

# **RETURN TO THE TAOIST NATURE**

Tracing the evolution of Nature Education in China for establishing a systematic  
experience-in-nature network

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## **ABSTRACT**

People's urgent needs for clean, safe, and enjoyable living conditions have enabled Nature Education (NE), a form of Environmental Education (EE), to burgeon to meet the needs of the environmental predicament in the People's Republic of China (PRC). This emergent qualitative study was guided by *grounded theory* based on data collection and analysis from transcribing and translating 12 in-depth interviews with four case study NE organizations. Building on *Integral theory* and *Maslow's hierarchy of needs*, this study analyzes how cultural perspectives of human-nature relationships contribute to the progression of indigenous environmental education. Based on three cycles of coding and the resulting themes that allowed me to trace the emergence and development of NE in PRC, this study presents a new model, *the holarchy of human environmental needs*, that includes needs on several levels: survival, resource utilization, social activities, psychological health, to self-actualization. When all levels of environmental needs are met through NE, participants can eventually attain the ultimate harmony with NATURE embodied in Taoism. Within the social context of increasing urban-rural differentiation in PRC, this study also proposes a systematic Experience in nature (EN) network, along with a list of practical suggestion for NE organizations and practitioners to take advantage of community networks, thus raising the efficiency of need-based environmental education.

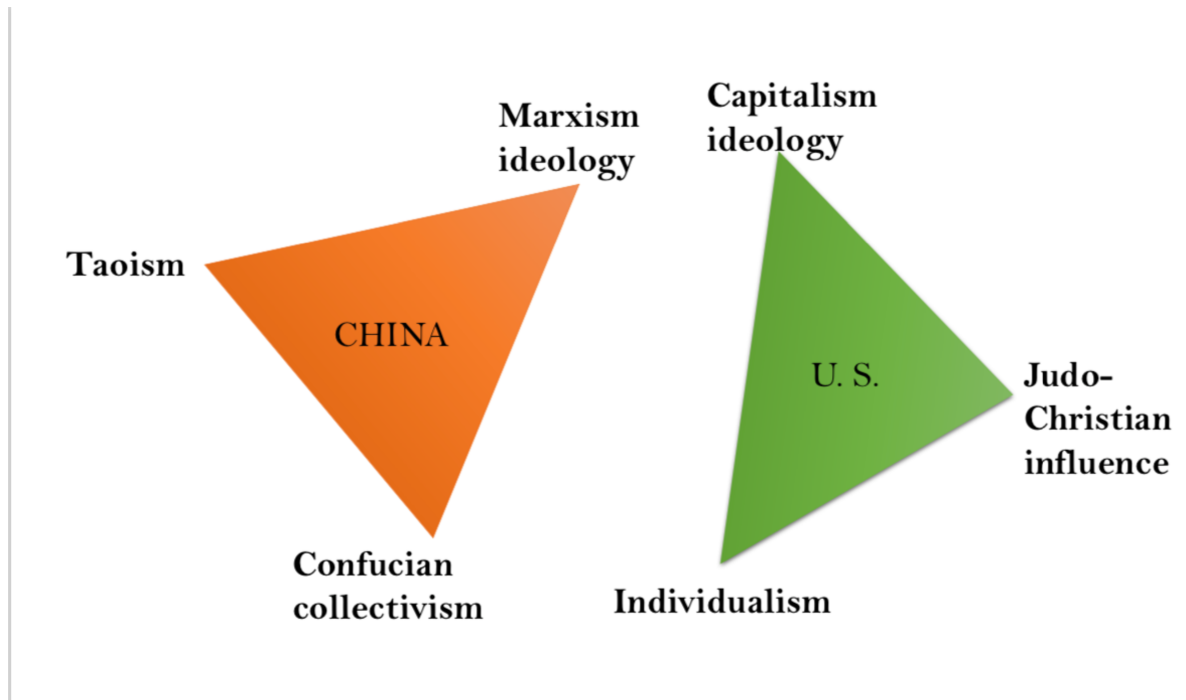
*Keywords:* Environmental Education, ESD, Nature Education, Experience in nature, Community Construction, Rural-urban dichotomy in China, Maslow's hierarchy of needs, Integral Theory, Complex Adaptive System

## **I. Introduction**

Environmental education (EE) usually refers to the professional field with more than 50 years of history. However, it also refers to all forms of education in, about, and for nature. To trace the emergence and evolution of one form of environmental education—Nature Education—an independent system connecting people to nature in China, Chinese environmental ideology, along with two other theories are introduced to provide a theoretical framework for data analysis in this study.

### *Nature Education as an indigenous form of environmental education in China*

The seed of environmental education has always existed in the ideology of human relations to nature. One common function of global education is to inform people of their physical and social environment to better operate human societies. Since the Belgrade Charter in 1976, environmental education (EE) has become a distinct field with specific goals of cultivating eco-literacy and changes from utilitarian to responsible behavior, which can help humans gain relief from their environmental predicament. Consequently, the U.S. EE model has become a standardized example for many countries to follow due to its mature system and institutional support, and PRC is one of the countries that has successfully introduced the U.S. and United Nations EE model. However, even as environmental education gradually become a distinct field throughout the world, indigenous forms of environmental education that originally address environmental attributes of education already existed in many places. In other words, the prevalence of EE under American influence has shaded indigenous environmental education in China, which has stemmed from Chinese traditional values and indigenous environmental philosophy.



**Figure 1.** Important components of current environmental ideology in Mainland China and contrasting components in the U.S. Other important influences on environmental ideology are not shown due to the limited scope of this study.

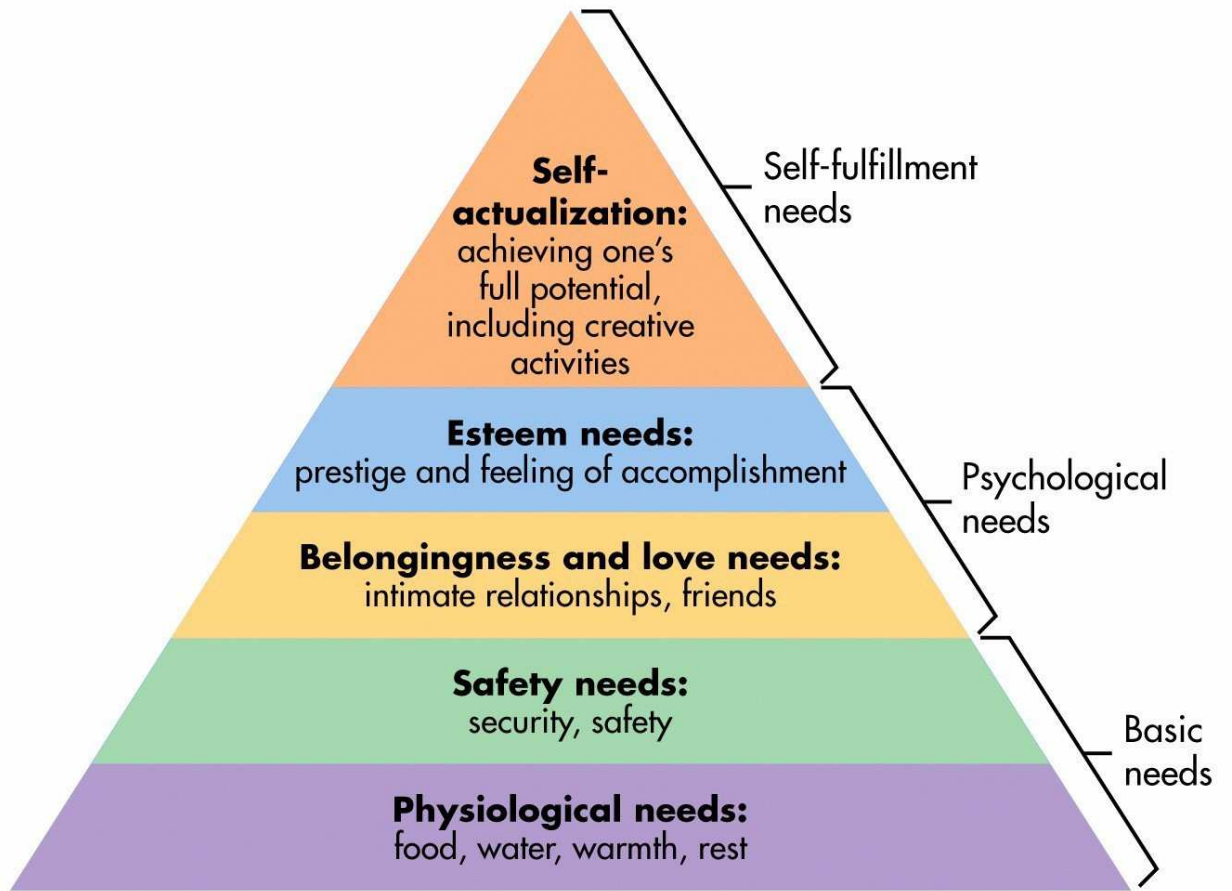
Figure 1 illustrates important components of current ideology in Mainland China and contrasting components in the U.S. The environmental ideology in China has been different from the West due to its unique cultural origins, accounting for the failure of the U.S. EE model to grow in Chinese cultural soil. Philosophical reflections on education and human-nature relations have germinated in the pre-Qin days (221 BC) in ancient China. As agricultural production gradually increased in efficiency and scale, ancient Chinese experiences in farming and water conservation developed into systematic understandings of relations between human and nature (Yu 2014, p.16). *I Ching* and Taoism have framed an environmental ethic in China, as they view humans and nature as a harmonious whole rather than two opposing sides frequently observed in Western traditions. This early dialectical ideology has cultivated morals of respecting and preserving ecosystems for a sustainable society. Marxist philosophy, which was introduced in the establishment of PRC, integrates well with Daoist dialectics, and thus help people understand human-nature relations in a dynamic way. In addition, Confucian collectivism also plays an important role in shaping Chinese environmental ideology. The Chinese concept of identity, or “self,” has been embedded in a holistic and collectivist viewpoint, as people place themselves within nature as well as their living community and society (Pratt 1991). In contrast, the concept of “self” in Western cultures is largely individualistic and egocentric with regards to rights and private properties, as John Locke stated in the second treatise of *Two Treatises of Government* (1689). Therefore, the traditional environmental ideology in China has a potentially advantageous *collective* component of “self” that can inform the society about harmonious human-nature relations.

As a result, the U.S. EE model under the influence of capitalism, individualism, and Judeo-Christian beliefs does not fit well into the current Chinese formal education system, which is reinforced by Chinese ideology. Therefore, an indigenous form of environmental education, Nature Education (NE), is gradually coming to the fore in China, while EE has been responding to challenges posted by Education for Sustainable Development (ESD) after the Rio Summit in 1992. Altogether, NE incorporates Taoist and Confucian environmental philosophies while absorbing experiences from EE and ESD. However, NE as a form of environmental education remains unique to China, working as an independent system consisting of distinct structures and principles which will be further analyzed in this study.

#### *Maslow's hierarchy of needs*

Abraham Maslow (1908-1970), a humanistic psychologist, formulated a hypothetical model of the growth and development of human beings. Maslow posited that once human beings are not dominated by physiological needs, “higher” needs emerge and take over. When these new needs in turn are satisfied, again new needs emerge until the final need of self-actualization is fulfilled. Therefore, human needs are organized into a hierarchy of relative prepotency (Maslow 1943a, p.375).

Maslow's hierarchy of needs is most often displayed as a five-layer pyramid (Figure 2), with basic needs at the bottom and the more complex needs towards the top (Wu 2012). Maslow initially proposed that five basic needs—arranged in a hierarchy from lower-order to higher-order—are essential to optimal human existence (Maslow 1943b).



**Figure 2.** Maslow's hierarchy of needs. Five Basic needs essential to optimal human existence are arranged in a hierarchy from lower-order to higher-order.



<b>Motivational Level</b>	<b>Description of a person at this level</b>
<b>Self-actualization</b>	Seeks fulfillment of personal potential
<b>Esteem needs</b>	Seeks esteem through recognition or achievement
<b>Belongingness and love needs</b>	Seeks affiliation with a group
<b>Safety needs</b>	Seeks security through order and law
<b>Physiological (survival) needs</b>	Seeks to obtain the necessities of life

**Table 1.** The most widespread version of Maslow’s hierarchy contains five motivational levels and five levels of needs. (Koltko-Rivera 2006).

The lower-order needs, also called “deficiency needs,” include physiological, safety, love, and belonging needs. Higher-order needs, or “growth needs,” include esteem and self-actualization needs (Noltemeyer et al. 2012). The hierarchy is arranged with needs in an increasing order of complexity, which also implies the increasing involvement of socioeconomic factors from physiological to psychological needs. What drives the development of needs from lower to higher levels is the motivation of an individual to attain desired accomplishments (Koltko-Rivera 2006). Descriptions of individuals at different stages of motivation in response to his or her dominating level of needs are shown in Table 1.

According to Maslow, only when deficiency needs were sufficiently met could an individual gradually progress to the achievement of growth needs (Hamel, Leclerc, & Lefrancois 2003). The priority of a starving person is usually looking for shelter and food, as physiological barriers prevent him or her from meeting other psychological needs. However, an individual might be motivated by multiple needs simultaneously, and deficiency needs may again become motivating if threatened, even after deficiency needs have initially been satisfied (Noltemeyer et al. 2012). For instance, temporary job loss might motivate an individual to focus on targeting deficiency needs. In general, the optimal level of growth and development cannot be attained unless an individual has ensured both deficiency and growth needs (Maslow 1954). The specific form of needs on the level of self-actualization, or the realization of an individual’s full potential, will vary from person to person. “In one individual it may take the form of the desire to be an ideal mother, in another it may be expressed athletically (Maslow 1943a, p. 382).”

However, human beings do not stop motivating themselves once they attain self-actualization. Although Maslow's motivational scheme is popularized as the five-level hierarchy depicted in Figure 2, a more accurate version of the hierarchy should take into account Maslow's later work (1969a) and private journal entries (1979 and 1982; Koltko-Rivera 2006). Beyond self-actualization, individuals will experience self-transcendence, seeking to further a cause beyond being cognizant of self and to experience a communion beyond the limitation of self through peak experiences (Maslow 1979, p.749). Maslow has addressed the motivational importance of peak experiences, which include mystical experiences, aesthetic experiences, and emotional experiences involving nature (Koltko-Rivera 2006). Such experiences lead self-actualized individuals to transcend the very self that was being actualized. Maslow (1999b) described the paradoxical process of self-transcendence when he stated that:

...if our goal is the Eastern one of ego-transcendence and obliteration, of leaving behind self-consciousness and self-observation, then it looks as if the best path to this goal for most people is via achieving identity, a strong real self via basic-need-gratification (p.125).

In conclusion, Maslow's hierarchy of needs demonstrate the developmental pathway of individual needs based on changes in their motivations towards identities, and then erase their identities to reach the ultimate stage of transcendence. Maslow's model has attracted researchers from various disciplines due to its developmental view of psychology as well as its generality. Maslow's proposal of self-transcendence also provides a means to bridge bodies of theories that are currently isolated (Koltko-Rivera 2006). This study will demonstrate the application of "self-transcendence" in human relations to nature addressed by Nature Education in China.

## *Integral theory*

Integral theory is a meta-theory developed by American philosopher Ken Wilber, weaving various disciplines and professional fields together through the AQAL (all quadrants, all levels, all states, and all types) model that signifies different dimensions of reality (Esbjorn-Hargens 2009, p.50). This framework organizes numerous existing approaches of analysis, and thus allows researchers to select appropriately from among the most relevant research tools.

