disorder" to describe human's various manifestations of alienation from nature, such as feeling insensitive, inattention, physical and mental illness (Louv, 2005). Based on this concept, a research conducted by Shenzhen Mangrove Wetlands Conservation Foundation (MCF) in 2015 indicated that around 16% of urban children (age three to thirteen) in China started to show inclinations to nature deficit disorder (Yan, 2016). At the same time, the report revealed a situation that urban children in China with little time on outdoor activities (68% less than an hour per day) but more time on cram schools (52% go to 1-2 cram schools last semester) and electronic devices (19% more than one hour and 10% report they have addiction).

In 2012, Japan-China Civil Society Network (CSNet), a NGO based in Tokyo, introduced the concept of nature school and 自然体験型環境教育 (nature-experiencing type EE) in China. Nature education in Japan can be traced back to 1980s when the first nature school emerged. There are more than 4000 nature schools in Japan currently. Each year, CSNet organized several trips for Chinese nature educators to learn and receive training from Japan. A few NE organizations also cooperate with Japanese nature schools and CSNet to offer summer/winter camps in Japan for Chinese children.

In 2014, the first China Nature Education Forum was held in Xiamen City voluntarily organized by three staffs from different NE organizations, including Wang Yu. It was the first

assembly for nature educators in China to gather together and share their NE experiences with each other. It also served as a place where ideas from other countries and areas, such as the U.S., Japan, and Hong Kong to be introduced to the mainland of China. In 2015, the first report on NE was published. In 2016, the working group of talent cultivation in NE, consisting of 11 NE organizations, was established to offer training for nature educators in China.

2.2 General information about NE in China

The Report on Nature Education of 2016 revealed that there were 177 NE organizations in China at the research time (Wang & Liu, 2016). Among these organizations, nearly half (83, 46.9%) are nature schools or nature centers, 32 (18.1%) integrates nature education in outdoor activities or trips (Figure 3).

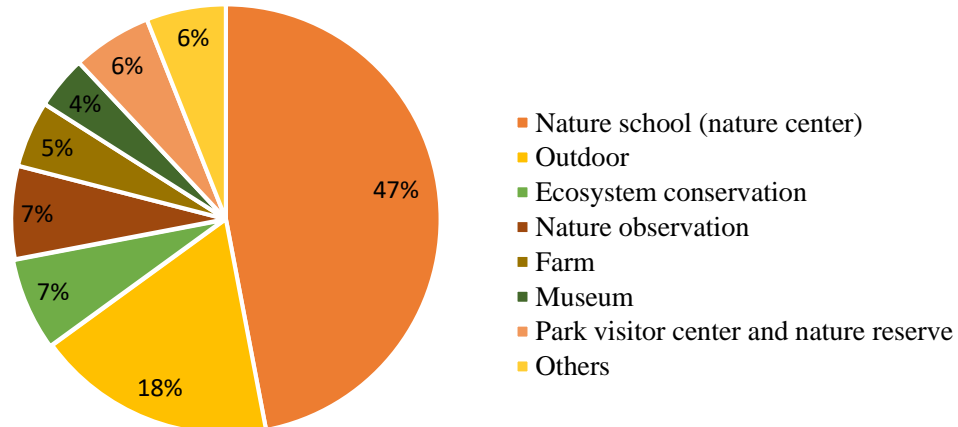


Figure 3 Types of nature education institutions

As for the main body of institutional operations, half (89) organizations were operated by private companies while a quarter (46) were operated by NPOs, which means 3 quarters were operated by non-governmental institutions and less than a quarter were operated by governments or companies which were entrusted by governments (Figure 4).

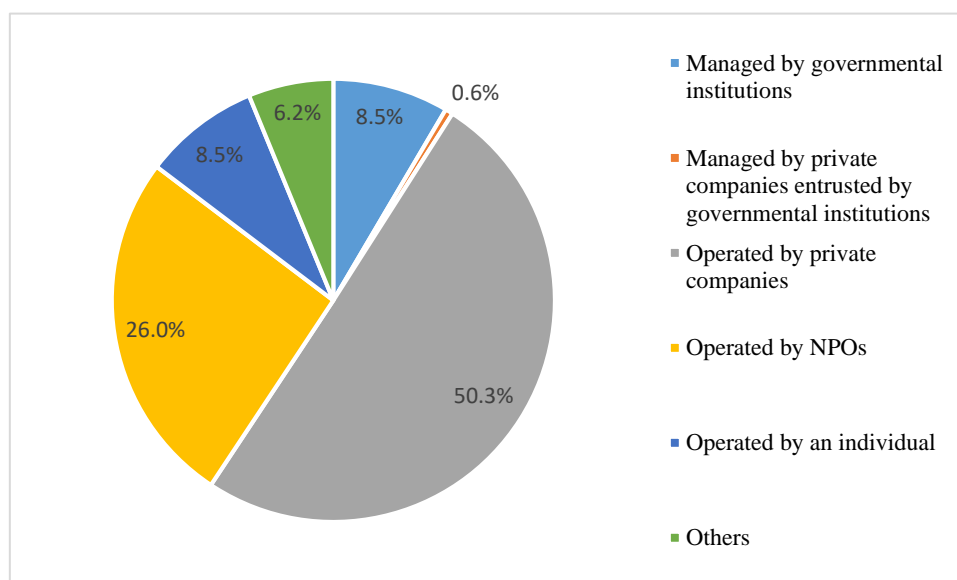


Figure 4 Main body of institutional operations

As for the targets of nature education institutions, 87.6% (155 out of 177) of nature education institutions target at pupils, while 73.5% (130 out of 177) target at families with children. More than half (55.3%, 98) of institutions target at children aged three to six (Figure 5). This shows that most NE institutions target at children before junior high school, and there is much less NE courses for teenagers (children in junior and senior high school) and adults.

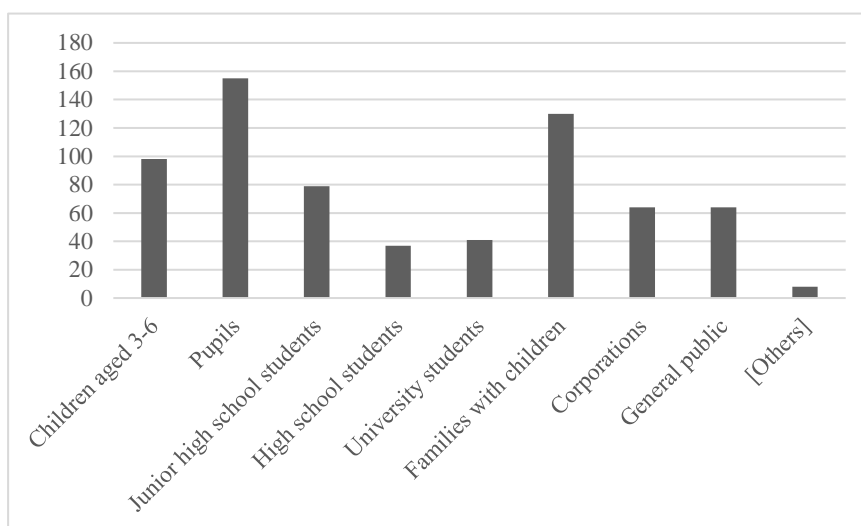


Figure 5 Major targets of nature education institutions

However, during the interview with Wang Yu, she pointed out that the result of the Report on Nature Education of 2016 might not reflect the real situation of NE in China. The report collected data through NE organizations voluntarily filling the questionnaires, with the problematic assumptions that all the NE organizations would attend the Forum and fill the survey. One NE organization tended to use “keyword searching from WeChat¹” to count the number of NE organizations with the assumption that all NE organizations publish articles on their official platform of WeChat. However, this study was not complete because the policy of WeChat changed. Therefore, so far, the Report has been almost the only source to gain the national data about NE. While the data I showed above can give us a rough idea of the circumstance of NE in China, we should keep in mind that the result is not accurate.

¹ WeChat is the major online chatting software in mainland China. It also became a major information source for Chinese people as organizations published information on their official platforms of WeChat.

2.3 Current NE practices

According to the Annual Report on Environmental Development of China (2016-2017) [中国环境发展报告(2016~2017)] (Sun et al., 2017), the core of NE in China is nature experience. Nature experience can entail a variety of contents, such as nature games, nature observation, hands-on activity, nature practice, etc. with a common purpose of connecting human and nature. Table 3 has shown the details of the different types of activities.