In the Integral model, quadrants represent four irreducible dimensions of reality—intentional, cultural, behavioral, and social (aka systems)—as well as to the four perspective sets by which we can gain access to such domains (Esbjorn-Hargens 2009, p.50). According to Integral theory, these four quadrants capture the subjective (Upper Left), intersubjective (Lower Left), objective (Upper Right), and interobjective (Lower Right) perspectives of reality (Esbjorn-Hargens 2009; shown in Figure 3). While the Upper and Lower Left Quadrants represent subjective experiences and intentionality, or interiors, the Upper and Lower Right Quadrants represent observable behaviors and physiological complements, or exteriors (Esbjorn-Hargens 2009, pp.52-54). Integral theory insists that the reality in one quadrant cannot be understood through lenses of other quadrants; for instance, objective empirical exteriors can be distorted when viewed through subjective psychological lenses. Also, cultural realities in the Lower Left Quadrant cannot be simplified through the lenses of individual intentionality in the Upper Left Quadrant (Esbjorn-Hargens 2009). The four dimensions of reality are irreducible and cannot transform into each other. However, they are inseparable as they co-arise and

inform each other. To fully interpret the occurrence of a thought or an action, all four dimensions of reality need to be considered (Esbjorn-Hargens 2009, p.54).

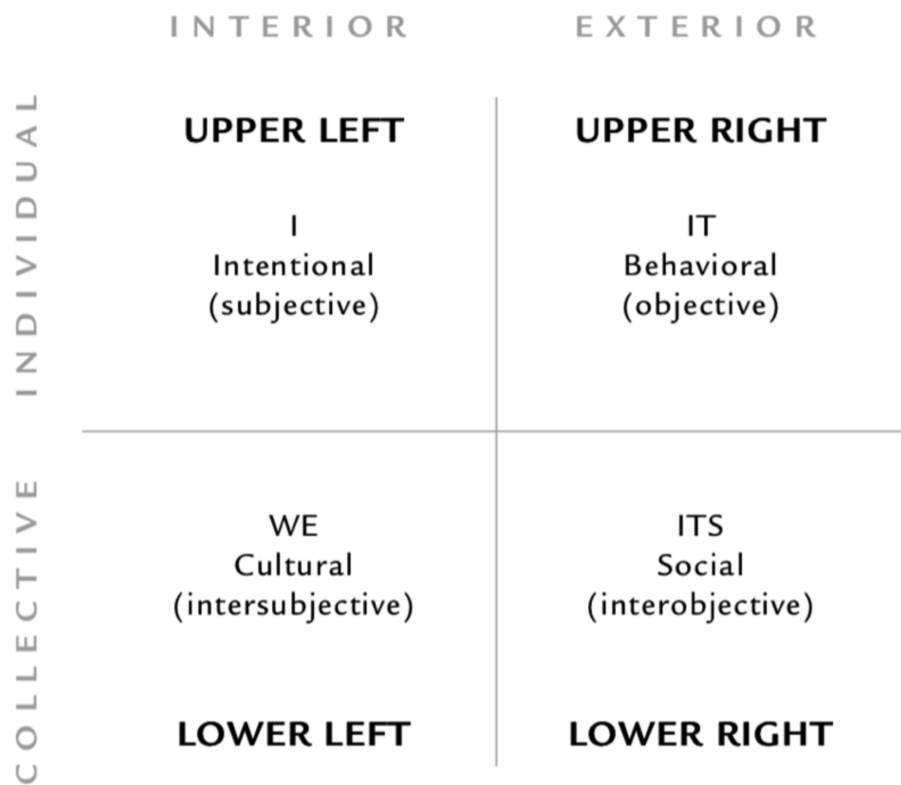
Integral theory also provides a quadrant framework that allows differentiation between definitions of “nature” for rigor and accuracy in research approaches. NATURE, Nature, and nature refer to perspectives in different domains of reality. NATURE both interiors and exteriors at the levels of physiosphere, biosphere, and noosphere. Nature represents only the exterior part of NATURE, referring to behavior (UR) and systematic perspectives (LR) at the levels of physiosphere, biosphere, and noosphere. And nature describes the empirical-sensory world in both the exterior world (UR and LR) disclosed by senses and in the interior world (UL and LL) disclosed by emotional and rational impulses in the physiosphere and biosphere but not the noosphere (Esbjorn-Hargens 2009, pp.24-25). NATURE, Nature, and nature are at different scales of the exterior and the interior world—nature describes all domains of reality only in the biosphere, Nature refers to all the exterior levels of the physiosphere, biosphere, and noosphere (sphere of human thoughts), and NATURE contains nature and Nature by including all the levels (Esbjorn-Hargens, 2009 p.27). Since nature, Nature, and NATURE represent different perspectives of reality, they cannot be equated with one another or reduced to interiors or exteriors. As Wilber (2002) states:

when all interiors are reduced to exteriors, one can no longer recognize degrees of interior depth, and thus everything becomes equally a strand in the great interlocking web of valueless. Everything is part of Nature.

Integral theory, in contrast, illustrates that various realms—the realm of matter, the realm of life, the realm of mind, and the realm of Spirit are all interior to Nature (Esbjorn-Hargens 2009, p.27-28). In other words, an integral approach should “integrate

monological nature into dialogical culture and then takes both into translogical Spirit” — nature to Nature to NATURE (Esbjorn-Hargens 2009, p.29).

Altogether, Integral theory provides this study with powerful tools to interpret *Maslow's hierarchy of needs* (1954) in the context of NE development in China. The quadrant model suggests that the co-emergence of perspectives has also supported the construction of a theoretical framework in this study. The three forms of nature will be used in this study to suggest different perspectives on “nature.” In addition, the scale and realms of nature from nature, to Nature, to NATURE will be further incorporated into data analysis and discussion of results.



**Figure 3.** Four quadrants represent the four dimensions of reality (from Esbjorn-Hargens 2009).

*Nature education in China: Connecting human to the Dao of Nature (Dao Fa Zi Ran)*

It is hard to trace the actual origin of NE in China; unlike EE and Education for Sustainable Development (ESD), with institutional support leaving tracks in both school curriculum and governmental reports, NE has remained undefined and informal until a spurt of development in 2012, when 180 NE organizations were established (CNEF 2015). The first national meeting on NE was held by the China Nature Education Forum (CNEF) in 2014, and currently around 500 organizations join the event on an annual basis. The report on the industry released by CNEF in 2016 has presented the first authoritative definition of Nature Education as an educational field using various methods of experiencing nature to establish human-nature, human-human, and human-self-identity relations to promote healthy growth of human beings into harmonious symbiosis with nature (Wang & Liu 2016). The report also identifies the essence of NE as Dao, first described by Laozi in *Dao De Jing*:

Harmony is the Way it is

Humans are embedded on earth; earth is modelled on heaven; heaven is modelled on the Dao (the Way it is), and the Dao is modelled on NATURE (*Dao De Jing*, Chapter 25).

NATURE here implies the objective principle of the universe or the way of life (i.e. anything external to human beings). Dao is part of NATURE, follows NATURE, and produces almost everything in the universe (Lee et al. 2009). According to Laozi, the principle of Dao is thus NATURE (Dao Fa Zi Ran), and the ultimate harmony of the universe can only be attained through following the natural way of living, or Dao itself.



Therefore, NE also refers to education following Dao embedded in nature, leading people to the status of being “the way it is.” In Western philosophy, such status is usually described as transcendence of self or full realization of self-identity. In a Chinese context, to return to the way is to grow into a complete human being. The power of nature is strong enough to push human beings towards NATURE, but Nature Deficit Disorder (NDD), a term coined by Richard Louv in *Last Child in the Woods* (2007) refers to disorders resulting from humans disconnecting from the outdoors, has impeded the process of growing into completion. Facing the challenges posed by NDD, NE aims at helping people to return to their connections with nature by figuring out their own needs from a wide range of life experiences in the outdoors, in communities, and in daily life (CNEF Field Status Report 2015).

Targeted at needs for nature, NE has been burgeoning in China’s market economy where educational products have been gradually accepted as commodities instead of governmental services. CNEF has also provided the definition and service of NE from socioeconomic perspectives. NE is a highly synthesized field concentrating multiple services of environmental education, environmental knowledge, conservation, community development, landscape architecture, marketing, etc. As an experiential product with self-renewing power, NE can satisfy demands for nature on the market, and it has the capacity to fully satisfy schools, firms, organizations, and the government’s needs on various aspects (Wang & Liu 2016).

Even though the CNEF 2015 and 2016 industry reports on NE have been precursors of research on NE as a professional field, they have provided neither a theoretical framework nor practical implications for NE providers and practitioners. However, both

reports have concentrated a great amount of information from interviews with 15 organizations, showing interesting patterns among NE practitioners and urban NE participants' perspectives of NE as an emerging field. Many quotes from interviewees have indicated the chaotic status of NE at present, some attributing it to NE's dependence on a market economy, while others attribute it to the co-existence of multiple disciplines in NE activities. Ironically, some NE practitioners strongly acknowledge the co-existence of disciplines, while many others think that NE should not have a particular shape modified by certain disciplines. Such "chaotic status" has inspired this study to investigate what factors might contribute to NE's emergence, evolution, and future trajectory.

#### *Research concerns*

To understand relations between NE organizations as well as relations between NE organizations and NE participants, this study has deconstructed NE starting from understanding 1) the role of communities in NE's development, since many NE activities happen in rural or urban communities 2) the urban-rural dichotomy's impact on NE to bridge communities in rural and urban communities based on phenomenological observation of NE organizations and available information on CNEF. However, through data collection and data analysis, these two concerns have allowed me to initiate an in-depth exploration of mechanisms underlying NE organizations' operations towards fulfilling human needs for nature.

## **II. Methodology**

### *Grounded theory*

A grounded theory approach (Glaser & Strauss 1967; Strauss & Corbin 1990; Strauss & Corbin 1998) guided this emergent qualitative research from data collection to data analysis. An emergent method is an inductive and open-ended approach that is used to study dynamic problems with uncertainty. Grounded theory, based on emergent methods, is a systematic approach to collect and analyze data while remaining open to various explanations of data attained (Charmaz 2008, p.155). Through the process of open-ended inquiry, flexible data collection and analysis, to the development of theoretical categories, grounded theory minimizes researchers' preconceptions while using their subjectivity to guide the investigation of emergent social phenomena.

### *Case study and sample*

This research began with a general observation on the relatively new field of NE in China, as this field appears to have diverse programs that connect communities in urban and rural places. Considering the geographical and socioeconomic differences between regions and provinces in China, this study used the strategy of case studies (Stake 1978) to combine data from four case study organizations rather than a single organization to better represent the complexity and diversity among NE organizations. Case studies can provide representative information on a broader scale of organizational behavior and social values, presenting practical suggestions for targeted groups to inform effective decision-making (Bassey 1981). For this research, the essential goal is to move from “what” questions—what are the common strengths and weaknesses of current Nature Education organizations

to “how” questions—how does NE improve towards stated missions and goals (Wang, Wei & Huo 2006). Therefore, to represent NE organizations that are at different developmental stages and are facing diverse groups of participants, this study has carefully chosen four organizations from *The Catalog of Cases in Chinese Nature Education V1.0* (China Nature Education Forum 2016) to enable the construction of a comprehensive theoretical framework and provide more constructive feedback for NE in China to build upon.

Based on the open-ended interest of community construction and the rural-urban dichotomy associated with the field of NE, there were two main factors determining the selection of case study organizations: 1) evidence of involvement with community construction, and 2) location of programs or educational activities in rural or urban sites. Therefore, based on the available descriptions about programs offered, and organizational mission statements in *The Catalog of Cases in Chinese Nature Education V1.0* (China Nature Education Forum 2016), four organizations from different provinces were selected, two generally located in urban surroundings, and two in rural or transitional suburban surroundings to address the research concerns.

Organization A is a non-profit organization located in Shanghai City, mainly targeting urban groups who want to experience nature through urban gardening and gaining knowledge of permaculture. Organization B is a social organization in Wuhan City, Hubei Province, with its network in organic farming and food distribution in urban communities. Organization B has been taking the lead in environmental art and environmental curriculum design in collaboration with museums and formal education. In contrast, both Organizations C and D are social enterprises rather than non-profit organizations, which

are organizations or companies that use commercial benefits to enlarge their social impact and empower the public for real-life changes. Organization C's main office is located in Kunming City, Yunnan Province, while most of its long-term educational courses are taught at its base in suburban Kunming, where the natural landscape is similar to a traditional rural setting with farms, reservoirs, and mountains. Although Organization D's main office is based in Chengdu City, Sichuan Province, it is a company consisting of three components: ecotourism, tourism planning, and Education for Sustainable Development (ESD) in rural regions of Sichuan. Organization D considers itself a provider of Nature Education for tourists around the world, and specifically to rural Tibetan communities in Western Sichuan through a non-profit community school in Ganzi Autonomous State, Sichuan.

Altogether, 2-4 Nature Education practitioners were selected from each case study organization for in-depth interviews. Participants who were chosen possessed diverse educational backgrounds and various lengths of time spent working for their organizations, ensuring the richness of responses to interview questions. The number of participants and their demographic information is shown in Table 2. In general, the representative stratum methodology in data collection (drawing representative samples from each case study to create a comprehensive data set) guarantees validity and reliability by doing representative sampling at both levels of practitioners and organizations.

	#		WORKING	CHILDHOOD	CURRENT	LENGTH	EDUCATIONAL
	INTERVIEWEE	GENDER	ENVIRONMENT	EXPERIENCE	JOB	OF JOB	BACKGROUND
ORGANIZATION A	1	Male	Urban	Rural	University Professor (Founder)	4 years	Landscape Architecture
	2	Female	Urban	Urban	Coordination	1 year	Botany
	3	Female	Urban	Rural	Reception	1 year	Unstated
ORGANIZATION B	4	Male	Mixed	Urban	General Coordinator	10 years	Electronics (in Germany)
	5	Female	Urban	Urban	Program Logistics	10 years	Business Management
ORGANIZATION C	6	Female	Mixed	Rural	Public Events Planning (Founder)	10 years	Social Work
	7	Female	Rural	Rural	Intern on Logistics	6 months	Conservation Biology
	8	Female	Rural	Unstated	Course Design (Founder)	10 years	Environmental Education ( in the U.S)
	9	Female	Mixed	Unstated	Event Coordinator (Founder)	10 years	Social Work
ORGANIZATION D	10	Female	Rural	Suburban	Course Assistant	1 month	Advertising
	11	Female	Rural	Urban	Program Coordinator	2 years	Environmental Design
	12	Female	Rural	Unstated	General Coordinator	14 years	Anthropology (in U.K)

**Table 2.** General background information of 12 interviewees. Different numbers of interviewees were selected from each case study organization depending on organization size and interviewee’s availability. Working environment describes interviewees’ working sites. A mixed working environment suggests a combination of work in both urban and rural settings. Childhood experience suggests the environment where interviewees grew up. Interviewees who held various jobs and different work experiences in their organizations were selected. Educational background describes interviewees’ expertise from prior education. Interviewees who attained their degrees overseas are indicated with parentheses. In the table, “Unstated” indicates that the respondent did not respond to related questions.

### *Interviews*

In-depth dyadic interviews were conducted in Chinese. Each of the 12 interviewees chose to participate on a voluntary basis, and signed consent forms in which they were informed about interview information in advance (Appendix 1). Interview questions included two major themes: 1) interviewee's personal understanding of their organizations and Nature Education 2) interviewee's background contributing to such understanding. (The list of interview questions are shown in Appendix 2.) Questions were flexible with respect to each interviewee's comfort level and their depth of understanding the topics, while questions for all interviewees addressed their opinion on community construction and their organizations' programs. As more interviews were conducted, emerging concerns were added to the interview questions. Interviews ranged from 30-50 minutes based on each interviewee's interpretation of questions, and were recorded for transcription and subsequent data analysis.