Table 3 Different types of NE activities

Type of activity	Description	Examples
Nature interpretation	Nature interpreters deliver knowledge and experiences about nature	Nature interpreters teaches students how to recognize different plants by explaining their names, features and so on.
Sensing nature	Nature educators guide students to sense different natural objects by five senses	Nature educators let students to taste wild fruits, touch leaves, etc.
Hands-on activity	Use natural objects to make handicraft	Use fallen branches to do some wood craft; cook from natural materials
Nature practice	Do some actual practice in a natural or semi-natural environment	Experience farming, forest management, etc.
Nature game	Do training or games in a natural environment to achieve certain objectives	Ice-breaking game “Strong wind blows”, tree-simulation game, nature drama, etc.

(Adapted from a NE organization: Shanlin tianye, 2018)

As for the location, some NE organizations focus on local activities, many others conduct activities in a larger scale across the country and even across the globe. This is quite different from Japan and South Korea where most nature schools focus on local activities.

In chapter three, more detailed NE practices in a selected case study will be explored.

CHAPTER 3 A NEW DEVELOPMENT OF ENVIRONMENTAL EDUCATION FROM THE GRASSROOTS: CHALLENGE OF YUNNAN ZAIDI NATURE SCHOOL

Yunnan Zaidi Nature Education Center (云南在地自然教育中心, or “Zaidi” “local”) was selected as the case study in this research because is a typical NE organization which focuses mainly on NE, and it teaches various types of NE activities including those listed in Table 3. Therefore, results from this organization can be generalized. This case study also exhibits the following features:

- 1) Zaidi is one of the largest and most well-known professional NE organizations, influential in the NE field in China. It is collected in *Cases of nature education organizations in China* (中国自然教育机构案例集) published by third China Nature Education Forum (CNEF, 2016), and one of the eleven NE organizations in the working group of talent cultivation in NE.
- 2) Wang Yu (Mayi), the director of Zaidi, is an important NE impeller in China. She is one of the initiators of the first CNEF and a member of council of CNEF. She studied in a master program of environmental education in the University of Wisconsin in the U.S. and has years of working experiences in EE, nature conservation and community capability building. She is also the chairperson of the working group of talent cultivation in NE.

3.1 The beginning of the challenge: a history and the current of Yunnan Zaidi Nature education Center

3.1.1 Yunnan Zaidi Nature Education Center

Yunnan province, locating at the southwest of China, has an extensive area of about 394000 square kilometers. It has various landscapes. The eastern part of Yunnan is plateau with karst topography and the western part is canyon region. The altitude varies from 76 meters to 6740 meters (Ministry of Geology and Mineral Resources, 1990). Yunnan is also the province with highest biodiversity level in China. Additionally, Yunnan is also famous for its rich fossils, especially those from the Lower Cambrian.

Yunnan is the province with the most types of ethnic minority groups. There are 25 ethnic minority groups comprising 33.4% of the total population in 2010 (Yunnan Municipal Government, 2014).

Despite rich natural and cultural resources, Yunnan is relatively undeveloped economically. The GDP per capita in 2016 in Yunnan is 31093 CNY ($\approx 4884 \text{ USD}^2$), which is only 57.6% of the national level: 53935 CNY ($\approx 8471 \text{ USD}$). Tourism is an important industry for Yunnan. Tertiary industry contributes 46.7% of its total GDP, followed by the second industry (38.5%) (National Bureau of Statistics of China, 2018).

Zaidi is a social enterprise established in 2012. It is based in Kunming, the capital city of Yunnan, but its activity area is the whole province.

Zaidi is a type of NE organization that focused on local activities. This is because Yunnan province has rich natural resources and abundant ethnic culture, which provides a rich basis to conduct NE.

The mission of Zaidi is “devoting to nature education practice, by providing experiencing activities based on local features and lifestyles and a platform of mutual learning and

² According to CNY/USD rate on May 17, 2018

companion, and motivating teenagers and adults to respect and love nature, cultivate their insight and mobility to cope with environmental issues”.

The author has reviewed the data on the official online platform of Zaidi in 2017, and found that Zaidi’s NE curriculum has three main types of programs which directed towards either children on their own, or children and parents together:

- 1) weekend courses: usually once per month, four times per semester, one class can last for half day, the whole day, or overnight
- 2) Seasonal camps: takes place in holidays, usually last for one week
- 3) Routine and non-routine events: usually last for half day, one day or two days. E.g. 5th anniversary event: musical festival on grassland, traditional outdoor game, goods exchange, etc.

The type of location to conduct NE activities are shown as Figure 6. The type of location present a variety from green areas in the cities which are relatively highly intervened by humans to the wilderness where human has little intervention.

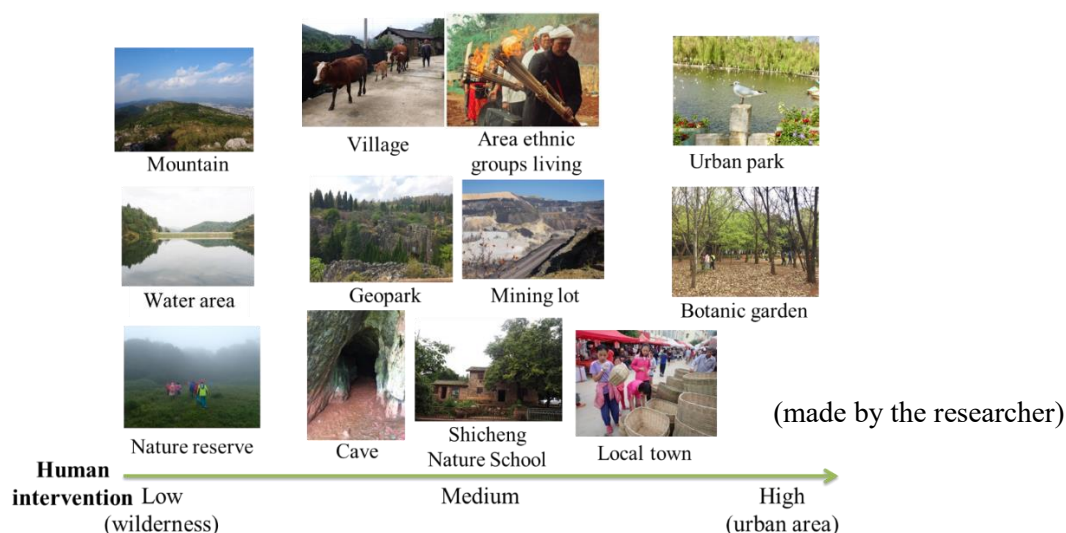


Figure 6 The type of location where NE activities were conducted by Zaidi

Activities at Zaidi range from more personal activities such as rock climbing, carpentry to more collective activities such as playing nature games, experiencing sustainable lifestyle in

the Shicheng Nature School which is a part of Zaidi. Most of their activities are targeted towards children aged seven to fourteen (Figure 7). The education content includes but is not limited as nature history, geology, observing and sensing natural objects, drawing, performing, and outdoor survival skills.

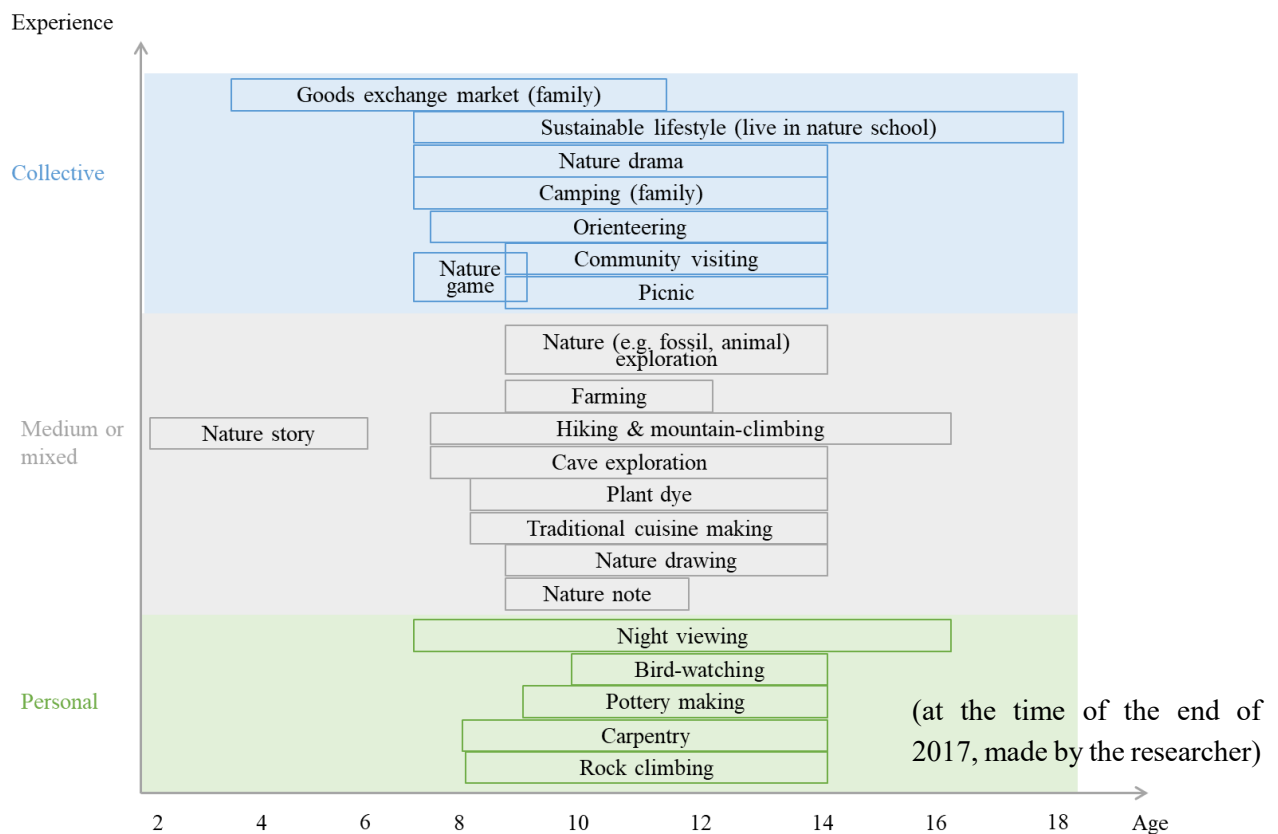


Figure 7 The type of NE activities and which age group they are targeting at

Except for education curriculum facing to the children and families, Zaidi also developed zirandaoshi (literately means “nature counselor”) training courses which face to adults who are interested in engaging in NE.

Shicheng Nature School serves as a crucial base to experience sustainable lifestyle. It locates in a geopark with facilities such as croplands, orchard, rainwater collection system,

eco-toilets and so on. Eco-friendly practices include water-recycling, kitchen waste reusing, waste separation, and so on (figure 8).

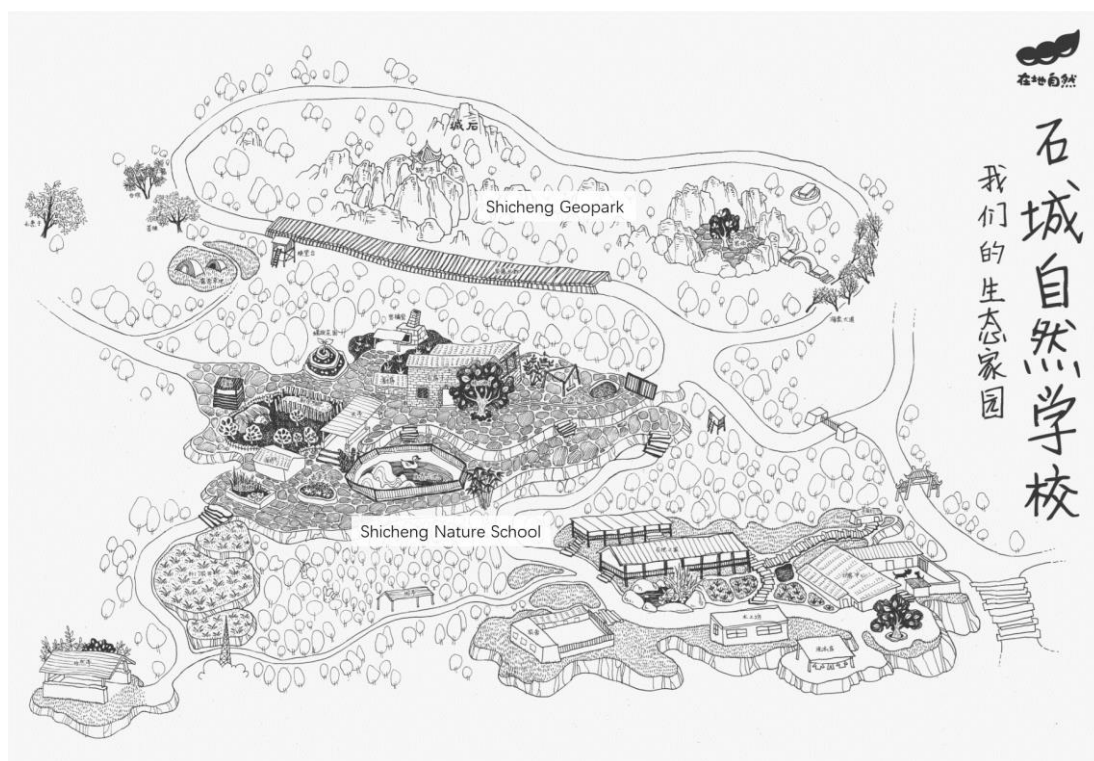


Figure 8 Map of Shicheng Nature School (from Yunnan Zaidi Nature Education Center)

The role of the nature school will be further discussed in section 3.6.

3.1.2 Interviewee's background

Nineteen staff members from Zaidi and six families (the child and at least one parent) were invited to participate in this study. The nineteen staff members include all the thirteen full-time employees (of which three are Zaidi founders), four part-timers, one volunteer and one cooperator³. Among the nine full-time employees, seven were female and two were male. The four part-timers were selected according to their engagement in NE. They served as NE educators or participate in daily management of the nature school on a regular basis, like daily, weekly or monthly. The volunteer was referred by the other staff and has assisted NE

³ Sometimes, staffs from another institution with some specialty joined the camp as an cooperative educator.

activities for a long time. The cooperator played an important role in a summer camp the researcher has observed.

Detailed information of interviewed staffs was listed in Table 4.

Table 4 Demographic Information of the staffs from Zaidi

Name	Gender	Age	Position	Education background	Starting time of contacting with Zaidi
Ant (Wang Yu)	F	Late 30s	Initiator, director	Master: Environmental education	2012
Jasmine	F	Early 30s	Initiator, course manager	Master: Eco-tourism	2012
Elm	F	Late 30s	Initiator, manager of public matters	Master of social work	2012
Tamarind	F	Mid 30s	"Nature school" manager	Master: Ecology	2012
Flower	F	Mid 20s	Full-time, based in "nature school"	Bachelor: Eco-tourism	2012
Durian	F	Mid 20s	Full-time	Bachelor: Eco-tourism	2015
Feather	F	Mid 30s	Full-time	Bachelor: Nursing	2016
Russian Blue	M	Early 20s	Full-time	Bachelor: Landscape design	2016
Fishtail Palm	F	Late 20s	Full-time, based in "nature school"	Master: Botany	2016
Sesame	F	Early 20s	Full-time	Bachelor: Landscape	2016
Cloud	F	Early 30s	Full-time, financial, administrative and logistical support	Bachelor: Chinese language and literature	2016
Moonlight	F	Late 20s	Full-time, based in "nature school"	Master: Ecology	2017
Cengceng	M	Late 20s	Full-time, based in "nature school"	Bachelor: Information and computing science	2017

Grass	F	Late 30s	Part-time		2012
Yin	M		Part-time, gatekeeper		2015
Squirrel	M	Late 20s	Part-time		2014
Leopard Cat	M	Early 40s	Part-time	Master: Biology	2013
Autumn	F	Mid 40s	Volunteer	Bachelor: Mechanical engineering	2015
Giant squirrel	M	Late 20s	Cooperator	Bachelor: Forestry technology	

Note. Pseudonyms were used to protect participants

Thirteen of eighteen educators (except for the gate keeper, uncle Yin) have relevant educational background, such as ecology (three) and eco-tourism (three). Wang Yu, the director, has an educational background in EE. Sixteen of seventeen educators have nature-related hobbies, such as trekking (including mountain climbing, four), nature observation (including bird watching, four), nature painting (four), etc. Fifteen of eighteen educators have relevant working (internship) experience before working for Zaidi. Six of them had experience involving in environmental volunteer circles in the university. All the four managers had the environmental NGO background.

All the managers created Zaidi because they wanted to conserve the environment by changing people's environmental attitude and behavior. Six educators joined Zaidi because they agreed with Zaidi's ideas. Six educators mentioned that reliant organization members were a vital factor for them to involve in Zaidi.