### *Coding and theme development*

Interviewees' responses were transcribed and coded in Chinese using a constructivist bias (Ponterotto 2005) with a grounded theory approach (Strauss & Corbin 1967). NVivo 11 for Mac was used for three cycles of coding, the first being open coding and the other two being focused coding (Charmaz 2008, p.156). Initially, close readings were done on 12 samples from all interviewees for the first cycle of coding. A node in Chinese was attributed to a sentence or a group of sentences which contain a clear and specific meaning from interviewees. As coding went on, and more codes were created, sentences from different samples were attributed to established codes which captured interviewee's meanings. All

codes were translated into English at the end of first cycle of coding. The second cycle of coding (axial coding) combined child codes from the 12 participants into categorical nodes (parent codes) based on similar meanings of nodes. During the third cycle of coding (thematic coding), categorical nodes were combined based on common themes (Charmaz 2006).

### **III. Results**

#### *Themes and codes*

Altogether, the first cycle of coding provided 597 codes (Appendix 3), which were collapsed into 53 second-level codes through the axial coding. During the thematic coding, second-level codes were organized into four common themes which were referenced by all 12 interviewees, supporting the comprehensive nature of opinions represented in the theme development. Among the four themes, Theme III—NE organizations has 494 references in total, while Theme I—community construction only has 126 references in total. The other two themes have a similar number of references, Theme II—NE as a field with 312 references and Theme IV—social contexts of China with 310 references. All themes, along with their second-level codes, are shown in Figures 4a-f.



		Sources	References
Third-level codes	Theme 1: Community construction is the common mission of NE orgs	12	126
Second-level codes	Advance of NE into communities	2	4
	<b>Clover NE community construction</b>	<b>3</b>	<b>13</b>
	Community construction requires every individual's efforts	3	5
	Community events address LNT	1	1
	Community markets have limited contributions to community construction	1	1
	Conflicts between outsiders and community residents in community construction	1	1
	Constructing autonomy in communities	7	14
	Constructing communities through community garden (urban garden)	3	4
	Constructing space in community	4	5
	<b>Dragon community construction</b>	<b>4</b>	<b>37</b>
	Efforts made into community construction will eventually feeds the individual who made efforts	1	2
	<b>Characteristics of local community (where NE activities happen)</b>	<b>7</b>	<b>38</b>
	<b>Natur community construction</b>	<b>2</b>	<b>45</b>
	NE constructs interpersonal ties	4	5
	NE constructs the interpersonal relationship in a neighborhood	5	7
	<b>OTG community construction</b>	<b>3</b>	<b>66</b>
<b>The concept of community construction has two aspects including community education and community nurturing</b>	<b>2</b>	<b>9</b>	
The ultimate goal of community construction is to serve human beings	2	2	

**Figure 4a.** Theme I: community construction is the common mission of NE organizations. Bolded words indicate parent codes that contain child codes.

		Sources	References
Third-level codes	Theme 2: NE as a field	12	312
Second-level codes	<b>Interactions</b>	<b>9</b>	<b>29</b>
	<b>Learning in NE activities</b>	<b>4</b>	<b>6</b>
	<b>NE characteristics</b>	<b>11</b>	<b>63</b>
	<b>NE field status</b>	<b>12</b>	<b>104</b>
	<b>NE public events</b>	<b>8</b>	<b>29</b>
	<b>NE realms</b>	<b>11</b>	<b>73</b>
	<b>NE vs. EE</b>	<b>3</b>	<b>8</b>
	Theme 3: NE organizations	12	494
	<b>Courses and Activities</b>	<b>6</b>	<b>31</b>
	<b>NE organizations' concepts</b>	<b>9</b>	<b>49</b>
	<b>NE organizations' social impact</b>	<b>7</b>	<b>19</b>
	<b>NE organizations' values</b>	<b>5</b>	<b>11</b>
	<b>NE organizations' economic and social marketing</b>	<b>10</b>	<b>40</b>
	<b>Organizational characteristics</b>	<b>12</b>	<b>185</b>
<b>Organizational structures</b>	<b>11</b>	<b>199</b>	

**Figure 4b.** Theme II: NE as a field. Theme III: NE organizations. Bolded words indicate parent codes that contain child codes.

		Sources	References		Sources	References
Second-level codes	NE realms	11	73	EN	8	34
First-level codes	<b>Affective Nature Education (AFE)</b>	<b>4</b>	<b>12</b>	Domestic platforms for EN in China	1	4
	All realms of NE deserve respect	3	3	Some EN activities do not have deep impact on kids	2	2
	Domestic resources are rich enough in China for Experience in Nature (EN)	1	1	EN activities attract young groups	1	3
	Each NE realm has its own strength	3	4	EN addresses LNT	5	6
	<b>EN</b>	<b>8</b>	<b>34</b>	EN excursions' impact on rural communities	1	2
	<b>Nature Watch</b>	<b>2</b>	<b>5</b>	Issues of garbage disposal during EN activities	1	1
	<b>Natural Food (NF)</b>	<b>1</b>	<b>3</b>	Kids have EN in farmlands	2	2
	<b>Permaculture</b>	<b>3</b>	<b>7</b>	Natur was against EN in distant places at its early stage	1	1
	<b>The division of realms in NE</b>	<b>1</b>	<b>3</b>	Natur's reasoning to accept EN activities in distant places	1	1
	<b>There are no distinct schools, genres, or realms of NE in China</b>	<b>1</b>	<b>1</b>	The complex landscape and rich resources in China make EN wide and multifactorial	1	1
				The difference between EN activities and other extracurriculum activities	1	1
				The scope of EN in OTG NE activities and courses	3	7
			The variety of individual connections to nature determines the variety of demands on EN	2	3	

**Figure 4c.** Detailed child codes of NE realms. Bolded words indicate parent codes that contain child codes. “EN” indicate “Experience in nature,” the child codes of which are listed in the chart on the right.

		Sources	References
Second-level codes	NE organizations social and economic marketing	10	40
First-level codes	<b>Mission</b>	10	23
Children codes	<b>Mission of Clover NE is to build human connections to nature</b>	<b>1</b>	<b>2</b>
	<b>Mission of Dragon is to bridge human and nature</b>	<b>2</b>	<b>4</b>
	<b>Mission of Natur is to solve environmental issues starting from addressing needs</b>	<b>1</b>	<b>4</b>
	Mission of OTG is to cultivate people that appreciate the variety of human-nature relations	1	1
	<b>Mission of NE</b>	<b>8</b>	<b>12</b>

**Figure 4d.** Detailed children codes of second-level code “Mission” in Theme III. Bolded words indicate parent codes that contain children codes.

		Sources	References
Third-level codes	Theme 4: Social contexts of China	12	310
Second-level codes	<b>Agriculture</b>	<b>4</b>	<b>14</b>
	Chinese education has too much focus on cognitive learning and too little on experiential learning	1	1
	<b>China vs Foreign countries</b>	<b>3</b>	<b>10</b>
	<b>Conferences</b>	<b>4</b>	<b>7</b>
	<b>Families</b>	<b>11</b>	<b>40</b>
	<b>Formal Education in China</b>	<b>3</b>	<b>4</b>
	Lack of public trust and a credit system in Mainland China	1	1
	Modern life's lack in food seasonality and locality	2	2
	<b>Nature thinking</b>	<b>11</b>	<b>74</b>
	<b>New Media (WeChat)'s role in community construction</b>	<b>7</b>	<b>19</b>
	<b>Politics</b>	<b>8</b>	<b>30</b>
	Social backgrounds behind the field of NE in China	1	2
	Social enterprises need enough funds to sustain their operations	3	4
	Social enterprises repay their debts to communities	1	1
	The definition of elite	1	1
	The food safety issue	2	5
	Lack of awareness on food safety in China	1	1
	<b>Theory vs practice</b>	<b>5</b>	<b>13</b>
	Great demand on safe food	1	1
	No channels to get safely produced food before the establishment of Natur	1	13
<b>Urban vs Rural</b>	<b>12</b>	<b>77</b>	

**Figure 4e.** Theme V: social contexts of China. Bolded words indicate parent codes that contain children codes.

		Sources	References			Sources	References
Second-level codes	Nature thinking (thoughts on nature)	11	74	Second-level codes	Small Nature vs Big Nature	7	34
First-level codes	Hatred and fear for nature	3	5	First-level codes	Forms of Experience in Nature (EN) in NE activities that address small and big nature	6	11
	Natural scenes and natural landscapes have locality	3	4		The meaning of EN in travels and tours	2	3
	<b>Small Nature vs. Big Nature</b>	<b>7</b>	<b>34</b>		The necessity and importance of nature that is around us (Small Nature)	5	10
	<b>Nature Deficit Disorder</b>	<b>6</b>	<b>17</b>	Second-level codes	Nature Deficit Disorder	6	17
	Nature has resilience	1	1	First-level codes	Both urban and rural kids need nature		
	Nature is an integrated systems with humans in it	1	2		NDD in students of landscape architecture		
	Respect and awe for nature	4	5				
	The core of Taoism is Nature	3	5				
	Wearing shoes is detaching from nature	1	1				

**Figure 4f.** Detailed child codes of nature thinking. Bolded words indicate parent codes that contain child codes.

In Figure 4a, four bolded codes are parent codes containing child codes, which are descriptive of features of parent codes. Four parent codes are dedicated to community construction facilitated or implemented by all four investigated NE organizations in the study. The sources and references of these parent codes have demonstrated that for each NE organization, all the practitioners interviewed had referred to community construction when they are asked about intention, content, and impact of their NE activities. Therefore, the four NE organizations investigated in this study are devoting energy to community construction, which was hypothesized to be a common mission of NE organizations in Mainland China compared to EE organizations in other countries. Interviewee's perspectives on NE as a field and on their own organizations are shown in Figure 4b. While 12 interviewees all commented on NE field status, 11 of them mentioned ideas relating to realms or schools of NE in the current field. The child codes of NE are shown in Figure 4c. changing environment.

A further look at "NE realms" demonstrates evidence strongly supporting the existence of realms. As mentioned in the introduction, while many NE practitioners have categorically denied the co-existence of multiple realms in NE, and suggested that NE does not take particular forms, there is only one reference (of 73 references) stating NE as a field with no distinct schools, genres or realms. Instead, realms like Affective Nature Education (AFE), Nature Watch (NW), Natural Food (NF), Permaculture, and Experience in nature (EN) are referred at different frequency with respect to each NE organizations' specialty and implementation. Among all the realms, EN has the highest number of references, which are shown in Figure 4c. Regardless of the NE organizations' missions and focus on specific realms, EN infiltrates all NE activities.

Another second-level code in Theme III, “NE organizations’ economic and social marketing” has important implications as well. This second-level code contains a children code named “mission,” which is an aggregate of codes that state four NE organizations’ missions and where interviewees see their organizations in the market. Details are provided in Figure 4d. The child codes indicate that all organizations have defined their missions as intermediary agents between targeting people and nature, aiming at connecting people to nature through providing NE activities.

Figure 4e demonstrates second-level codes belonging to Theme V—social contexts of China. All interviewees commented on the urban-rural dichotomy under China’s fast economic development, as well as how NE activities are bridging urban and rural interests. Nature thinking, or thoughts on nature, are commonly expressed by 11 out of 12 interviewees while there were no specific interview questions designed to address the environmental philosophy of interviewees. The break-down of “nature-thinking” is shown in Figure 4f.

Figure 4f indicates that interviewees are familiar with the concept of Nature Deficient Disorder (NDD) (Louv 2007), and have incorporated the ideas into their own environmental ethic. Besides various kinds of emotional ties with nature, including awe, hatred, and fear, 7 out of 12 interviewees distinguished between “Big Nature” and “Small Nature.” “Big Nature” and “Small Nature” demonstrate perspectives on nature similar to Integral theory quadrants. “Big Nature” refers to NATURE described by Taoism that is much bigger than the scale of human life, and “Small Nature” refers to the smaller case nature encountered in all forms of EN represented by NE activities. However, it is important to see the underlying force of environmental philosophy, which is heavily

influenced by traditional Chinese philosophy. The important distinction between “Big Nature” and “Small Nature,” along with Chinese philosophical influence on NE will be further analyzed based on the quadrant model of Integral theory in the Discussion section.

From the pattern of the numerous codes, it seems that NE is a chaotic field based on principles and activities that are all correlated to each other with no discernable pattern.

However, NE is, in fact, a complex adaptive system that has many components interacting and adapting to changes in China’s socioeconomic context (Holland 2006).

Most importantly, NE organizes by developing into realms that address specific needs for Small Nature and Big NATURE. As their stated missions imply, NE activities aim at connecting participants to nature for curing NDD, which have diverse symptoms with different people. Therefore, different NE realms that share the feature of “Experience in nature” seem to guide NE organizations on providing appropriate treatments to connect people to the Small Nature, and progress towards harmonious integration with Big NATURE.

In a nutshell, two NE concepts, NDD describing human needs for nature, and progression towards the integration of humans and nature—are similar to the concepts of “needs” and “self-actualization” in *Maslow’s hierarchy of needs*. In fact, there are a great number of parallel concepts associated with NE realms and Maslow’s designation of needs in the codes as well. For example, Maslow articulated the fundamental importance of food, water, and shelter for an individual’s well-being, while NE activities are bringing people from polluted urban environments to relatively unexploited rural areas of clean air and water. The needs for love and esteem are also like people’s emotional connections with nature developed through NE activities. Building on these similarities, this study



constructs a new model, *the holarchy of environmental needs*, adapted from Maslow's work, to better understand the relations between different NE realms as components of NE and how they interact to satisfy human needs for nature using activities in forms of EN.

### *Holarchy of environmental needs*

Using Integral theory, *Maslow's hierarchy of needs* appears to have its roots in the Upper Left Quadrant, which describes the subjective reality perceived by an individual.

However, Maslow's model can also be used to address the social dimension of human needs (identified with the Lower Left Quadrant) in addition to the psychological hierarchy of individual needs (identified with the Upper Left Quadrant). In other words, Maslow's theory can include social and cultural contexts in addition to its obvious psychological aspects focused on human needs. Even though all five levels of needs in Maslow's hierarchy are psychological descriptions of individuals, they result from physical (Upper Right), and social and cultural (Lower Left) impacts on individual thoughts. For example, physiological needs (Upper Right) depend on natural resources and establishment of infrastructure (Upper Right), while belonging and love (Upper Left) needs are met through cultural (Lower Left) contexts. It is thus unreasonable to isolate *Maslow's hierarchy of needs* from the environment that cultivates and simultaneously satisfies different levels of individual needs. In view of Integral theory, a holarchy of human needs analyzed through the lenses of the Lower Left Quadrant might provide a more comprehensive picture of how human self-attainment in the sociocultural context varies with response to a changing environment.

A *holarchy* is like a hierarchy, but consists of holons, components that are simultaneously a whole and a part (Koestler, 1967, p. 48). While both hierarchies and holarchies are arrangements of a set of ranks or levels, a hierarchy has an ordering where components can switch places, while the relationships between holons in a holarchy are inclusive with lower levels contained within higher levels (Esbjorn-Hargens 2009). For example, a molecule contains the holonic component of atoms; without atoms, a molecule cannot exist, but a molecule is not “better” than an atom. To better capture the nature of environmental needs, this study proposes a holarchical model adapted from Maslow’s hierarchical model using evidence from codes to support the application a holarchical model of NE.

The five needs are embedded in socioeconomic systems and cultural beliefs, *and* also drive human beings to interact with corresponding exteriors. To practically satisfy needs on each of the five levels within the hierarchy, humans must interact with their environment. This study revises Maslow’s term from “needs” to “environmental needs” which considers the fundamental characteristics of human existence. Therefore, this study proposes *the holarchy of environmental needs*, which is essentially casting *Maslow’s hierarchy of needs* from the Upper Left Quadrant to the Lower Left Quadrant to emphasize the integrative and relational aspects of human needs. In other words, this new holarchical model is intended to capture the environmental core of human life in sociocultural contexts. As humans interact with the environment to meet their lower levels of needs and move towards more complex needs, they are moving along the five levels of environmental needs (Figure 5).

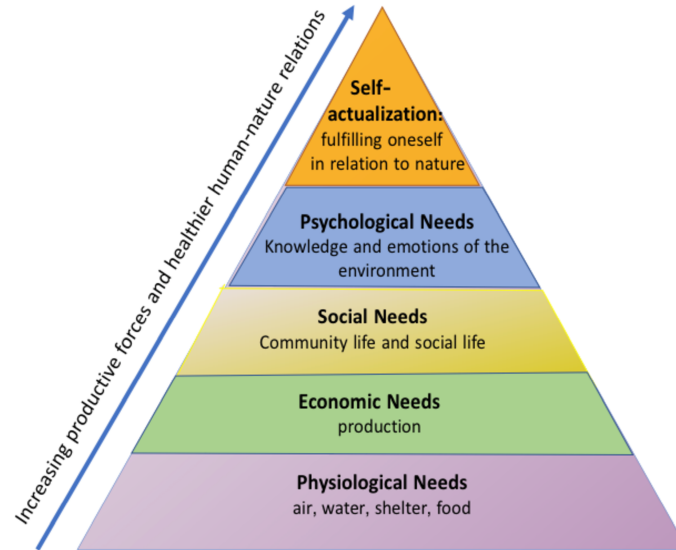
Starting from the first two levels of needs in Maslow's model, the physiological and safety needs, the holarchical model categorizes them together as physiological needs on the base level, as they imply direct physiological interaction with the physical world. The most fundamental environmental needs include food, water, air, shelter, and clothing, and humans depend on available natural resources to survive.

The new model next includes economic needs and social needs, which are not directly mentioned in Maslow's model. Once survival needs are met, humans are distinguished from other animals because we realize our purposes through the labor process. As Marx stated in *Capital*, labor is a process in which both human beings and nature participate, and in which human beings start, regulate, and control the material transactions between themselves and nature to appropriate nature's productions in a form adapted to their own wants and environmental needs (Marx 1867, p.85). Through such production processes, human-nature relations have moved from human dependence on nature to human transformation of nature, and humans inevitably enter into relations of production. Social needs simultaneously arise in the production processes. The totality of relations of production contains the social structures that construct the interpersonal relations in the production of goods through labor (Marx 1859, pp.362-363). In other words, productive forces determine the relations of production (Marx 1859, pp.362-363).

Just like gregarious animals that take advantage of big populations to lower the risk of being preyed upon and increase the efficiency of hunting, humans collaborate and form communities or tribes to decrease their difficulty of living. In communal interactions with the environment, social relations are formed as humans gradually develop relations of production through using their labor to actively transform the environment. For instance,

from catching fish in a river to breeding fish fry and stably harvesting fish in a pond, humans establish relations with each other to purposefully meet communal needs. The communal production binds members of a community together to satisfy their social needs for a sense of belonging, love, and affection (Cherry 2017), which corresponds to the third level of needs on Maslow's hierarchical model. Altogether, the new holarchy model argues that social needs emerge in the fulfillment of economic needs, and both economic needs and social needs contain the layer of communal life.

The new holarchy model then proposes the fourth level, which corresponds to the core psychology in Maslow's model. However, the psychology in the new model is more descriptive of a group or community's psychology rather than emphasizing individual thoughts. According to Maslow's model, after the first three levels of environmental needs are satisfied, people will shift their focus from interacting with the objective environment—including physical materials and other human beings in society to intangible subjective needs, including esteem needs. In the new holarchy model, such esteem needs are represented in both cognitive and affective aspects. The cognitive aspect of environmental needs on this level consists of knowledge of the environment, which can be the physical surroundings and the sociocultural environment. The affective aspect of environmental needs on this level consists of emotions at lower levels of the holarchy, as people feel their relations to the natural environment, as well as to their communities. This psychological level of environmental needs largely reflects a group or a community's values towards nature, and is representative of whether human-nature relations of a society are benign.



**Figure 5.** Hierarchy of environmental needs. As productive forces advance in time and human beings progress into healthier relations to nature, higher levels of needs can be met.

While esteem needs are still related to communal life and social relations, self-actualization brings people back to reflect on their relations to the environment. Maslow compares self-actualization and the desire for self-fulfillment to the tendency for a person to become actualized in what he or she is potentially (Maslow 1943). Therefore, the realization of all levels of needs requires humans to interact with the physical and social environment while reflecting on such interactions. The new model thus retains self-realization needs as the fifth level of environmental needs, but being the highest level in the Lower Left Quadrant, it has a different implication as a holarchical level compared to Maslow's hierarchy. Instead of having to be built upon realizing all the four levels of needs below it in Maslow's hierarchy, self-realization is fulfilled on all levels but at different extents. The physiological, economic, social, and psychological levels all contain the essence of self-actualization, while a higher level transcends and includes the levels below. In other words, in a sociocultural context, all environmental needs aim at attaining self-actualization through human interaction with the environment, and the five levels demonstrate an increasing complexity of self-actualization as the most comprehensive (holistic) structure of fulfilling environmental needs.

Altogether, the adjusted *holarchy of environmental needs* retains the five-level hierarchical structure of needs to address the developmental nature of human environmental needs. In Maslow's model (Figure 2), motivation is the main factor that brings people from deficiency needs to growth needs. In Figure 2, the hierarchy retains the developmental progress of needs from physiological to psychological. However, the progress of environmental needs is determined by the development of productive forces and human-nature relations instead of individual motivation. As humans interact with the

environment to establish economic and societal systems, their needs change naturally. Before human beings learn to transform nature for their own wants, they only utilize available resources. At this stage, when productivity was very low, humans prioritize meeting their physiological needs. Once these survival needs were satisfied, humans had energy and established manpower in their growing population to enter the stage of production. People started to produce commodities to meet economic needs, which included needs to trade, exchange, and continue increasing productive forces (Ning 1986). Moving from meeting economic needs through production, distribution, exchange, and consumption, social needs emerge as people form relations with each other in economic activities, creating a communal way of living in the environment. When the social needs of people in a community or a society are satisfied, their priorities will shift back to psychological needs, as they are establishing understanding of their living environment both cognitively and emotionally. As Gergen (1985) stated, an understanding of social life is not to be derived from knowledge of psychological principles, and the psychological principles are derived from the ongoing process of negotiation and conflict among persons (p.61). In the end, the most complex environmental need is self-actualization—a spiritual connection to the environment and commitment to know oneself in the dynamic relation between human society and the ultimate NATURE, the way it is. Higher order environmental needs, such as self-actualization cannot be reached without fulfilling lower order needs. For instance, a sense of belonging to nature as a psychological need is hard to attain without physically connecting with natural landscapes.

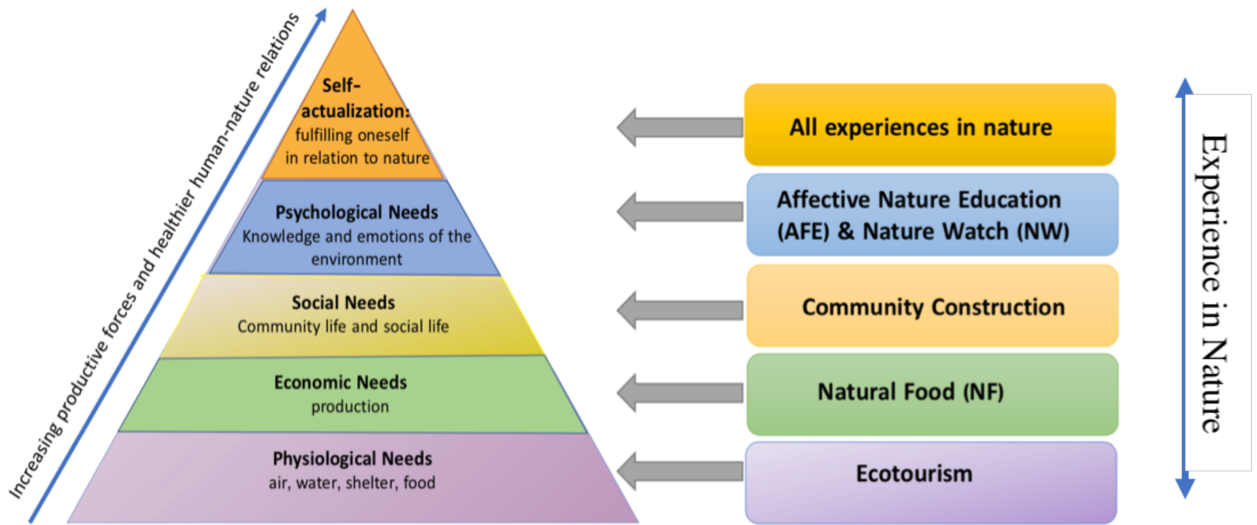
In general, the *holarchy of environmental needs* illustrates that human needs change in accordance with the maturation of a society. When productive forces advance, lower environmental needs will be met faster, and higher environmental needs like social needs and psychological needs are usually the targets of a society. However, when production contradicts healthy human-nature relations, environmental needs will not be met and result in an unhealthy society that is alienated from NATURE. This contradiction usually triggers the germination of revolutionary environmental thoughts that guide socioeconomic activities to a new balance with nature, which will be discussed later. Therefore, the *holarchy of environmental needs* constitutes the basis of my theoretical framework in this study, as it is the bearing for human-nature relations and illustrates the rolling traces of environmental ideology on the road of education in China.



#### **IV. Discussion**

##### *Nature Education as an environmental need-based system*

Even though NE is still a developing field, it has great potential to develop into a need-based system to satisfy people's environmental needs on different levels of the holarchy. Aiming at the *holarchy of environmental needs*, NE has a framework of Experience in nature (EN), consisting of multiple educational realms that specialize in addressing certain levels of environmental needs (Figure 6). The co-existence of ecotourism, Natural Food (NF), community construction, Affective Nature Education (AFE), and Nature Watch (NE) and their interactions among each other have addressed all levels of environmental needs in a world faced with environmental dilemmas, guiding people to attain relations with nature, including both their interiors and exteriors. Based on the analysis of codes, I identified five realms of EN addressing different needs for *nature*, representing the empirical-sensory world that all human beings experience, responding to all levels of environmental needs for attaining environmental self-actualization, the harmony between human and *NATURE*, referring to the entire universe containing all dimensions of reality.



**Figure 6.** The square boxes represent NE realms; whose colors correspond to the level of environmental needs that they are designed to address. The arrows represent how this study utilizes data with regards to the appearing phenomena as well as interviewees’ perspectives on these topics to prove the reasonability of the proposed holarchy model.

a. *Ecotourism and physiological needs*

As introduced above, Richard Louv (2007) and his work related to Nature Deficit Disorder (NDD) played a major role in inspiring NE (Yan 2015), as a physical connection with clean air, water, and beautiful landscapes has become an urgent need of urban populations in present China. Even though there are few quotes directly stating NDD as a major concern, it has been the underlying context when interviewees spoke of needs for nature. The quote below illustrates the fundamental importance of NDD as a concept for NE:

The majority of NE organizations base their development on Louv's theory of NDD, because everyone thinks that kids in urban surroundings are deficient in nature resulting from their growth in concrete forests.

—Interviewee 9

Ecotourism has taken the lead in transmitting ecological values and the importance of directly connecting to the outdoors. Since eco-tours as commodities for consumers are easy to design, ecotourism has become indispensable in most NE activities. These eco-tours vary in length, content, and participants due to their tight connections with operating organizations' scale and market niche. However, all forms of eco-tours emphasize "education in nature" to bring participants into direct contact with *nature* where there is cleaner air, water, and enjoyable landscapes. In other words, ecotourism is a basic form of EN, meeting participants' physiological needs on the *holarchy of environmental needs*. However, these eco-tours have limited impact on participants' attitudes towards the environment and their connection to nature.

We started with EN activities in botanical gardens, inviting parents and their children. But we discovered that our activities, which lasted for one day in a whole week, were absolutely not enough to move our participants in depth.

—Interviewee 9

Therefore, to provide urban populations with longer exposure to relatively pristine environments and diverse outdoor activities in such environments, many NE organizations in China have established their bases, called Nature Schools or Nature Bases, in rural or suburban areas. Three out of four organizations interviewed in this study have their own educational bases: “We have two main bases as sites for public events” (Interviewee 2).

We have a residential area in this base, and we are planning to open the base for rock climbing, cave exploration, night watch, and morning watch. There are many organizations similar to us, including their activities and camping trips in winter and summer breaks. They also have their own bases, and there are a few organizations with their bases out there in mainland China.

—Interviewee 7

Our forest school is a base for ecological studies. So-called “nature” is about the sky and the land, so almost all NE activities are taking place in nature, in outdoor surroundings.

—Interviewee 12

NE, at its preliminary stage, emphasizes the realm of ecotourism. *The holarchy of environmental needs* provides an explanation from the viewpoint of supply and demand, as most people need to satisfy their most basic level of physiological needs through exercising, playing, and touring in an environmentally safe environment. Another aspect of market strategy deals with the practicality of ecotourism and its wide range of associations with other existing industries:

It is quite easy to enter the field of NE, because outdoor organizations, training organizations, and tourism agencies can all plan activities in nature.

—Interviewee 9

We used to introduce our programs as eco-tours. We started to see them as Nature Education (NE) programs from 2015, but these NE programs were similar to eco-tours that we ran for foreigners, as they were adapted versions for Chinese at lower difficulties of program design and operation. From the tourism industry’s point of

view, Nature Education is only one thing on the big plate of ecotourism.

—Interviewee 10

Our leaders have found that the so-called concept of “NE” has been implemented in their outdoor trips.

—Interviewee 12

Altogether, ecotourism can be viewed as the preliminary realm of NE, with its aim to cure NDD by bringing people into environmentally safe and unpolluted natural landscapes. While pressing conditions and public opinion on pollution has led to explosive growth in needs for clean and safe living environments in mainland China, all sorts of organizations are trying to capitalize by supplying eco-tours to the market. Consequently, NE as a field appears to be chaotic because most organizations are still at the stage of moving from satisfying people’s first level of environmental needs towards addressing needs on other levels. However, every organization, regardless of its success or failure, goes through this exploring stage during its development, and ecotourism activities will unavoidably remain in operation, as all other realms of NE cannot exist without the component of direct experience in nature.

*b. Natural Food (NF) and economic needs*

*As the holarchy of environmental needs suggests*, when the public is reasonably satisfied with physiological activities in the outdoors, they will further pursue economic needs. Food safety has long been a concerning issue in China, and NE organizations are trying to capitalize by using economic approaches which address both consumers and producers on the two sides of a commodity chain. As consumers, people have demands for food that

is environmental-friendly and secure; as producers, people have a demand on growing food organically and in a sustainable way.

Natural Food as a NE realm thus emerges from needs for high-quality products that outweigh similar products in the market, and it becomes a platform for rural and urban communities to communicate about how to produce organic products and exchange naturally grown food.