Among the six families, four of them were referred by educators as long-term participants at Zaidi. Among the other two families, one child's father in the family is a part-timer at

Zaidi. The other family was randomly chosen from the participants of a summer camp the researcher observed. Among the six children of the six families, four were in the fifth or sixth grade of primary school and two were in junior high school when interviewed. There were four girls and two boys. One interview included child and both parents, while other interviews included a child and only one parent, totaling three mothers and two fathers. Table 5 shows detailed information on interviewed families.

Table 5 Demographic information of participant families

Family number		Family 1		Family 2	Family 3	Family 4	Family 5	Family 6
Children's information	Name (Child)	Totoro		Seagull	Crape myrtle	Rose	Morning glory	White wolf
	Gender	F		M	F	F	F	M
	Grade	Primary 5th		Primary 5th	Primary 6th	Primary 6th	Junior 1	Junior 1
	How long have participated in NE activities	Half year		2 or 3 years	5 years	5 years	4 years	4 years
	Participated program	Rock climbing, Mt.Gaoligong summer camp		Most	Almost all	Almost all	Almost all	Almost all
Parents' information	Name	Totoro's M	Totoro's F	Leopard Cat	Caterpillar	Plum Bean	Strawberry	Black Horse
	Mother or father	Mother	Father	Father	Mother	Mother	Mother	Father
	Age			Early 40s	Early 40s	Mid 40s	Early 40s	Early 40s
	Job	University teacher	Trade industry	College teacher	Housewife	Housewife	Engineer	Software engineer

Note. Pseudonyms were used to protect participants

All six families like to go to natural areas such as parks or mountains when they go out with their children. All the parents created opportunities for their children to interact with nature. According to children, three children go to natural areas with their family once per month, two are once per week. When asked about nature-related hobbies, four children mentioned outdoor activities, such as mountain climbing, playing in nature and camping. Other two children mentioned hands-on activities, such as drawing natural objects and flower arrangement. Two children mentioned they feel happiest when they are with animals.

Five children use electronic devices only on weekends or holidays, though the period they spend per day during such holidays vary from half an hour to four hours.

All children take extracurricular classes outside for NE, varying from one class to four. The most taken classes are English which are taken by four children, followed by music lessons taken by three children, with two children taking arts.

During the free time, four of them mentioned they might go to relatively natural areas such as green area near home, parks, and mountain.

3.1.3 Education strategy Zaidi is applying

Several education strategies were observed based on the participant observation of various NE courses Zaidi conducted:

Class setting:

1. Class with limited number of children
2. Mixed age education

Education method:

3. Children reflect on their acquirement and performance timely; Educators reflecting on themselves timely

4. Designing interesting activities and games to achieve certain educational purposes
5. Setting challenging exploration activities to achieve certain educational purposes
6. Experiential learning
7. Conduct personalized education tailored for different children
8. Encouraging free-choice learning – learning that the learner exercises a large extent of choice and control over what, when and why to learn (Falk, 2005). Concrete measures include setting free time, providing children with a degree of autonomy, making appointment with children, encouraging children to solve their own problems by themselves,

Education material:

9. Using random factors to conduct education
10. Using natural environment to conduct education

3.2 Nature education engagers' understanding of nature education

3.2.1 Educators' understanding of nature education

The understanding of “nature” in “nature education” provided by educators has three layers.

The first layer of understanding is that nature is “eco-systematic or organic existence” (Ant), “a real, objective natural environment” (Russian Blue). This understanding is very close to the definition of “nature” in ecology: living plants and animals, geological processes, weather, and physics, such as matter and energy (Environment and Ecology, 2018). Two educators (Elm and Jasmine) think of nature in a broader sense, as they think every object on the earth can be regarded as nature, including the natural systems and laws. One educator (Leopard Cat) limited his understanding of nature as yewai (野外), a word close to “the wild”,

or “field”, which exclude urban areas. One staff member (Tamarind) previously thought in the same way as Leopard Cat, but changed her idea through practicing NE. She now thinks that our surrounding nature such as green areas in communities and cities and the citizens are also nature.

The second layer of understanding is a “natural” educational method. Three educators maintained that educational activities should be conducted naturally, which means education should be tailored to conform to each child’s personalities and transformations, and children are not forced to do anything.

The third layer of understanding is to achieve a natural state, which were mentioned by three educators. For instance, one educator (Grass) explained that nature consists of actions occurring of their own volition instead of from outside action, including people getting along with each other naturally (inter-human relationship), following the laws of nature while getting along with nature (human-nature relationship) and gaining a precise recognition of self (human-self relationship). Here, laws of nature can mean natural phenomena occurring in the natural environment, nature of objects, and human nature. “Doing things naturally” here has a meaning of keeping things simple and following the laws of nature without exerting too much human interference. One informant (Russian Blue) mentioned that to reach such a state, educators should learn to get rid of greed as much as possible. This idealized “natural” state as explained by Zaidi educators relates to the Taoist philosophy of wuwei (无为). In Taoism, wuwei, literally “doing nothing”, means that individuals should not take action violating the laws of nature. In Taoism, wuwei is an ideal state individuals should pursue. Nature educators in Zaidi believe they should also pursue a natural state by learning from nature. They regard nature as the teacher and they merely serve as a guide or interpreter for the students. Such idea is similar to weak anthropocentrism which regards nature as a teacher for guiding human values (refer to section 1.4.2).

As for the general understanding of NE, nine of the sixteen educators mentioned changing people's attitude towards their local environment, and behavior in regards to conserving nature, as a vital element of NE. Facilitating social cooperation and community education is another significant aspect as six educators mentioned it. Five educators mentioned NE is a humanistic education as it is a people-oriented education instead of result-oriented education. Nine of the ten educators who answered whether their understanding of NE has changed over their time working at the institution said yes, seven of the nine educators said before they simply understood NE as "education in nature" or "education about nature" without the objective of "education for nature".

When asked for an understanding of the primary mission of Zaidi, twelve of the fifteen educators believe it is to shape people's environmental behavior or action especially developing sustainable lifestyle to achieve the purpose of environmental conservation. Five educators also mentioned a crucial aspect of the idea of Zaidi is for human's healthy development.

Based on these results, educators at Zaidi understand NE as a method of changing people's environmental attitude and behaviors through a humanistic approach. Additionally, educators' understanding of NE transformed gradually through engaging in NE. In reference to Lucas's tripartite EE model (section 1.4.3), educators' understanding of NE has been broadened from an education conducted in and about the natural environment toward a more holistic view that NE is also an "education for nature" which means the objective of NE is to conserve nature. Such transition of the understanding of NE led to an emphasis on building social connections and reforming the sense of community to better facilitate the change of environmental behaviors.

3.2.2 Parents and children's understanding of nature education

Four out of six parents understand NE as a way to link human/children and nature and understand the role human has towards nature. Two of them also mentioned NE could help people understand themselves through nature. Two parents think NE can help remove restrictions on human activity to liberate the soul.

When asked for an understanding of Zaidi's ideas, five parents explained that it is to achieve the goal of conserving nature by connecting humans with nature. All four parents who answered whether they agreed with this idea said yes. Five of the six parents had participated in Zaidi's NE activities while one of them is a part-time educator in Zaidi.

Three out of five children who answered the question what NE is think NE is playing in nature while other two children think NE is learning in nature. Two children also mentioned NE can give them freedom.

3.3 Transformation of understanding of human-nature relationship

3.3.1 Parents' transformation of understanding of human-nature relationship

Three parents' view changed towards stronger environmental stewardship⁴ by involving in NE, while the other three parents who originally held the view that humans and nature share a harmonious relationship did not experience an evident change of understanding of human-nature relationship.

Among the three parents who changed their environmental views, two mothers (Caterpillar and Plum Bean) mentioned that their understanding of human-nature relationship

⁴ Environmental stewardship refers to human responsible consumption, protection of the natural environment or corrective activities that could be achieved through conservation efforts and sustainable practices (IGI Global, 2018)

changed from the idea of human can conquer nature toward the notion of human and nature are equal and human should follow the natural rule:

“I was enjoying nature in my childhood, and at that time I received the education that men have power over nature, so I thought nature and human was unequal but now after involving with Zaidi and reading some books through them now I feel nature and human is equal and human is just part of nature instead of more powerful than nature. I really think in this way. And now I also see the environmental destruction in our country is so severe, so I am worry that the future environment will be more degraded.⁵” (interview with Plum bean)

Such change on understanding of human-nature relationship has led to more responsible environmental behaviors, which will be provided with more details in section 3.5.1.