As a result, many NE organizations support organic farming to respond to the growing demand for healthy food. I found three major ways that incorporate organic farming was incorporated into organizations. One way is to practice organic farming in the form of small-scale planting, usually utilizing the urban garden system and land in Nature Schools or Nature Bases. NE organizations that choose this way are transforming consumers into producers, reintroducing urban populations to agriculture, which is considered as a bridge between humans and nature in Chinese traditional values.

We are working to establish 2040 sites of urban food forests (urban garden and farm) in Shanghai before 2040, and what I truly hope is that people will be able to eat more healthily.

—Interviewee 2

Some of our parents are also aware of the food safety issue, so they are growing plants in their balcony to supply foods for family meals.

—Interviewee 6

We are hoping that this base will become self-sufficient eventually, so that it can become an example for sustainable lifestyle without using fertilizers and pesticides.

—Interviewee 7

In the meantime, NE organizations are using principles from Permaculture to design organic farming courses for interested families, teaching composting, spiral gardening, etc.

Sepp Holzer, the Austrian writer for permaculture has said that he has been practicing that way for many years, until someone told him that what he was doing was permaculture. I got introduced to this practice since 2015.

—Interviewee 1

Compared to the first way, which targets urban crowds, the second way intends to serve rural communities that rely on agriculture for income. NE organizations promoting organic goods usually become commission agents for rural communities that have given up interests brought by using fertilizers for farming practices with less environmental impact. One of the four investigated NE organizations is specializing in selling natural food products for consignment, addressing certain families' high demand on high-quality healthy life. And the other three organizations are all involved as proxies to different extents:

The majority of farms nowadays are using fertilizers, polytunnels, and maturing agents, but we are trying to gather organic farmers here at our platform to help them advertise.

—Interviewee 3

Every kind of Nature Food here has a story behind it. Natural food resources is much greater compared to nine years ago when we first established our organization. Everything that a big family needs for daily life can all be found in our natural food network now, as families can find healthy products to eat, buy, and use. After the examination on our suppliers, we have to follow the routine process from ordering, settling accounts, and to daily delivery.

—Interviewee 5

We also have camping trips in rural areas where production cooperative has been promoting organic farming. Parents and children can directly observe the

production environment, and can support organic farming through consumption. The village has a rice store in our city, and some parents have been continuously buying rice to support organic farming.

—Interviewee 8

The third approach is innovative and combines the first two, as it tries to create a shared trading system that rebuilds a credential system among rural and urban communities. It is an effective way to modify production through trust and shared values rather than relying on governmental commands with an unavoidable lag in time. To take advantage of participants' practices of organic farming, many NE organizations organize seasonal marketplaces for bartering. Some marketplaces pay more attention to food exchanges between urban families who practice small-scale farming, while the others put more emphasis on helping organic farmers advertise their products.

We are doing a seasonal marketplace for children. Children are our subject, and they are powerful to prise their families. We have four seasonal marketplaces throughout a year, which only open to regional families who actively participate in NE activities and organize all these events. These families can transmit their sustainable and organic farming practices through seasonal marketplaces, demonstrating their management of garbage at home. We are using virtual currency in seasonal marketplaces as well.

— Interviewee 6

We arrange marketplaces for organic farmers quite frequently. We will assemble them every week to display their organic products at the University Road as well as our farming bases. These occasions help farmers to communicate with consumers face-to-face, and these farmers will donate seeds to our seed library for urban growers' use in small-scale farming.

—Interviewee 3

Besides the three ways above containing the components of production and consumption, NE has also contributed to economic returns, especially for rural communities that support eco-tours and operation of Nature Schools and Nature Bases.



The local government wants to promote tourism in this area, and we are invited for tourism planning for local communities. We are hoping to represent local people's expectations on economic development and long-term perspectives in our NE activities. We define our forest school as a gear that prisms the development in this area. As it moves into local communities, we are expecting the local community to re-operate on its own through our hard work and company. We are hoping the educational products and tourism offered by this school will provide more income for the local community, which is a huge need and a prevailing trend. We are catching every chance we have to train local people in tourism service and NE programs as well.

—Interviewee 12

Therefore, NE not only aims to meet the economic needs for urban and rural populations but also uses Natural Food (NF) as a platform to bridge urban and rural needs. Urban and rural communities are connected through NF activities that bring urban crowds to rural production scenes under the framework of EN while bringing rural communities to urban sites for expanding production. When rural producers produce organic products for urban consumers, they gain income and a sustainable method of agricultural production; when urban consumers spend money on desired “natural food,” their economic needs are met. The second level of *the holarchy of environmental needs* are thus concentrated in the emergence and development of Natural Food. In addition, eco-tours representing physiological needs on the lower level of environmental needs also play an important role to enable connections between rural and urban populations, indicating the inclusive feature of a holarchy.

*c. Community construction and social needs*

As discussed in section b, the relations among producers are formed in the production process, evolving into social relations between people connected by production activities. Therefore, a community based on communal labor processes emerges along with

members' interactions. In the context of NE, communities are formed or reinforced as relations between community members are strengthened through communal participation of NE activities and NE activities designed for and carried out in a specific community has proven to meet community members' social needs in the simultaneous community construction process.

All NE organizations investigated in this study stated community construction as their aim. However, each organization might interpret the concept of "community" through different lenses, ending up with various methods of community construction. The concept "community" has multiple layers of interpretation. First and foremost, community is a concept of localism, as it is always equated with an urban residential area or a village area. When interviewees referred to a community, they usually meant a place and people living in that region. Community has emphasized the grassroots (The Chinese word is "Zaidi," literally meaning on the ground) character of all NE organizations, as they offer EN indigenously on the land. To move further, community is comprehended beyond the limitation of land, towards an abstract concept including dimensions of space and social values.

A community is a group's communal space or communal social life. Our organization starts with the special aspect of a community, and that is why we do landscape architecture.

—Interviewee 1

A community is so-called a communal entity because all community members have their responsibilities as citizens to participate in communal life and contribute their life experiences to their community.

—Interviewee 4

The concept of a community contains both aspects of region and culture, and therefore the culture of a group also belongs to subjects of community construction.

—Interviewee 6

What NE organizations value to be the most urgent subjects has determined the NE activities that constitute community construction. In many cases, NE organizations are constructing interpersonal relationships for people to satisfy their social needs in a revised community network. The natural environment—the Nature Schools and Nature Bases intentionally maintained by NE organizations, the urban garden system, plants and flowers in a residential area, wilderness area and wildlife protection zones in ecotourism, etc.—have become a communal space for people to participate in community activities and connect with each other in an increasingly indifferent society ruled by the internet.

Sometimes, we offer some relatively simple NE activities for families or outdoor film-showing events, and the participants who come do not know each other at first. However, they do know me as the event planner. This is the way to bring people together and become familiar with each other.

—Interviewee 3

My understanding of community construction is to make this community better, including relations between people and objects as well as relations among people. We are building connections to construct a better place, which eventually serves the constituents of a community.

—Interviewee 11

For creating new connections between people, WeChat has been playing a crucial role as it is the biggest source of information including opportunities of NE activities and communication among NE participants.

When an event is completed, people will share their photos and feelings through group chats on WeChat, which has greatly expanded the connectedness of the old community.

—Interviewee 1

For fixing the social credential system, NE organizations emphasize the importance of individual efforts to communal life as well as communal benefits. Community members' acts of altruism for group interests in a community will be paid by long-term benefits, as their social needs for social contact and esteem will be satisfied in the process.

Every person is a member of our community, not a spectator or a demander. All community members are pursuing a good living, and thus all members need to establish a platform for communal life and then maintain it well. "Rome was not built in one day"; the same thing applies to a community.

—Interviewee 4

What we are trying to do is to restore the trust between people based on communal life. We are maintaining the fundamental trust between people by community construction through Natural Food and NE activities.

—Interviewee 5

Some organizations also construct spiritual communities—where people holding similar values and similar codes of conduct live and thrive together. These commonly held values often reinforce sustainable practices or principles of Natural Food. As people are influencing each other's actions through direct conduct, members of a highly organized spiritual community will continue to conform to their beliefs. In the case of NE, these spiritual communities usually start from a sustainable living standard that guides community members to eat, to recycle, to produce hand-made products, to enjoy the outdoors, etc.

We proposed a concept called "big community" for community construction. What it means is not a residential area with regards to geography but a community for commonly held values. Community refers this group of people associated with our organization, who value intimacy with nature, sustainable practices, and natural development of children from an educational viewpoint. Based on these values held by the community, we are hoping to influence more people to construct their own communities and impact even more people.

—Interviewee 8

Most importantly, NE organizations are trying to construct autonomy for communities through bridging community members in shared EN. NE organizations can plan restoration events for rural community members to participate in infrastructure construction together, improving communal living conditions and communal use of space; NE organizations can also plan marketplace events in urban communities and unite community members to build interpersonal connections. However, the central mission of NE organizations is to enable communities to plan similar NE activities spontaneously, working towards a better sustainable living environment through communal efforts.

The key to a community molded by NE should be its self-consciousness—being conscious of itself and self-examining on itself.

—Interviewee 1

We are constructing this community, because it is a fulcrum for us to prise the lever. We want this village to develop towards an ecological community, which has its autonomous way of circulation. Currently, the community is relying on its production and its tourism service to increase income, which is a trend under current social needs.

—Interviewee 12

To summarize, community education naturally arises in the development of NE under the framework of EN, as communities—entities of collective social relations emerge from economic bases existing to fulfill basic physiological needs. Community education is a mode to connect the schooling system, family, and the society together (Li 1999) and provide the community with educational opportunities to serve their environmental needs on the social level. NE projects, including gardening in urban communities and

traditional architecture restoration in rural communities, help construct communities towards a more sustainable way of living while building close ties among families, schools, and the wider public. The educational aspect of community is tightly associated with values, which will be discussed in detail in section d, addressing the next level of *the holarchy of environmental needs*.

*d. Affective Nature Education (ANE), Nature Watch (NW), and psychological needs*

In a communal life, what maintains the community is shared knowledge and emotions, which bring community members together and creates group cultures consisting of communally held values. In the case of communities constructed through NE activities, ecological knowledge, along with love for nature, has bonded community members together psychologically. On the individual level described in Maslow's hierarchical model, attaining knowledge from nature studies, as well as attaining mental contentment through establishing emotional ties with natural objects are both intended to meet esteem needs and realize individuals' full potential. However, with regards to environmental needs requiring interacting with the physical environment and the social environment, cognitive and affective activities happen in interpersonal and intercommunity interactions to address group psychological needs towards environmental self-actualization.

Affective Nature Education (AFE) and Nature Watch (or Nature Observation, NW) are two NE realms specializing in meeting emotional and cognitive aspects of needs on the psychology level of *the holarchy of environmental needs*. Affective is translated from the Chinese word "QingYi," Qing meaning emotions and Yi meaning will, and therefore

AFE refers to Nature Education that awakens emotions towards nature along with the will to concentrate on nature. Nature Watch is literally translated from “observation of nature,” consisting of scientific observation of species and viewing natural landscapes. Both AFE and NW have been introduced to mainland China before NE emerged as an arising new field, and have now become specialties of certain NE organizations.

AFE addresses human emotional needs when interacting with the environment, acknowledging the importance of empathy and enhanced sensory experiences towards nature in healthy human-nature relations. Even though Affective Nature Education can be traced to Joseph Cornell (1903-1972), the author of *Sharing Nature with Children* (1979), NE practitioners in China usually regard his work as an educational guide on environmental education rather than Nature Education. Interestingly, AFE has guided many NE practitioners to distinguish NE from traditional EE both in China and abroad. Traditional EE has been denounced for ignoring emotions due to the Chinese educational system focus on academics, and AFE has evolved to fill the gap of affective education. Qingshui (Wenqing Liu), a female NE practitioner from Hong Kong, has been the source of AFE philosophy in Mainland China since 2008. Her workshop and course have strongly impacted how NE organizations design and implement their activities.

I was introduced to AFE in 2008 by Qingshui from Hong Kong, and I gained an opportunity to study with her. AFE was introduced to Guangxi Province at first, and thus NE is a concept different from EE. We've done EE in the past, but we could not get to people's hearts; so, we tried to re-enter through AFE, and then we established our organization.

—Interviewee 6

AFE's mission is to help children and adults become aware of their connections to nature and generate positive emotions about these relations. As a result of their spontaneous emotions, people develop environmentally-responsible behavior and values for environmental protection.

This kid has been going on outdoor trips to forests and coastlines with me since he was three. We do not teach him how to protect wildlife intentionally, but this kid has developed his love for wildlife and anger for slaughtering and abuse of animals. These emotions are from his heart, arising from his respect for life.

—Interviewee 4

On the other hand, Nature Watch emphasizes ecoliteracy (Orr 2011)—knowledge of local ecological and social systems as well as skills to observe human impact on the environment. Nature Watch was born in Green Camp, initiated by Chinese Scholars and the Society of Wilderness in Taiwan. RenXiu Xu, the Taiwanese founder of the Society of Wilderness, has been an active observer and recorder of species. NW advocates use of a scientific method to know and connect with nature, as observation is the fundamental step of science. Besides visual observation, an exhaustive record of the observed object, including images and word descriptions, is also indispensable to NW. Through acquiring a detailed understanding of a plant or an animal, NW participants gain ecoliteracy of a region along with necessary knowledge to help conservation efforts. Since NW activities are easily incorporated into numerous kinds of eco-tours, such as camp trips, outdoor training, and courses offered in Nature School or Nature Bases, NW has seeped through the entire framework of Experience in nature. On the first and second levels on *the holarchy of environmental needs*, NE organizations usually offer training on nature notes and identification of indigenous species. Participants learn to make observational notes



on natural landscapes which they encounter during eco-tours or discover in Nature Schools, and they are trained to keep observational notes on crops they plant in urban gardens as well.

Our forest school has exhibitions of fossils and indigenous species including plants and butterflies, which are all related to NW. There are also areas designed for star watching.

—Interviewee 12

On the next level of *the holarchy of environmental needs*, the social needs level, NW spontaneously happens in the community construction process. For example, in community-based marketplace events, people are not only exchanging organic food products but also knowledge of vegetation, permaculture, farming, etc. In a spiritual community, people exchange their opinions and observations on environmental issues to maintain the commonly held values.

If a child can open up his or her senses to discover and observe near home, and establish relations with people in his or her community, he will get the meaning of NE, which is also the meaning of community education.

—Interviewee 8

Another implication of NW on the community level of environmental needs is that NW has greatly promoted indigenous knowledge in rural or suburban communities where NE activities take place. Through NE activities, including eco-tours, organic farming courses, and community infrastructure restoration projects, urban participants learn from local communities and spread traditional wisdom about sustainable practices. For example, many NE practitioners have discovered that some indigenous communities have a long

history of specific sustainable practices that were mistaken as newly emergent fashion exporting from foreign countries.

We take children to learn from local communities. We noticed that this community loves growing vegetables in flower pots and washbasins and putting these along the streets. I think our goal is to transform this small town into an edible landscape with vegetables grown by community members. We think it is important to learn from the locals.

—Interviewee 9

Therefore, NE activities also aim to preserve traditional knowledge of these communities, pushing outsiders to learn and pushing local community members to re-apply them through NE activities.

The lifestyle of the local community has changed, including their use of watermills. People abandoned watermills because they all use steel mills now. Printing prayer flags by hand used to be a very nice practice. Even though this custom still remains in their culture, it has become commercialized, and the flags they use nowadays are brought from city markets. We have discovered that local people would only have opportunities to demonstrate these cultural practices if our NE courses or eco-tours provide them with a platform.