3.3.2 Children’s transformation of understanding of and relationship with nature

Four children expressed their understanding of nature. When asked about their opinion on nature⁶ three children explained that nature is like friends, which implies a view of comfortable and equal relationship between the children and nature. One other child explained that nature is where people can learn many things, which implies a view that nature is more powerful than human and human should be humble toward nature. Two children said their understanding of nature did not change after involvement in NE. One of the two children who experienced change (Rose) mentioned she became more adventurous with nature. One child (White Wolf) experiencing change on understanding of nature said that nature is both like teacher and friend from the previous view that nature is solely a friend.

⁵ The original transcription in Chinese is: “小时候因为一直在享受自然，而且那个时候受到的教育就是人定胜天的那种教育，就觉得好像自然是跟人类不是平等的.....但是现在接触在地然后通过他们看一些书以后.....现在感觉其实自然跟人类是平等的，人类只是其中的一个部分，人类并不是凌驾于自然之上的。现在确实是这样认为。然后现在主要又看到我们国家环境破坏这么严重，觉得还是很担忧将来的那个生存环境越来越恶化。”

⁶ The question is “what do you think nature is, if using a metaphor?”.

3.3.3 Educator's transformation of understanding of human-nature relationship

When asked about the relationship between nature and themselves, thirteen of the fifteen educators who answered this question said that (s)he belongs to nature and (s)he should be humble toward nature. Seven of the eight educators who answered the question whether their relationship with nature has ever changed after involving in NE said yes. Among the seven educators, five said they changed their attitude toward nature from feeling indifferent toward stronger environmental stewardship with the view that nature is more powerful than human. Five mentioned they felt more empathy toward nature.

Such result suggests that it is common to hold the view that nature is more powerful than human among the nature educators. Outcomes of attitudinal change will be displayed in section 3.5.3.

While asked about the opinion of ideal nature-society relationship, twelve of the fifteen educators who answered this question think that nature and the society should be in a balanced relationship, which means we should pursue a more sustainable society which we gain resources from the natural environment within the extent of nature resilience. This result suggests that most educators are with the idea of sustainable development.

3.4 Transformation on human development⁷

Among the five parents who described their major transformations after involving in NE, two parents (Strawberry and Black horse) felt better mental health in NE activities. Additionally, two parents (Caterpillar and Strawberry) started to gain understanding of their child's perspective.

Among the six children, four children mentioned they built more social connections by making more friends (two), enhancing teamwork skills (two) and becoming more confident

⁷ Human development here can be simply understood as the expansion of people's freedoms and opportunities to improve their well-being (Measure of America, 2018).

(two).

Three parents observed their children become more confident and two observed their children enhance their teamwork skills. Three parents mentioned better physical and mental health as positive changes, while two parents mentioned creativity.

Children building confidence was also observed by the researcher in the summer camp. Out of eighteen children, eight children mentioned they became more confident in their camp diaries.

As for the educators, three of them mentioned they were more confident.

Elements such as mental health, confidence and social connection all contribute to the human development by enhancing human capabilities which are human beings' abilities to lead lives they value with reasons and to extend their substantive choices (Sen, 1997). Such human development and human capability can foster social change as they impact people's sense of freedom, and their ability to engage actively in the society (Sen, 1997; HDRO Outreach, 2015).

3.5 Transformation of environmental behavior

3.5.1 Parents' transformation of environmental behavior

Five parents described the major transformations of behavior and other perspectives. Among them, two parents (Plum Bean and Caterpillar) who experienced a transformation on the understanding of human-nature relationship, started to apply reduce-reuse-recycle practices and waste segregation at their homes, where the researcher also observed such practices.

For instance, one of the parents (Caterpillar) started to grow flowers and vegetables without using pesticide and chemical fertilizer on the roof top and in the yard. She also started waste segregation, reuse kitchen waste, and made a rainwater recycling system within her family. Furthermore, she initiated to make soaps with used oil and opened workshops in her

community to teach people the process.

Two other parents (Strawberry and Black Horse) started to reduce waste production in daily life.

3.5.2. Children's transformation of environmental behavior

Five out of the six children mentioned they developed deeper connection with nature by enhancing empathy toward nature (three), being more adventurous with nature (two), knowledge about nature (two) and having fun in nature (two).

Three parents also mentioned that their children developed stronger empathy towards nature.

From participant observation at the summer camp, the researcher observed children develop stronger empathy toward nature and became more adventurous. In diaries written by the children, the most mentioned changes by children themselves regarding their connection with nature (the total number of children is eighteen) are increased knowledge about nature which is mentioned by ten children, more adventurous with nature (nine) and empathy toward nature (six) (from children's camp diary).

Rose, who experienced a change on view of nature toward more adventurous with nature described her transformation as follows:

“Before, I was influenced by my classmates who would pat again and again if clothes were stuck with some mud, so I used to fear to get dirty, but now I prefer to play first without thinking such things, sometimes my body was stuck with mud everywhere, and it became a piece of case for me to roll down from a high grass slope. If I was like before, I would just sit and watch other children rolling with a disgusting look.”⁸ (interview with Rose from family 4)

⁸ The original transcription in Chinese is: “原来因为受我们班级同学影响，我们班同学就是那种沾上一点土在那拍呀拍拍拍拍的那种，然后呢这样小点树枝就拎着裤子不敢走路那种感觉，然后呢原来就是还是有点洁癖那种类型，就是感觉有点怕脏，然后呢现在是管他三七二十一先玩够了再说，然后就是有些时候那种后来是浑身上下沾满的那种泥土，然后上次我们去滚的时候那种草坡坡嘛特别高，那种草滚下去都没问题！要是像原来刚参加在地那种会很嫌弃的坐在旁边看着其他小朋友滚。”

An example of empathy toward nature is from one child who described an experience of being amazed by the strong vitality of grass:

“Poet Bai has a famous poem to describe the strong vitality of grass, but I have never experienced that by myself. Every time when I took the nature drawing class, we sat on the grass. Every time the grass was pressed down but the next time when we went there, they grew well again, where I felt its strong vitality.”⁹ (interview with Crape Myrtle from family 3)

Her mother also observed her behavioral change out of empathy toward nature:

“I think she may be more concerned with nature than some of her classmates. She also developed an awe toward nature. For example, some children like to pick flowers, she would say that please don’t pick them, how good this flower is on the plant, don’t destroy it. ... And she treats various small animals well. When there was an insect at home, I felt it was so disgusting, and intended to kill it, (she would say) hey, don't hurt it, you can just throw it outside ... She doesn’t easily harm life, like all kinds of animals and plants. She slowly cultivated the attitude to care for them.”¹⁰ (interview with Caterpillar from family 3)

3.5.3 Educators’ transformation of environmental behavior

Six of the fifteen educators who answered this question mentioned they reduced waste production. The most frequently-mentioned example is the reduced use of plastic bags and disposable utensils. For instance, one educator (Moonlight) mentioned she changed her behavior after joining Zaidi, and made comparisons with her previous employment:

“In my previous working environment, I couldn’t conduct eco-friendly behavior. For

⁹ The original transcription in Chinese is: “就是你看小草嘛，就白居易的诗就是野火烧不尽，春风吹又生，就可以看到它生命力的顽强，但是我们以前是一直没有真实的去感受过，但是去自然笔记的时候每次都是坐在草坪上嘛，然后每次就坐了以后压扁了第二次唉又长好了，然后就可以看到它顽强的生命力了嘛。”

¹⁰ The original transcription in Chinese is: “我觉得她可能跟她的一些同学相比较，会更关注自然界里面的一些东西……然后就是对自然有一种敬畏的心，比如说有的小孩喜欢去摘花什么的，她就说你不要摘，这个花在上面多好，不要去破坏它……还有她对各种小动物啊什么的，家里边有个什么虫子，我说唉呀太恶心了，给它按死了，（她会说）唉你不要伤害它，你把它丢到哪里去就对了。……她不会轻易的去伤害生命，各种动物啊植物啊，她对这种小生命慢慢的培养起一种就很爱护它们的心。”

instance, when we worked overtime and ordered a take-out service, I still used plastic bags and disposable utensils, but here provides a better atmosphere for me able to stick to those meaningful things. Before, though I didn't want to, I couldn't insist on my own idea because of external factors. Here everyone doing such things made me more motivated to do so.”¹¹

Three educators mentioned that their consumption behavior changed. For instance, one educator who has a predilection towards fashion (Durian) described her behavioral change as follows:

“I used to have strong desire to purchase because I like various types of clothes. It was possible for me to buy something just for matching my clothes when I participated in a party. But now I wouldn't do that. I still keep my concern about fashion ... but I would rationally think about it. Nobody [in Zaidi] made the rule that you shouldn't buy, but the whole group and the things [nature education] I got to work on made me more rational to think if something can be used for longer time instead of once. I think such change has exerted big impact on my personal life, and such change made me feel good.”¹²

3.6 Promotion of NE in the nature school and communities

As an organized group, NE engagers of Zaidi is taking collective action to enlarge its social impact.

In Shicheng Nature School, educators are implementing environmentally responsible practices such as reduce, reuse and recycling, waste segregation, organic agriculture.

According to two educators (Huaer and Cengceng) living inside the nature school, such

¹¹ The original transcription in Chinese is: “之前在那样的环境里，不是特别能够坚持做对环境友好的事情。比如加班大家叫个外卖，还是会用塑料袋、饭盒、一次性筷子，来到这里有一个更好的氛围，那这些有意义的事就可以坚持下去了。原先内心是拒绝的，但是外界的因素有的时候不能坚持自己的想法，但这边大家一起做这件事就更有动力了。”

¹² The original transcription in Chinese is: “我之前是那种购买欲还挺强的一个人，因为我很喜欢各种类型的服装什么的，看到我都会买，我也可能会因为去参加某一个聚会什么，为了搭配，我一定会去买那个东西。但是现在我不会。我依然为保持对时装或时尚的关心……但是我会很理性地去（对待）…大家倒没有刻意地说你不能买之类的，但可能整个团队或者我接触的事情让我变得更理性了，会考虑一个东西不是用一次，而是更长的一个（周期）。我觉得这个变化对我个人生活的影响还是蛮大的。而且这样的改变让我觉得挺好的。”

practices exert impact on the local residents through their daily interaction. For instance, more local people know about NE and cooperate with Zaidi's 3R practices.

Furthermore, NE participants were motivated to organize community activities to promote 3R practices and empathy toward nature, such as goods-sharing markets and nature observation activities. Among the six families interviewed, three parents (Caterpillar, Plum Bean and Leopard Cat) had experiences of serving as volunteers and organizers in such events, one family had experiences of participating (involved less than volunteers), and two families didn't have such experiences. According to Caterpillar and Plumbean, participants of such community activities were motivated to participate in future activities.

Zaidi is now cooperating with some local administrations to promote such community NE activities. Such community activities have potential to influence more people. For instance, in one two-day community event held near Shicheng nature school in 2017, the number of participants was around 150 people. For curriculum courses including semester courses and seasonal camps, the number of participants is about twenty.

In the interviews, several interviewees pointed out the current problems in such collective actions. Uncle Yin, the gatekeeper of Shicheng Nature School, thinks that organic agriculture in the nature school is not sustainable yet, as the school still cannot be self-sustained due to low production. Two staff (Cloud and Caterpillar) believe that both the content and frequency of community activities should be enhanced to exert larger impact. The managers of Zaidi have expressed their hope and plan to make more efforts on sustaining the nature school and enlarging the impact on citizens by conducting more well-planned community activities.

3.7 From development toward transformation: the case of Yunnan Zaidi Nature

Education Center

Figure 9 shows a summary of the transformative values and outcomes brought by NE conducted by Zaidi.

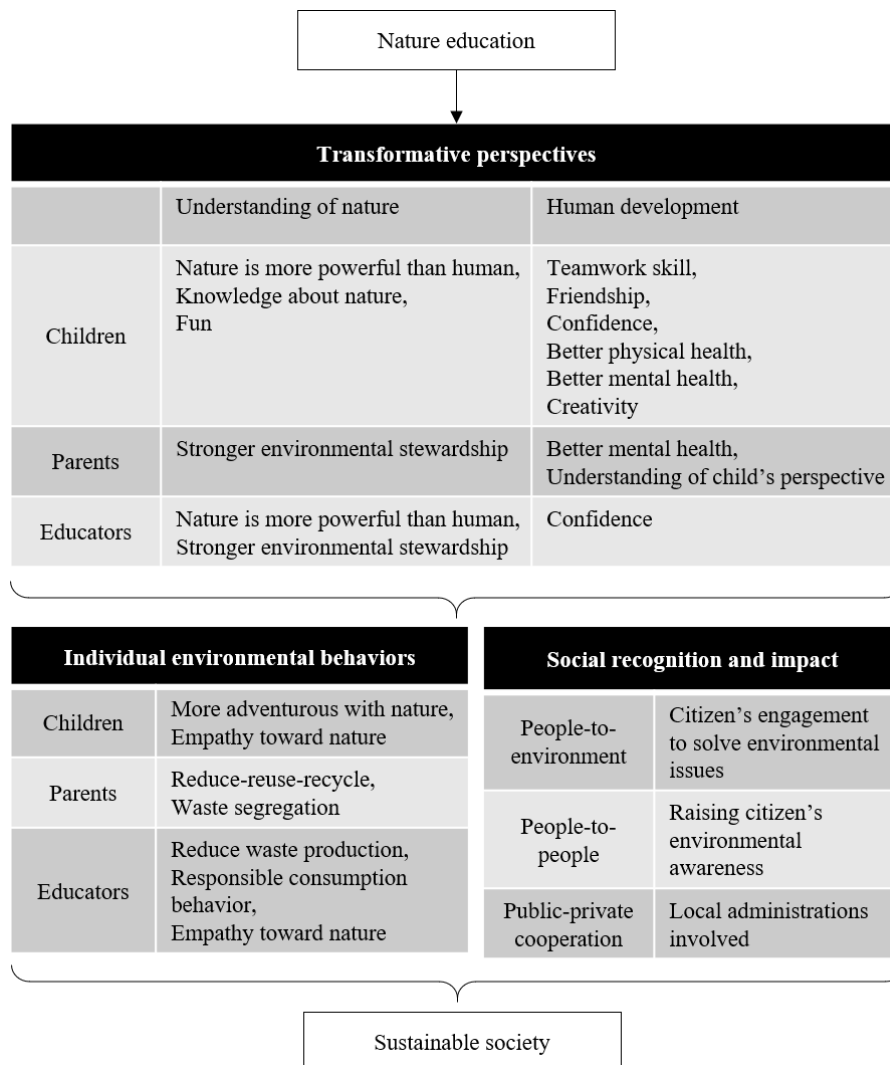


Figure 9 Summarization of transformative values and outcomes brought by NE in the case study

NE engagers, i.e. children, parents and educators, have experienced transformations of understanding of nature and relationship between human and nature, as well as human development. NE engagers have experienced an expanding of self from a narrow self-interested self toward a social self who consider the need of others, and then toward an

ecological self who also consider the natural environment (Naess, 1987). They started to make decisions based on considered preferences rather than felt preferences, where transition from a strong anthropocentrism toward weak anthropocentrism occurred. During the process, they enhanced their human capability and achieved human development, which enlarges their opportunity and freedom to conduct both individual environmental behaviors and collective actions to enhance citizen engagement for build a sustainable society.

Accumulated individual environmental behaviors based on a holistic understanding of self, others and the environment can contribute to solving environmental issues such as resource depletion, pollution and so on which are directly related with the sustainable development of our society. On a relatively larger scale, collective actions taken by Zaidi can indirectly influence others to solving the environmental problem by raising citizen's environmental awareness (people-to-people relations) or directly contribute to solving the environmental problem by enhancing citizens and local administrative agents' engagement (people-to-environment relations and public-private cooperation) (Schusler, et al., 2009). As environmental sustainability is a significant aspect of a sustainable society, contributing to solving environmental issues either by individual behavior or collective action can lead to a more sustainable society (SustainabilityDegrees, 2018).

CHAPTER 4 CONCLUSION: HOW CAN WE CONTRIBUTE TO THE DEVELOPMENT OF NATURE EDUCATION IN CHINA?

4.1 Strength and opportunities: Possibility and expectation

While a large number of grass-roots NE organizations are promoting NE all across the country, both the central government and local administrations are showing support toward NE. Center for Environmental Education and Communications of Ministry of Environmental Protection launched “National nature school capability building project” from 2014 with the support from a private environmental foundation (Jin & Zhu, 2016). The project promotes NE by supporting talent cultivation, providing guidelines, making pilot nature schools and fostering transboundary cooperation (Jin & Zhu, 2016; Cui, 2017).