—Interviewee 12

Altogether, AFE and NW need to work together, as both the cognitive and affective factors contribute to psychological fulfillments and feelings of competence, which empower people to act according to the environmental ideology they believe in (Chawla 2007). One interviewee described her feelings after participating in both NW Green Camp and AFE:

I started with Green Camp, which represents one category of NE—Nature Watch. NW organizes yearly field trip to preserved wilderness area for conservation education. And I got to know Affective Nature Education (AFE), which is emphasizing the emotional side of NE. When I was in Green Camp, I did not pay too much attention to the name of the plant species, or the science lessons it offered. Instead, AFE moved me deeply and put me into the natural world as it AFE is established on our affection for nature. However, after more experiences

with both, I have discovered that AFE and NW are complementary because knowledge and affection are complementary. Cognitive learning is a way to know something, building better emotional ties with it. Therefore, AFE and NW are incomparable and exist for their own values.

—Interviewee 10

As Qingshui, the leader of AFE states:

A person exhibits two kinds of power in his or her existence. One is the power of knowledge and turns into wisdom as it develops towards an ultimate stage. The other is the power of emotions and becomes charity or mercy when it is accumulated enough. When these two kinds of power are balanced, and blended to the greatest extent, a person will have a strong will to act altruism (Liu 2017).

NE activities cannot ignore one and promote the other, because psychological needs must take both affective and cognitive development into consideration. When a person feels cognitively and emotionally accomplished in his or her relation to the environment—his or her living community, the society, and the natural world—he or she, with a sense of belonging, is then ready for exploration of self and actualization of self-potential.

*e. Experience in nature (EN) and self-actualization*

EN is the framework consisting of all NE realms discussed above, referring to all forms of NE that involve human interactions with nature. Experience in nature is experiencing nature through every possible way (*nature* here refers to all the interiors and exteriors that people experience in the empirical-sensory world), including direct outdoor experience as well as cognitive and affective experiences in natural and anthropogenic community environments.

At first, I was trying to establish a platform by reaching out to ecological farms in China, and then asking them whether they accept youth for Experience in nature, earning accommodations through practice in organic farming.

—Interviewee 11

What Experience in nature means to kids is not only “every grain comes from hard work” but their observation of plant growth. Kids have developed their expectations and sense of responsibility in the process.

—Interviewee 8

Nature around us is important, because it is part of our daily life. It is like our daily meal, as we cannot eat white rice all the time. We need to have fried rice and sweets sometimes as well. Eating the fried rice is like visiting nature that is far away, for instance, an oceanic island for vacation. However, white rice is still our staple food with great nutritional value. Nature around us in our community is essential, because NE at this level has a day-to-day impact on us.

—Interviewee 1

The Earth is essentially nature as a whole, and cities are part of nature as well. When we talk about NDD, we don't think about the fact that nature is what surrounds us. We are unaware of the nature that is just around us.

—Interviewee 11

All experiences in nature exist to satisfy human environmental needs. NE is thus the intermediary between humans and their environment, providing educational services that help people attain self-actualization in their cultural context through experiential learning. However, the inherent characteristics of environmental needs have made EN a complex adaptive system within which all realms of NE are interacting with one another. To comprehend how EN guides NE to satisfy changing human environmental needs, I carefully reviewed the essence of self-actualization, the goal of NE inferred by many NE practitioners in the interviews.

Maslow refers to self-actualization as the desire for self-fulfillment and the tendency for a person to become actualized in what he or she is potentially (Maslow 1943b). According to Maslow's hierarchical model, self-actualization is at the highest level of development and cannot be met unless needs at all the lower levels are satiated. For instance, a person

needs to have meet subsistence need, have a safe living environment, and a community supporting his or her emotional needs and esteem needs to attain their full potential. The realization of all levels of needs on Maslow's hierarchy requires humans to interact with the physical and social environment while reflecting on such interactions. Therefore, self-actualization is an inherently environmental process, because human pursuits for needs are embedded in their environment.

It is worth clarifying how environmental self-actualization in the model of *the holarchy of environmental needs* is different from *self-actualization in Maslow's hierarchy of needs*. First, according to Integral theory, the biggest difference between the two is the quadrant of experience that each originates from. While Maslow's self-actualization is describing a stage in the Upper Left Quadrant, environmental self-actualization refers to an individual experience that belongs to a bigger community's collective status, or a culture's spiritual status on human-nature relations in the Lower Left Quadrant. This difference can also be attributed to Chinese and Western interpretation of "self" introduced above, as Chinese people tend to view "self" in a collective way compared to a Western focus on individual thinking. In fact, many NE practitioners have pointed out that emphasizing cultivating personal relationships with nature (Upper Left Quadrant) rather than reflecting on human-nature relationships in a bigger context (Lower Left Quadrant) is the main factor preventing NE from evolving into higher forms.

My experience at the National NE Forum last year made me realize how limited NE was. It almost feels like everyone was working with playhouses, clinging to individual feelings and ties with one particular flower. However, NE can be much broader, as nature has magnificent landscapes besides elegant flower and plants. There are indigenous communities' feelings for nature besides our own feelings, and there are human-nature relationships existing in indigenous cultural system besides our personal relations to nature. Some people might be related to nature at

a level much higher than “feeling related to a beautiful flower,” because that kind of human-nature relation is only at a preliminary stage.

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#### Interviewee 10

However, NE cannot straightforwardly develop into the ultimate stage that this quote describes without the necessary process of meeting the different levels of needs suggested in the holarchy. The reason lies in the developmental character of human needs determined by the development of productive forces and human-nature relations. As humans interact with the environment to establish economic and societal systems, their needs adapt naturally. The most complex environmental need is self-actualization—a spiritual connection to the environment and commitment to know oneself in the dynamic relation between human society and nature. Higher order environmental needs, such as self-actualization cannot be reached without fulfilling lower order needs. For instance, a sense of belonging to nature as a psychological need is hard to attain without physically connecting with natural landscapes. Even when a community is at the psychology level of environmental needs, it is still possible for its priorities to return to the most basic physiological level if the physical environment is polluted or overexploited. Therefore, to understand how NE changes in response to developmental environmental needs, it is crucial to understand other features of environmental actualization.

The second difference between Maslow’s self-actualization and environmental actualization arises from the fundamental differences between the structure of a hierarchy and a holarchy. In Maslow’s hierarchy, self-actualization cannot be attained without satisfying lower levels of needs. However, in a holarchy, each higher level of needs

includes and is comprised of levels lower than itself, while having some new level of organization that its lower levels does not possess. The holarchical structure thus corresponds to the developmental level of environmental needs, retaining the fluidity of structure without being constrained by the strictness of a hierarchical structure, which claims that self-actualization is at the top of a fixed arrangement which does not include the elements from the levels below. Instead, in the holarchy of environmental needs, every level of needs possesses some features of environmental self-actualization—to establish connections with the environment through satisfying needs and reflecting on such connections to understand human-nature relations.

Nature Deficit Disorder (NDD), in my opinion, is to deviate from life. Kids with NDD will grow into an emptiness which needs to be filled. Very few kids, or even adults could tell where they come from, how they are related to a place, and how can they get back nowadays. Nevertheless, human beings need this sense of belonging: connecting with a land is a sense of belonging; connecting with people on that land, or so-called community is also a sense of belonging. They need to know how these people in the community relate to them, and how things are happening to people in the community related to them. Our camping trips to Japan and Gaoligong Mountain Range are all for letting children see more people. They need to know the human-nature relationship there, and why people live the way they do and how that is different from their experiences. Eventually, they will be looking for oneself.

—Interviewee 9

Therefore, the five levels of environmental needs, from physiological needs, economic needs, social needs, psychological needs, to self-actualization needs, are all reflections of human relations to *nature* with increasing complexity and a rising degree of human potential to attain harmony with *NATURE*, the way it is. Consequently, all levels of environmental needs are met through EN; as the environmental needs become more complicated, the form of EN provided by NE will also become more complicated. For example, the physiological needs can be easily satisfied through taking people into the

wilderness; as socioeconomic aspects intersect with environmental needs, it requires intricate combinations of experiences in nature. And the process of self-actualization is gradually accomplished through the rising complexity of EN, as NE participants become more aware of their relations to nature. When people eventually reach the stage of “non-self” in Taoism when they do not feel the boundary between NATURE and themselves, they become united with Dao, or Tian-Ren-He-Yi (harmony between nature and mankind). NE at its ultimate stage would be educating people to attain the state of harmony:

The mainstay of our philosophy is Eastern thought on humans and nature, especially human-nature relations in Tibetan Buddhism and Taoism. Compared to Western ways of conceiving nature, humans and nature are integrated as a whole in Eastern philosophy, where there is no differentiation between the observer and the observed. Many NE organizations participating in CNEF are still at their preliminary stages because they are still emphasizing feelings of observing. In my opinion, moving towards the next step, human beings will forget the difference between nature and themselves when they are in pristine surroundings. I believe that this is the eventual, and the most important stage of NE.

—Interviewee 10

The final goal of NE is to make humans kind and beautiful with love for the world. And this message is embedded in the context of human-nature relations in Chinese culture, as shown in *Tao Te Ching*. If Americans want to learn from NE in China, one thing they could learn is our respect and affection for nature. Eventually, NE is all about self-cultivation, as people are growing as they learn from and in nature.

—Interviewee 11

Our aspiration for developing the forest school is to change participants’ attitudes—their attitudes towards the world and towards themselves, one outward and one inward. We want them to be elegant, free, and self-confident. We believe that if a person knows the outside world while knowing him or herself inside without any constraints, this person is living with dignity and power.

—Interviewee 12

As discussed in sections a - e, NE has evolved into various realms that specialize in addressing each level of environmental needs. NE is thus a need-based system, as it co-



evolves with human environmental needs that are developing along with productive forces and human-nature relations. NE's advantage as a need-based system is represented in the framework of EN's inclusivity of diverse needs. The pluralistic and multi-realm feature of NE as a field has enabled it to educate a wide variety of people:

There needs to be diversity in the ways of getting close to nature. My way of getting close to nature is different from yours. For example, my way can be practical or cognitive while yours can be artistic and affective. Under such occasions, families participating in NE activities need to have a wide variety of choices among NE services offered.

—Interviewee 8

Altogether, NE values all physiological, economic, social, and psychological (cultural) experiences in nature and motivates people toward harmonious human-nature relations. NE's goal is to meet all levels of environmental needs through its division of approaches including eco-tours, NF, community construction, AFE and NW which together constitute EN, while pushing all participants towards their full comprehension of self in a traditional Chinese way. As *the holarchy of environmental needs* illustrates, self-actualization is grounded in relationships: to land, to people, and to the Dao of NATURE.

## **V. Conclusion and practical implications**

This study proposes *the holarchy of environmental needs* to understand the emergence and evolution of Nature Education (NE), a new environmental education field in mainland China with steady growth under deteriorating environmental conditions and increasing public awareness of the environment. Adapted from *Maslow's hierarchy of needs*, *the holarchy of environmental needs* positions EE approaches in a sociocultural context rather than in the context of individual developmental psychology, addressing collective cognition and relativism that are prevalent in Chinese culture. The new holarchical

structure is informed by Integral theory, as all levels of environmental needs share the essential characteristic—all environmental needs result from human will to interact with nature and are desires to attain ultimate harmony with nature. To test the validity and accuracy of *the holarchy of environmental needs*, this study looked at real-life projections of this holarchical model in the field of NE. Data analysis from codes validates the existence of such classifications, as NE is the bridge between humans and nature using educational services to fulfill people's environmental needs. While five levels of environmental needs are proposed in the holarchy, five forms of NE with associated realms were discovered through coding, and each realm directly corresponds to each level of environmental needs in the holarchy. Therefore, all the NE realms aiming at meeting each level of environmental needs coordinates to structure the complex adaptive system of Experience in nature (EN). NE organizations design experiential learning activities using the principles of eco-tours, Natural Food, community construction, Affective Nature Education, and Nature Watch to meet physiological, economic, social, and psychological needs. In the process of fulfilling both individual and community needs, NE participants interact with physical and interpersonal nature, and move towards self-actualization—understanding themselves in relation to nature, which has been illustrated in traditional Chinese environmental philosophy. In other words, in contrast to EE and ESD, NE has returned to the ancient wisdom originating from Taoism; unlike EE and ESD, which are regulated by the Chinese government, NE has more marketability and targets a wider range of the public who vary in their environmental needs, using a specialization strategy to raise the efficiency of need-based educational services and heading into a promising future where human beings are in healthy relation with nature.

However, NE is a professional field with a short history of about ten years. At its preliminary stage, most resources in the NE field have been devoted to addressing physiological needs, which is an inevitable result of the rift between humans and nature, as the basic physical and mental health of people has not yet been secured under critical environmental conditions in mainland China. The current field of NE is chaotic, as all tourism, charity, and extra-curricular schools are trying to join NE for varying reasons without the requisite patience and persistence = for exemplary education. Simultaneously, many NE organizations have denied the existence of NE realms for acknowledging their own peculiarities to increase their competence, even though data analysis supports the presence of AFE, NW, NF, eco-tours, and community construction in the field of NE. As a result, without institutional support and theoretical guidance, many NE organizations have become isolated from the field and gradually lose their direction in the sea of market forces. Many NE practitioners suffered from the vicious circle of failure; they entered NE without backgrounds in education or environmental science, and had little experience in marketing. They tried to initiate their organizations by offering eco-tours to scenic locations, but these NE activities soon lost interest from participants because they were low-quality and they could not sustain the expense to their organizations. It seems that when NE organizations cater solely to market forces, the worse their organization becomes at meeting their audience's needs. The situation is typical for NE at its preliminary stage; to move towards higher developmental stages, NE practitioners should reconsider NE as educational services to meet environmental needs rather than consumption needs.

Building on the theoretical framework of *the holarchy of environmental needs* and the system of EN, this study suggests several strategies for NE organizations and practitioners. These strategies are potential guidelines for NE organizations at all stages of development to utilize the systematic EN framework, better utilizing their comparative advantages and enabling more effective collaboration. Addressing common problems encountered by NE organizations in their operation, this study offers practical implications about how to satisfy different levels of environmental needs, while helping targeted NE communities fix the rift between human society and nature, returning to the Daoist unity of human and nature in the future.

#### *Implications and strategies for NE organizations and practitioners*

##### 1. Identify target groups' environmental needs

Since NE organizations offer environmental-need-based services, it is crucial to analyze the priorities of targeting groups to increase the efficiency and efficacy of operations. For example, an emerging community may try to establish common sustainable values and codes of conduct acknowledged by all its members. In this case, NE organizations can put their energy into community construction as community members will benefit more from community sustainability practices than being taken on outdoor trips to the wilderness. NE organizations should carefully investigate participants' intentions for attending NE activities, and communicate with the public to specify their clear and consistent missions.

##### 2. Use the system of Experience in nature as a guidance on NE activities

The system of Experience in nature will help NE organizations identify their strengths and weaknesses once they are clear about the developmental stage of needs of their target audience. When NE organizations match the level of environmental needs with the form of NE according to EN, they will identify certain NE realms as ideal components and incorporate them into their organizations. For example, if a NE organization aims at satisfying a rural community's economic needs, the organization should seek information in the realm of Natural Food for potential operational mechanisms.