According to *Several advice on promoting the reform and development of tourism* (关于促进旅游业改革发展的若干意见) published by the State Council in 2014, study travel should be included in the formal education of primary and secondary school students. Study travel is defined as experiential and practice activity outside school in which students participate in a group with organized plan and certain purpose (State Council, 2014). Such study travel provides an opportunity to integrate NE with formal education.

Some local administrations also show their support toward NE. For instance, the policy “half past three class”¹³ promoted by a district administration of Beijing provides afterschool education including NE for primary school students who ended their school at half past three

¹³ In Chinese: 三点半课堂.

when parents are still at work (interview from Wang Yu; Sun, 2018). Some community sub-district offices near Zaidi have begun to host cooperative classes to offer NE to community residents. Community serves as an important education environment for children, and hosting community classes decreases the threshold for the public to access to NE, because local residents who were just curious also can come to join. It is also relatively easier for grass-roots NE organizations to cooperate with the community sub-district offices rather than directly with the department of education in the provincial or municipal governments. These connections are reciprocal for both NE organizations and local community offices because conducting such community activities can be counted as their administrative performance.

4.2 Difficulties and challenges

Schools serve as a vital environment of education for children. However, there are still barriers for NE to enter schools. Firstly, schools have concerns for students' safety (China Education Daily, 2018). Also, there is limited space in some schools to conduct NE activities (according to the interview with Wang). What's more, it takes time for schools to accept and try a newly boomed education. Besides, there is no specialized national environmental education law to standardize environmental education in China. What's more, because China is applying a strict censorship on social activities, civil society organizations were only permitted to operate with a degree of finite autonomy (Fu, 2017). This hinders grass-roots organizations to achieve deeper social structural transformation.

Except for the external barriers, NE is facing internal challenges as well. NE involves various types of topics and activities, which requires educators to have interdisciplinary expertise. The holistic and humanistic method also requires educators to achieve high human capabilities. According to Report on nature education of 2016 (Wang & Liu, 2016), lack of well-trained educators was the top problem NE organizations were facing. Besides, as an

education focusing more on experience and practice than knowledge, NE requires education conductors to practice over and over again to accumulate experiences. While methods and theories can be learnt from other countries and organizations, all those methods should be localized and transformed to be more practical.

4.3 Advocacy and future study of environmental education

What kind of advocacy academia can provide for the future development of EE in China? Cornell University Civic Ecology Lab is providing online courseras about EE to the global EE practitioners. Provision of Chinese teaching assistants and translations make the courseras convenient for Chinese environmental educators to take. Such courses provide Chinese environmental educators to gain a global view of EE and learn basic EE theories and skills to better plan and conduct EE projects. It also serves as a platform for environmental educators all over the world to share their experiences and discuss together.

As suggested in previous sections, citizens and local administration agencies can provide significant advocacy toward NE in China as well. NE can facilitate citizens' engagement in collective action to solve sustainability-related issues, as well as promote small-scale structural changes by involving local administration agencies, and vice versa. Citizens and local administration agencies can either participate in or launch their own NE projects, as NE can be conducted just near the neighborhood.

In the future, it is important to clarify the process of how transformative values occur from the aspects of child developmental psychology and social psychology. Long-term impact on people and society exerted by NE is also worth studying by tracking the research targets for a long time. Study on the impact of NE on communities need further exploration as well. How government and grass-roots organizations can together promote EE remains a challenge for both academia and EE practitioners. This study can serve as a reference for those further

studies and it can contribute to understanding transformative values NE have in the context of China, the country with an urgent need to solve various environmental issues.

CITED REFERENCES

- Afeissa, S.H. (2008). The transformative value of ecological pragmatism: an Introduction to the work of Bryan. *Surveys and Perspectives Integrating Environment and Society*, 1, 73-79.
- Boyce, C. & Neale, P. (2006). Conducting in-depth interviews: a guide for designing and conducting in-depth interviews for evaluation input. MA: Pathfinder International. Retrieved from http://www2.pathfinder.org/site/DocServer/m_e_tool_series_indepth_interviews.pdf
- China Education Daily. (2018.1.5). Review of China's education reform in 2017. Retrieve May 8, 2018 from http://en.moe.gov.cn/News/Top_News/201801/t20180130_326023.html
- China Nature Education Forum. (2016). Ziran jiaoyu jigou huodong anliji (Cases of nature education organizations in China). Retrieved from <http://www.natureeducationchina.org/?p=1903>
- Cornell University. (2017). Week 1: Environmental education outcomes. In online course *CornellX: EE102x Environmental education outcomes* [transcript]. Retrieved from https://edge.edx.org/courses/course-v1:CornellX+EE102x+2017_T1/course/ (need membership to login-in)
- Cui, Y. (2017). *Tuidong ziranjiaoyu, women yezai zishangerxia momo nuli (We are making effort to promote NE from top-down)*. China: China Nature Education Forum.
- Deng, G. (2012). Woguo NGO de bianhua yu fazhan qushi (Transformation and development trend of Chinese NGO. Retrieved July 6, 2018 from

http://www.zjoi.com.cn/att/0/01/88/06/1880663_384076.doc

- Ding, S. (2002). Woguo de huanjing jiaoyu (Environmental education in China). *Journal of Liangshan University*, 4(1), 107-110.
- Duan, L., Ma, J., & Chen, T. (2007). Taking measures suited to local conditions to develop the environmental education of the elementary and middle school of rural area. *Neimenggu huanjingkexue (Environmental Science of Inner Mongolia)*, 19(3), 118-121.
- Dunlap, E.R. (1980). Paradigmatic change in social science: from human exemptions to an ecological paradigm. *American Behavioral Scientist*, 24(1), 5-14.
- Edward, J. (2015). Socially-critical environmental education in primary classrooms. Switzerland AG: Springer.
- Environment and Ecology. (2018). What is nature?. Retrieve Feb 28, 2018 from <http://environment-ecology.com/what-is-nature/108-what-is-nature.html>
- Falk, H.J. (2005). Free-choice environmental learning: framing the discussion. *Environmental Education Research*, 11(3), 265-280.
- Fu, D. (2017). Disguised collective action in China. *Comparative Political Studies*, 50(4), 499-527.
- Gaia Association. (2017). The background of Affective Nature Education (in Chinese). Retrieve Mar 1, 2018 from <http://www.gaia.org.hk/deepnatureplay2017/>
- Harold R. Hungerford & Trudi L. Volk (1990). Changing learner behavior through environmental education. *The Journal of Environmental Education*, 21(3), 8-21, DOI:10.1080/00958964.1990.10753743
- HDRO Outreach. (2015). What is human development?. Retrieved July 15, 2018 from <http://hdr.undp.org/en/content/what-human-development>
- Huang, Y. (2003). Zhongguo huanjing jiaoyu de fazhan yu fangxiang (The future development of environmental education in China). *Huangjing jiaoyu (Environmental*

Education), 2, 8-16.

IGI Global. (2018). What is environmental stewardship. Retrieved July 12, 2018 from

<https://www.igi-global.com/dictionary/environmental-stewardship/43243>

Jin, Y. & Zhu, Z. (2016). National nature school capacity building project: practice and

exploration of natural education. *Environmental Education*, 3, 62-63. Retrieved from

[http://www.wem.org.cn/news/news/admin/upload/day_160907/201609071404345706.p
df](http://www.wem.org.cn/news/news/admin/upload/day_160907/201609071404345706.pdf)

Lee, J. & Tilbury, D. (1998). Chang environments: the challenge for environmental education

in China. *Geography*, 83(3), 227-236.

Lei, D. (2006). Pingdian daojia: wuwei er wubuwei (Commenting on Taoism: wuwei and

wubuwei). Retrieved Feb 28, 2018 from

<http://theory.people.com.cn/GB/49157/49165/4206966.html>

Louv, R. (2005). *Last child in the woods: saving our children from nature-deficit disorder*.

NY: Workman Publishing Company.

Lucas, M.A. (1972). *Environment and environmental education: conceptual issues and*

curriculum implications (doctoral dissertation). Retrieved from OhioLINK.

Measure of America. (2018). About human development. Retrieved July 16, 2018 from

<http://www.measureofamerica.org/human-development/>

Ministry of Geology and Mineral Resources. (1990). *Regional geology of Yunnan Province*.

China: Geological Publishing House.