### 3. Innovation in combination with traditional wisdom

The uneven quality among NE organizations can be attributed to their blind application of NE realms and foreign EE theories without analyzing whether a certain combination of NE realms is reasonable to meet the environmental needs of NE participants. Many NE organizations try to incorporate a wide variety of principles and concepts such as LNT, Nature Deficit Disorder, Permaculture, AFE, etc. into their courses because they want to become the most versatile organizations that win the market. However, NE is not just a commercial field, and economic forces are reinforcing NE's nature as a need-based education system. NE organizations need to find their unique understanding of human-nature relations in the context of traditional Chinese environmental philosophy; in that way, NE organizations will have greater impact on their local communities.

### 4. Connect urban and rural communities

As discussed in this paper, NE has become a bridge between urban and rural communities. NE organizations, regardless of whether they are based in an urban or rural environment,

need to be aware of opportunities to promote rural-urban connections. For NE organizations aiming at NF and community construction, activities held in rural communities or urban communities will naturally promote the exchange of knowledge and the creation of affective ties addressed at the next level of Experience in nature, favoring the NE organizations to move forward.

#### 5. Strengthen training on NE practitioners and NE providers

There needs to be an integration of NE resources for more NE providers and NE practitioners. Since NE practitioners come from diverse backgrounds, many without professional training in teaching or science, it is crucial to increase the general quality of NE services by investing in NE providers and their workers. However, there also need to be adequate trainers with a strong background in EE, ESD, and natural and social science who understand the social context in mainland China. Therefore, EE practitioners should start by improving their proficiency in teaching and natural science through reading, attending national forums, and constant practice.

#### 6. Promoting communication and collaboration based on comparative advantage

Even though the China Nature Education Forum has been holding annual conferences for NE providers and NE practitioners for four years, organizations have not established a network for collaboration and communication. As suggested above, NE organizations should not view each other as competitors, but as partners in the common pursuit of educating people to live in harmony with the environment. Therefore, NE organizations should reach out to other organizations with different specialties, raising the efficiency of

need-fulfilment through collaboration.

#### 7. Call for institutional support and research support

Last, but not least, this study calls for institutional acknowledgement of NE as a field distinguishable from EE and ESD, because NE needs to independently evolve with less influence from current policies on EE and ESD and more focus on meeting higher level human environmental needs. Market forces can help eliminate NE organizations that are aiming primarily at economic interests rather than social benefits, building a more benign environment for NE practitioners and participants. Meanwhile, there needs to be institutional support for academic research on NE, as commensurate financial resources, manpower, and time will help implement needed research developing NE as an authentic Chinese field. More importantly, it is urgent to allow NE theories that arise in Chinese context to provide NE practices with theoretical support. In general, this study serves as an introduction for scholars interested in NE to start learning more about this interesting and important field. A list of potential research directions and related questions are provided in Table 3.

<b>Research directions</b>	<b>Suggested Future Research Questions</b>
<i>Environmental needs</i>	<p>Is there evidence supporting the holarchy of environmental needs from EE in the United States and other countries in the world?</p> <p>What drives environmental needs to move from lower to higher levels?</p> <p>How do NE organizations practically assess the levels of needs where targeting groups are located?</p> <p>How do subjective and intersubjective factors affect people's prior environmental needs?</p>
<i>NE as a Complex Adaptive System</i>	<p>What are the common difficulties that NE organizations are facing at different stages, and how do we address them?</p> <p>How does NE adapt to changing market forces?</p> <p>Do NE activities contribute to accumulation of social capital in both urban and rural communities? Do rural-urban interactions impact NE's social impact?</p> <p>Do NE activities improve communities' resilience to environmental variability?</p>
<i>NE realms</i>	<p>Is there evidence suggesting other NE realms, and do they fit in the Experience in nature system?</p> <p>Do NE organizations at each stage seem to have a common combination of NE realms in their structure?</p> <p>Does EE in other countries show similar division of work in realms to address human needs?</p> <p>How do interactions among NE realms affect market forces and customer behavior?</p>

**Table 3.** Potential future research directions and related questions.



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**Appendix 1. English consent form and translated Chinese version for interviews.**

**Community Construction in Environmental Education Programs Consent Form**

Researcher: Aiyu Zheng

Thesis Advisor: Howard Drossman

Colorado College Department of Environmental Program

Department Tel: (719) 389-6965

[aiyu.zheng@coloradocollege.edu](mailto:aiyu.zheng@coloradocollege.edu)

You are invited to take part in a research study on environmental education programs and their influences on community construction in China.

**What the study is about:** The study focuses on what are the common and different practices among city-based and country-based environmental education programs in China that make them effective in community construction.

**What you will be asked to do:** You will be interviewed for approximately 30 minutes with questions on your experience in your field and your opinions of the environmental education programs that you are participating.

**Risks and benefits:** There are no anticipated risks to you if you participate in this study, beyond those encountered in everyday life. If you participate in this interview, you will have a chance to win an online gift card. Your participation will greatly contribute to current investigations in the field of Environmental Education.

**Taking part is voluntary:** Taking part in this study is completely voluntary. If you choose to be in the study you can withdraw at any time without consequences of any kind. You can choose to skip any question with regard to your privacy. Participating in this study does not mean that you are giving up any of your legal rights.

**Your answers will be confidential:** The records of this study will be kept private. All data will be kept on the researcher's personal computer. Any report of this research that is made available to the public will not include your name or any other individual information by which you could be identified.

**If you have questions or want a copy or summary of the study results:** Contact the researcher at the email address or phone number above. You will be given a copy of this form to keep for your records. If you have any questions about whether you have been treated in an illegal or unethical way, contact the Colorado College Institutional Research Board chair, Amanda Udis-Kessler at 719-227-8177 or [audiskessler@coloradocollege.edu](mailto:audiskessler@coloradocollege.edu).

**Statement of Consent:** I have read the above information, and have received answers to any questions. I affirm that I am 18 years of age or older. I consent to take part in this research study.

\_\_\_\_\_  
Participant's Signature

\_\_\_\_\_  
Date

## 调研项目“探索社区营造在中国环境教育机构中的影响与作用”参与同意书

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您将参与一次针对中国环境教育机构与社区营造关系探究的学术调查研究，以下是关于调研内容以及对您参与要求的简介：

1. 调研内容：调研的目的是为了研究和比较国内北上广等城市社区中，主要面向城市人群的自然教育组织机构（多商业化）和立于城市外围或乡野之中，主要面向当地社区，更公益性的自然教育组织如何有效地营造社区，和当地社区产生联结。此次调研是为了广泛地收集数据，观摩活动，为论文找寻一个更具体的方向。
2. 您即将参与的调研内容：您将参与一次时长约为 30 分钟的采访。采访主要关注您在您工作领域的经验，您对自然教育行业的认识与评价等。
3. 参与调研的风险与收益：参与本次调研将不会给您带来任何不可抗力之外的风险。如果参与本次调研，您将有机会和其他参与者一起参与一次礼品卡的抽奖。您的参与将会对环境教育和社会营造等领域带来不可或缺贡献。
4. 自愿性：参与这次调研与否完全出于参与者自愿，如果您在采访过程中感到任何不适，可以告知调研者终止采访。如果遇到让您感到不舒适，或者隐私受到侵犯的问题，您可以选择不回答。调研中您保有法律赋予您的所有正当权益。

5.保密性： 您的采访将会被录音并妥善保存在调研者的个人电脑中。有关您的采访内容若在日后被用于发表任何公众可以获取的学术资料，调研者有义务担保您的个人信息不会被透露。

如果您对研究有任何疑问，或想要进一步了解调研动向，请通过邮件或者电话联系调研人。研究人与您将各持一份此同意书，以便联络和维护您的权益。如果您对您参与调研的合法性和伦理性有任何异议，请电话或邮件联系科罗拉多文理学院机构调查委员会会长 Amanda Udis Kessler。联系方式：+1 719-227-8177，[audiskessler@coloradocollege.edu](mailto:audiskessler@coloradocollege.edu)。

许可声明：我已经阅读并同意以上条款。我已确认我年满 18 周岁，并可以为参与调研的选择负责。我愿意并许可调研人对我进行上述的调查研究。

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参与者签名

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日期

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调研者签名

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日期

## **Appendix 2. Interview questions (translated from Chinese into English).**

Note: questions for each interviewee were adapted to the outline listed below based on their organizations' contexts and their spontaneous responses.

### I. Participants' job backgrounds and NE as a field

Q1. Please give a short description of the NE organization that you work in.

- History and establishment
- Mission (s)
- Characteristics
- Workers, division of work, and areas of focus
- Current status

Q2. Please briefly introduce your organization's NE activities.

- Contents
- Targeting groups
- Time
- Participation from the general public

Q3. What is your role in these NE activities?

- What are your responsibilities?
- What are your observations?

Q4. Which of the following groups has been the focus of your organization? (Families, communities, schools). Why?

Q5. Is there any interaction between rural and urban communities in your NE activities?

Q6. What concepts does your organization hold? What are your personal understandings of these concepts?

Q7. Have you observed any change in NE participants' environmental values and conduct?

Q8. What is the relation between your NE organization and the local communities? How is such relation formed?

Q9. What do you think of "realms" in NE? Does your organization prefer certain realms over the others?

Q10. In your opinion, what is NE's role in communities?

Q11. What is your critique on NE as a field? What are something you look forward to in the future of NE?



II. Educational background and personal information

Q1. How did you get to know NE and become a NE practitioner?

Q2. What is your educational background?

Q3. Where did you spend your childhood? In rural or urban surroundings?

Q4. Which one do you consider more advantageous—NE in urban communities vs. NE in rural communities?

Q5. What is your own definition of a “community?” What kind of community are you trying to build in NE activities?

Q6. Do you have interests or hobbies related to NE?

Q7. Have you been influenced by any foreign work on environmental education?

Q8. What is your opinion on environmental education in the U.S.? What are some similarities and differences between environmental education in the U.S. and NE in China?

**Appendix 3. Code Book (Translated from Chinese)**

Name	Description
All Great Quotes	
Community Construction is the common mission of NE orgs	
Advance of NE into communities	
Clover NE community construction	
Clover NE have market events	
Clover NE plans community events	
Clover NE's Map of Nature	
2040 Food Forest Goal	
Meter-square Farm	
Participants of Meter-square Farm	
Community construction requires every individual's efforts	
Community events address LNT	
Community markets have limited contributions to community construction	
Conflicts between outsiders and community residents in community construction programs	
Constructing autonomy and spontaneity in communities	
Constructing communities through community garden (urban garden)	
Constructing space in community	
Dragon Community Construction	
Dragon Yunhe dedicates to Tibetan Community Construction	

Name	Description
Dragon Forest School promotes community construction	
Dragon Yunhe attaches importance to cultivating local youth	
Dragon Yunhe constructs the relation between community members through doing ecotourism programs	
Dragon Yunhe helps communities to inherit their own traditional cultures	
Dragon Yunhe hires local community members for ecotourism and NE activities	
Dragon Yunhe innovates with respect to traditional culture in the Tibetan communities	
Dragon Yunhe provides local residents with training in ecotourism	
Dragon Yunhe provides local Tibetan community with NE	
Contents of NE in local Tibetan communities	
Dragon Yunhe respects local Tibetan communities' knowledge and feelings	
Dragon Yunhe takes advantage of renewable energy and new technology to solve developmental issues in Tibetan areas	
Dragon Yunhe popularizes dry pit latrines to promote sustainable development	
Dragon Yunhe is dedicated to construct a spiritual community	
Dragon Yunhe is dedicated to organize public events for its spiritual community	
Efforts made into community construction will eventually feed the individual making the effort	

Name	Description
Local community characteristics	
Environmental issues in local communities where NE activities are held	
Issues on garbage	
Local communities at Zhonglu County have strong desires to develop economics	
Local communities have existing sustainable practices	
Local communities have low costs (time and money) in their own community construction compared to EN in Shicheng Base	
The characteristics of the local communities where NE events are held	
Aging in infrastructure and demographics	
The history of local communities	
The interactions between residents and the social atmosphere	
The mental health of local communities	
The potential to develop tourism in Zhonglu County	
The regional culture of Danba provides rich resources for tourism	
Danba has unique sub Tibetan culture	
Danba's indigenous belief (Benbo Sect) and belief in sacred mountains	
Stories on sacred mountains and traditional values impact Zhonglu County's local communities' views on the environment	

Name	Description
	The deep roots and foundations from belief in sacred mountains help the operation of EP (environmental protection) programs
Natur community construction	
Natur Natural Living Community's connection to Natur Club members	
Food product pick-up helps Natur Club members to construct their appreciation for Natur community	
Natur Club members establish pick-up spots spontaneously	
Natur Club members get together due to the common pursuit of high living quality	
Natur Club members have a sense of belonging to the Natur community	
Natur Club members identify with Natur's concepts and values	
Natur Club members in Wuhan vs members outside Wuhan	
Natur Club members rely on the only one Natur community	
Natur designs its club system for its members to see the complexity and difficulty in lives	
Natur has deep emotional ties with its club members	
Natur Natural Living Community is experiencing joint growth with its members	
Natur Natural Living Community values the joint participation of all members	
Natur was founded on Natur Club members' appreciation and trust	

Name	Description
Natur's payback to its club members	
The demand of Natur Club members	
The spontaneous behaviours of Natur Club members	
The system of Natur Club	
Natur Club system considers everything from a consumer perspective instead of a salesman perspective	
The characteristics of Natur Club members	
The establishment of Natur Club system	
The regulations in Natur Club system	
Natur Nature Living Community is a spiritual community	
The complexity in Natur's design for its community	
NE constructs interpersonal ties	
NE constructs the interpersonal relationship in a neighbourhood	
OTG community construction	
OTG and local communities solve problems together through collaboration	
OTG collaborate with local communities on EN activities	
OTG cultivate the seed of NE in communities by promoting community members to do their own NE	
OTG learn local knowledge from local communities	
OTG NE consists of education on local communities' history and culture	
OTG offers Service Education to local communities	

Name	Description
OTG organizes market events (Four Season Market) in urban communities	
Community virtual currency in Four Season Market	
The function of community virtual currency	
Four Season Market does not aim for profits	
Four Season Market is exclusive to communities members (not to the wide public)	
OTG supports Four Season Market in different communities	
The goal of Four Season Market is barter and the exchange of spirits	
The prerequisites and characteristics of communities hosting Four Season Market	
The seasonality of Four Season Market impacts parents' acceptance of it	
The subjects of Four Season Market is family	
OTG strives to connect with local communities where NE activities are held	
OTG tries to increase the feasibility of combining education and community construction	
OTG's concepts for community construction are devoid of contents and practices	
OTG's core concept for community construction is sustainable living	
The aim of OTG has always been related to community construction	
The concept of community construction has two aspects including	

Name	Description
community education and community nurturing	
community education	
community nurturing	
The ultimate goal of community construction is to serve human beings	
NE field	
Interactions	
Interactions (org-org or org-community)	
Collaboration between Dragon Expeditions and other public service orgs	
Interactions between Dragon Expeditions and local communities where activities are held	
Dragon Expeditions alter local communities' values on environmental protection through transmitting values	
Dragon Expeditions change environmental practices in local communities through setting up social contracts with them	
Dragon Expeditions' impact on local community	
Interactions between Dragon Expeditions and other NE orgs in China	
Interactions between Natur and other NE orgs in China	
The differences between Natur NE and other NE orgs in China	
Interactions between OTG and foreign EE or NE orgs	
Interactions between OTG and other NE orgs in China	



Name	Description
Interactions between OTG NE events and local communities	
OTG and local communities have mutual impact on each other	
OTG expand its impact on local communities through public events	
OTG Shicheng Base tries to involve in local cultures	
OTG and local communities are connected by small details in daily life	
OTG's collaboration with NGOs in China	
Interactions among NE and other fields	
The relation between NE and community construction	
The relations between Ecotourism and NE	
Ecotourism	
The goal of ecotourism is to promote sustainable development	
The marketability of the Ecotourism Field	
Learning in NE activities	
Dragon Yunhe learns from local knowledge	
Learn from nature and learn in nature	
Learn from urban communities during NE activities	
Nature Education characteristics	
Knowledge and emotion are complementary in NE (cognitive and affective domain)	