Millennium Ecosystem Assessment (MA). (2003). Ecosystems and human well-being: a

framework for assessment. Retrieved May 2, 2018 from

http://pdf.wri.org/ecosystems_human_wellbeing.pdf

NAAEE. (2016). About EE and why it matters. Retrieved March 1, 2018 from

<https://naaee.org/about-us/about-ee-and-why-it-matters>

- Naess, A. (1987). Self-realization: an ecological approach to being in the world. *The Trumpeter*, 4(3). 35-41.
- National Bureau of Statistics of China. (2018). Province economic data. Retrieved May 18, 2018 from <http://www.stats.gov.cn/>
- NEEF. (2018). Benefits of Environmental Education. Retrieved July 7, 2018 from <https://www.neefusa.org/nature/water/benefits-environmental-education>
- Newman, J., Varner, G., & Linquist, S. (2017). Nature-based tourism and transformative value. In *Defending biodiversity: Environmental science and ethics* (pp. 173-192). Cambridge: Cambridge University Press. doi:10.1017/9781139024105.007
- Norton, B. (1984). Environmental ethics and weak anthropology. *Environmental ethics*, 6, 131-148.
- Rowe, J.S (1994). Ecocentrism: the chord that harmonizes humans and earth." *The Trumpeter*, 11(2), 106-107. Retrieved from <http://www.ecospherics.net/pages/RoweEcocentrism.html>
- Sarkar, S. (2005). *Biodiversity and environmental philosophy: an introduction*. NY: Cambridge University Press
- Schusler, T., Krasny, M., Peters, S, & Decker, D. (2009). Developing citizens and communities through youth environmental action. *Environmental Education Research*, 15(1), 111-127, DOI: 10.1080/13504620802710581
- Sen, A. (1997). Editorial: human capital and human capability. *World Development*, 25(12), 1959-1961.
- Shanlintianye. (2018.1.2). Nature education practitioner. Retrieved Jan 8, 2018 from Shanlintianye's official platform on WeChat.
- Sharing Nature. (2016). Flow learning. Retrieve Feb 28, 2018 from <https://www.sharingnature.com/flow-learning.html>

- Shastri, C.S. (2013). Environmental ethics anthropocentric to eco-centric approach: a paradigm shift. *Journal of the Indian Law Institute*, 55(4), 522-530.
- Shu, T. (2005). Huanbao huodongjia Tangxiyang yu daxuesheng lvseying (Environmental activist Tang Xiyang and college students green camps). *Ziranzhizi (Son of Nature)*, 2, 56-57.
- State Council. (2014). Guanyu cujin lvyouye gaige fazhan de ruogan yijian (Several advices on promoting the reform and development of tourism). Retrieved May 19, 2018 from http://www.gov.cn/zhengce/content/2014-08/21/content_8999.htm
- Sun, J. (2018). Beijing: shequ kaiban “sandianban” gongyiketang poujie “haizi fangxue qunaer” nanti (Beijing: community conduct “half past three” classes to solve the problem of “where children go after school”). Retrieved July 15, 2018 from <http://edu.people.com.cn/n1/2018/0412/c367001-29922701.html>
- Sun, S., Friend of Nature, & Bo, L. (2017). *Annual Report on Environmental Development of China. Green book of environment*. Beijing: Social Sciences Academic Press. Retrieved from <http://www.shangbaonline.com/xh/c/132131.html>
- SustainabilityDegrees. (2018). Sustainable society. Retrieved Feb 28, 2018 from <https://www.sustainabilitydegrees.com/what-is-sustainability/sustainable-society/>
- Sustainable Society Foundation. (2017). Sustainable society index. Retrieved Feb 28, 2018 from <http://www.ssfindex.com/>
- Tan, Q. (2011). Dui dangqian xiaoxue huanjing jiaoyu de sikao (Thoughts on current environmental education in the primary school). *Zhongguo xiaowai jiaoyu (China Out-of-school Education)*, 01, 12-13.
- Tbilisi Declaration. (1977). Retrieved from <https://www.gdrc.org/uem/ee/tbilisi.html>
- Tian, Q. (2004). Historical review of environmental education in China. *Chinese Education & Society*, 37(3), 34-38.

- Tian, Q. (2008). Chinese ESD policy research. Proceedings of regional workshop on ESD Policy and Implementation in China, Japan and Republic of Korea.
- Tian, Y. & Wang, C. (2016). Environmental education in China: development, difficulties and recommendations. *Journal of Social Science Studies*, 3(1), 31-43.
- Wang, Z. & Xie, S. (2013). Zhongguo huanjing jiaoyu sishinian fazhan licheng kaocha (Study on the forty-year development of environmental education in China). *Zouxiang shehuikexue (Approaching Social Science)*, 10, 184-189.
- Wang, Y. (2017). *Ziran jiaoyu jichu (Introduction of nature education)*. China: Jinyunshan Training.
- Wang, Q. & Liu, Z. (2016). *2016 ziran jiaoyu hangye diaocha baogao (Report on nature education of 2016)*. China: China Nature Education Forum.
- Weston, A. (1985). Beyond intrinsic value: pragmatism in environmental ethics. *Environmental Ethics*, 7, 321-339.
- Wu, J. (2011). *Shengtai ziwo: ren yu huanjing de xinlixue tansuo (Ecological Self: An Exploration of Psychology on Human and Environment)*. Beijing: Central Compilation&Translation Press.
- Yan, B. (2016). *Chengshi ertong yu ziran qinmidu diaocha (Survey of connectedness with nature for urban children)*. Shenzhen Mangrove Wetlands Conservation Foundation.
- Yin, W. (2009). Huanjing jiaoyu de xinlinian: cong “lukasimoshi” tanqi (New philosophy of environmental education: from “Lucas mode”). *Jiaoyu yanjiu yu shiyan (Education Study and Experiment)*, S2, 19-22.
- Yunnan Municipal Government. (2014). General situation of ethnic groups. Retrieved Apr 5, 2017 from http://xxgk.yn.gov.cn/Z_M_011/Info_More.aspx?Classid=196708

OTHER REFERENCES

Santrock, W.J. (1997). *Child Development*. New York: McGraw-Hill Education

APPENDIX A

Interview guiding questions:

a. For children:

Background: school, grade, how to go to school, nature-related hobby

1. When do you feel happiest?
2. Why did you give yourself this nature name?
3. How often do you go to natural places with your family or friends?
4. How much time do you spend on electronic devices?
5. What after-school classes are you attending? (How much time?)
6. What do you do in your free time? How much free time do you have in a week?
7. Why did you participate in NE at the beginning?
8. What kinds of courses and activities have you attended? How long so far?
9. If you try to use a metaphor, what do you think nature is? Why? Did such view change?
10. Which activity/course/camp do you like the most and why?
11. What's your achievement in NE activities? Do you feel any changes by attending NE activities?
12. How do you understand NE?
13. What do you think human-nature relationship should be?
14. What do you want to do in the future?

b. For parents:

Background: age, job, education background, hobby

1. Where would you choose to go for family trips?
2. Do you pay particular attention on letting your child contact with nature?
3. What kind of person do you expect your child to be? Are you satisfied with his/her development so far?
4. How did you know NE at the beginning? How do you understand NE?
5. Why did you let your child attend (or agree your child to attend)? What was your expectation toward NE at the beginning?
6. What kind of development did you observe after your child received NE? (Such as personality, health, connection with nature, etc.)
7. Is your expectation toward NE met?
8. How important does nature mean to you? What's your relationship with nature?
9. What do you think human-nature relationship should be?
10. Do those ideas you mentioned in the above question experience a change?
11. What do you think is Zaidi's idea? To how much degree do you agree?
12. Did you attend any NE activities? What's your acquirement in NE activities?
13. Did you have any other transformations? How did those transformations happen?
14. Have you ever participated in community activities with Zaidi?
15. Why did you participate in such community activities?
16. What's your role in such activities?
17. What kind of influence did you observe exerted on other participants?
18. What's your acquirement in such community activities?

19. Do you plan to continue attending such community activities?

c. For educators:

Background: age, education background, nature-related hobby, relevant working experiences, when joined Zaidi

1. Motivation to join Zaidi/NE
2. What's your relationship with nature?
3. What do you think is the ideal situation of nature and society?
4. Have such views in above two questions experience changes?
5. How do you understand NE? did you such understanding experience a change?
6. What do you think is the main idea of Zaidi? To what extend do you agree? Do you want to add something or where in the future Zaidi should ahead to?
7. What do you think is the most important objective of NE? why? Did such view experience a change?
8. Have you experienced any behavioral changes since engaging in NE? What are the causes?
9. What transformations of other people did you observe?

APPENDIX B

I would like to attach all the transcriptions (in Chinese) with the thesis, but if I do so, the volume will be too large. If you are interested in the original transcriptions in Chinese, please contact me at yushuangying@126.com.