Name	Description
NE contains human-nature relation on a larger scale (culture and ideology)	
NE enables kids to play and keep their innocence	
NE in China is place-based and grassroots	
NE is a natural education without external force (Taoism concept)	
NE is a tool for transition and connection	
NE is a way to know oneself (Self-cognition Education)	
NE not only changes kids but also their families	
NE serve kids from local communities	
NE shapes spiritual communities that are not limited by space	
NE stimulates action through changing peoples' thoughts	
NE's impact on community awareness of environmental protection and community behavior	
NE's impact on human values	
NE's locality	
Nature Education field status	
Certain NE orgs only offers activities instead of real education	
Difficulties in operating NE orgs	
Issues in manpower	
It is hard to run an org in a society without a credit system	
Lack of experiences in marketing	

Name	Description
Many people repels order NF in advance	
NE org lacks precise market niche	
NE orgs lack useful references	
NE orgs need social marketing	
The difficulties in running a NE Base	
The difficulty of running a base exists in coordinating workers and their family lives	
The expansion of a NE org needs a certain economic basis	
The way of running programs encounters difficulties in org operation	
Expected state of NE as the field becomes mature	
NE activities need theoretical foundations	
NE as a field is filled with plagiarism and little innovation	
NE as a field needs bread and love (subsistence and ambitions)	
NE at its preliminary stage has difficulties to penetrate communities	
NE can be applied to multiple realms (NE is a big platform)	
NE field current status in China	
NE field is a hodgepodge of good and bad	
NE field standards and curriculum standards	
NE field worker roles	
NE mentors use their behaviour to influence people's awareness of environmental protection	

Name	Description
NE focusing on elite education will have bigger social impact	
NE needs to get back to the ground (land)	
NE needs to get wider (in forms) in China	
NE orgs are weak in educational contents	
NE orgs have experienced difficulties to advance into communities at their preliminary stage.	
NE orgs in China cannot completely replicate foreign EE concepts	
NE should not become an isolated field	
NE's emergence is problematic and NE should not exist	
The commercialization of NE	
The gap of NE exists in higher grades (from middle school to high school)	
The standardization of NE	
The state of NE and NE orgs when the field just emerged	
There is a trend for NE to become education for elites	
Nature Education Public events	
Experiences in organizing public events accumulate for NE with focus on communities	
Natur founders' previous experiences in organizing social events contributed to Natur NE activities	
OTG carries out social marketing through organizing public events	
Public Clover NE events are open to all groups	

Name	Description
Public events have limited impact on the public	
Public events raise environmental awareness but fail to prompt actions	
Specific events in Dragon Yunhe NE	
Dragon Yunhe organizes parent-kid events	
The two major designs in Dragon Yunhe NE activities	
Dragon Yunhe emphasizes Education For Sustainability (EFS)	
Dragon Yunhe provides experiences in local cultures	
The contents for OTG public events	
OTG hold literature sharing meetings	
OTG organize public salons in urban places	
Nature Education Realms	
Affective Nature Education (ANE)	
Emotional connection to nature impacts human environmental awareness and behaviours	
All schools or forms of NE deserve respect	
Domestic resources are rich enough in China for EN (Experience in nature)	
Each school or form of NE has its own strength	
EN	
Domestic platforms for EN in China	
EN activities do not have deep impact on kids	

Name	Description
EN activities attract young groups	
EN addresses LNT	
EN excursions' impact on rural communities	
Issues of garbage deposition during EN activities	
Kids have EN in farm lands	
Natur was against EN in distant places at its early stage	
Natur's reasoning to accept EN in distant places	
The complex landscape and rich resources in China make EN (Experience in nature) wide and multifactorial	
The differences between EN activities and other extracurricular activities	
The scope of EN in OTG NE activities and courses	
The variety in Individual connections with nature determines the variety of demands on EN (Experience in nature)	
Nature Watch (NW) in NE	
Green Camp	
Collaboration between green camp and The Society of Wilderness	
The key of Green Camp is conservation education	
Green camp means to train NE educators	
Camp activities	
Natural Food (NF)	

Name	Description
Seasonality of NF	
The convenience in modern life vs the inconvenience of NF	
Permaculture	
The trend to divide realms in NE field	
There are no distinct schools, genres, or realms of NE in China	
Nature Education vs Environmental Education	
The goal of EE is to stimulate awareness and action	
NE Orgs	
Courses and activities	
Connections between NE activities and formal education (elementary schools)	
Courses offered by OTG NE	
Content and frequency of courses at OTG Shicheng Base	
OTG's NE course in urban settings and in Shicheng Base	
The independency of NE course at the Shicheng Base	
OTG offers training on NE in local kindergartens	
The training for NE mentors addresses practice and the design of NE activities	
The curriculum of Clover NE courses	
Nature Education orgs' concepts	
Clover NE concepts	
Land ethics in Landscape Architecture	

Name	Description
Landscape Architecture needs to consider human needs	
Landscape incorporates human initiatives	
Community Concepts	
Big OTG	
Big OTG shares values	
The concept of Big OTG	
The structure of Big OTG	
Community (the other meaning refers to group instead of place) is not limited to place but founded on the group belief	
Community is a cultural concept	
Core concepts for Natur Natural Living Community	
The meaning of on the ground for OTG	
Dragon concepts	
LNT is strong as it is systematic and methodologically mature	
The core concepts of Dragon Yunhe	
The core of Yunhe is the Eastern thought of Harmony between Human and Nature (Taoism concept)	
OTG concepts	
Human beings must have a sense of community	
Human beings need to have a sense of belonging to land	
The practices of Transition Town (TT)	



Name	Description
Cases of TT	
TT practices aim to switch to sustainable uses of energy	
TT practices are based on the Peak Oil Theory	
The source of OTG's concept on the sustainable life	
Nature Education orgs' social impact	
Dragon's social impact	
Dragon Yunhe stimulate change in attitudes (local communities and activity participants)	
Natur's social impact	
Natur Branding	
The Natur branding of activities that kids participate in	
The Natur branding of domestic products	
OTG's social impact	
Expand OTG in scale vs expand OTG's impact on values	
OTG NE's demonstration of sustainable living and its impact	
Specific impacts from OTG NE's concepts on families	
Nature Education orgs' values	
Dragon Yunhe values social values over commercial values in NE	
OTG promotes values	
OTG promotes values and sustainable living styles	

Name	Description
OTG transmits values through playing	
NE Orgs econ and social marketing	
Mission	
Mission of Clover NE is to build human connections to nature	
Clover NE promotes the connection between people and nature	
Mission of Dragon is to bridge human and nature	
Dragon Yunhe facilitates the foundation of the first national park in China	
Dragon Yunhe is the bridge connecting human beings and nature	
Mission of Natur is to solve environmental issues starting from addressing personal needs	
Natur promotes communication between Germany and China in NE field	
Natur promotes healthy development of NE orgs	
Mission of NE	
The goal of NE is teach kids different forms of human-nature relation	
Mission of OTG NE is to cultivate people that appreciate human-nature relations	
Targeting groups	
Groups in public that OTG are targeting in its NE activities	
OTG is open to all public in the society	

Name	Description
Parents are the subjects of OTG's NE public events	
The three categories of parent groups in NE public events	
Influential parents impact sustainable practices in their communities	
OTG NE focuses on influencing parents	
Parents identify with and promote the value which OTG holds	
Parents' sustainable practices after receiving OTG NE's influences	
Parents will reflect on OTG NE's influences on their kids	
Parents at the advanced developmental stage of NE mentors	
Parents at the introductory levels of NE mentors	
The overlaps of identity in OTG's NE activities	
The tie between NE mentors and the big OTG	
NE mentor group designs and implements parent-kid activities	
NE mentors extend their influences through the platform of OTG	
The alliance of NE mentors	
Cultivation Committee in Parent-Kid Association promotes joint learning and joint cultivation	

Name	Description
Parent-Kid Association is a spontaneous group inside OTG	
Parent-Kid Association is an example for NE mentors' alliance	
The nature of Parent-Kid Association is a parent micro-community or a parent club	
The subjects of NE mentors and the meaning for having NE mentors	
Groups that Dragon Expeditions target	
Organizational characteristics	
Clover NE characteristics	
The background information on Clover NE's establishment	
The landscape architecture background of Clover NE	
Dragon characteristics	
Future directions for Dragon Yunhe	
The operation of Dragon Expeditions is sustainable	
The potential for Dragon Expeditions to go beyond its current realm	
Interviewees	
Change in interviewees' lives when they started to work in the EE field	
Community life's influences on interviewees	
Difficulties that interviewees encounter in their NE career	
Impact of EE concepts from foreign cultures on	

Name	Description
interviewees	
Interviewee's background in anthropology	
Interviewees' childhood environment (urban vs rural)	
Interviewees' educational background	
Interviewees' environmental values	
Interviewees' interpretation of NE	
Interviewees' interests and hobbies	
Interviewees' job and tasks	
Interviewees' judgements on whether certain NE activities are good or problematic	
Interviewees' opinion on EE in the U.S.	
Characteristics of EE in U.S (knowledge, advocacy, problem-solving)	
Interviewees' opinion on human-nature relation in Western cultures	
Interviewee's opinions on community	
Interviewee's working experiences	
Interviewee's reasons for background in fields unrelated to NE to choose their career now	
Interviewee's will to initiate social change through public events	
Reasons for interviewees to choose NE as a career	
Similar orgs that interviewees compared to their own orgs	

Name	Description
The environment where interviewees grow up impacted interviewees' careers in NE	
Natur characteristics	
Natur has chosen the right path	
Natur is a grassroots org	
Natur is supported by its soul	
Natur's insistence	
The background of Natur's establishment	
The characteristics of Natur volunteers	
OTG characteristics	
OTG is place-based and grassroots	
OTG NE is interactive and long-lasting (on a daily basis)	
OTG's background in Social Work	
The growth engine of OTG	
Organizational structure	
Bases	
Base for Clover NE	
Clover NE Base helps community construction	
The definition of NE base related to the Food Forest Plan	
The functions of Clover NE Base	
Base OTG	

Name	Description
OTG Shicheng Base emphasizes Practical Education	
OTG Shicheng Base has a sense of community	
OTG Shicheng Base is open to all groups	
OTG Shicheng Base keeps notes on Nature Watch (NW)	NW= Nature Watch
OTG Shicheng Base offers EN in a sustainable lifestyle	EN= Experience in nature
OTG Shicheng Base operation	
OTG Shicheng Base promotes organic farming	
OTG Shicheng Base's functions and activities	
Participants in NE activities in OTG Shicheng Base have basic understandings of food sources	
Themes of OTG Shicheng Base	
Natur bases	
Natur farmers have their own channels for sales	
Natur's rural bases	
Clover NE Org Structure	
Clover NE is non-profit	
Clover NE targets kids	
Clover NE's findings come from public donations	
Dragon structures	

Name	Description
Dragon Expeditions' work team and division of work	
The diverse backgrounds of employees in Dragon Expeditions	
The role of coordinator in Dragon Expeditions team	
Dragon Yunhe established a platform for public participation	
Dragon Yunhe makes use of Dragon Forest School as a platform to share knowledge and experiences	
The structure of Dragon Expeditions as a company	
Dragon Expeditions (Ecotourism focus)	
Dragon Expedition was more focused on ecotourism at its early age	
Dragon Expeditions has incorporated concepts from Outdoor Education	
The scope of Dragon Expeditions' eco-tours	
Dragon Forest School	
Core values and concepts that Dragon Forest School holds	
Dragon Forest School focuses on Practical Education	
Dragon Forest School is carrier for development in the local Tibetan communities	
Factors impacting the selecting process for the location of Dragon Forest School	
Dragon Forest School can stimulate development in Zhonglu County	



Name	Description
Dragon Forest School is supported by local government	
The Tibetan community where Dragon Forest School is located is representative of communities in wider Tibetan areas	
The unique environment where Dragon Forest School is in	
Zhonglu County has preserved its cultural heritages in relatively complete forms	
The architectural design of Dragon Forest School	
Zones in Dragon Forest School's architectural design	
The construction history of Dragon Forest School	
The four goals of Dragon Forest School	
The function of Dragon Forest School is a base for Study Trip (ST)	
Specific ST activities in Dragon Forest School	
Dragon Forest School offers activities to experience local cultures for foreign guests	
ST activities vary among age groups	
Summer activities in Dragon Forest School	
The curriculum design in Dragon Forest School	
The goal of ST is to strengthen Liberal	

Name	Description
Education outside school classrooms	
ST means to cultivate skills in kids	
The impact of Dragon Forest School	
Dragon Forest School is a test sample which radiates impact to the wider Tibetan area	
The mixed nature (public service and commercial) of Dragon Forest School	
The reason for Dragon Forest School's establishment	
Dragon planning for tourism	
Dragon expeditions tried to plan for tourism development in Zhonglu County in a new way	
The problems in ordinary tourism development planning	
Dragon Yunhe NE is fed by profits made from Dragon Expeditions and tourism planning	
Natur Organization structure	
Natur does not operate for economic benefits	
Natur employees are paid volunteers without contracts	
Natur focuses on a small group of people	
Natur has lowered activity fees to payback participants	
Natur's future plan on old-age service for its community members	
Natur's requirement on employees	

Name	Description
The two main areas in Natur Natural Living Community	
Natur is rooted in NF not in NE	
Natur NE activities	
Natur NE addresses Life Education (Informal Education) and attitudes towards life	
Natur NE brings kids into a natural state (Taoism concept)	
Natur's advertisement on its NE activities	
The prospective of Natur NE	
Natur NE develops better than Natur NF and organic agriculture	
Natur NF has a limited targeting group due to feasibility (food distribution)	
Natur NF has high quality and distinct features	
Natur NF vs food in markets	
Natur NF's impact on kids	
Natur NF vs Consigning other farmers' products	
Natur Club system cannot handle high risks	
Selling on consignments has high risks	
Nature NE came into being naturally	
The kinds and categories of Natur NF	
The potential to expand the area of NF	
Work involved in Natur NF	

Name	Description
The procedures of inspection, production, distribution and pick-up in Natur NF	
The distribution of NF	
The inspection of NF suppliers	
The management of NF suppliers	
OTG org structure	
Communication and goal formulation in the OTG work team	
Division of labour inside OTG	
Internship at OTG Shicheng Base	
OTG is a social enterprise	
OTG NE has limited energy and social resources	
OTG Shicheng Base is a non-profit center for EN	
OTG will eventually earn profits	
OTG's communication group	
OTG's original intention when established	
OTG's requirements on employees	
OTG's work team has a strong sense of group bonding	
The independency of OTG NE's educational goal from its educational objects	
Social contexts of China	
Agriculture	

Name	Description
Agriculture is the tie between human kind and nature	
Clover NE promotes organic farming	
Farmers collaborating with Nature afford food distribution	
Farmers collaborating with OTG have their own channels for sales	
Natur promotes organic farming	
Natur searches for safe food	
The importance of planning in agriculture	
The quality of organic food products on market is not guaranteed	
Yearly schedule can help farmers plan to grow crops	
China has too much focus on cognitive learning while too little on experiential learning	
China vs Foreign Countries	
China lacks certain conditions (infrastructure and specific natural environment) to offer same EN in foreign countries	
Chinese NE and foreign NE are different regarding knowledge and emotions (cognitive and affective domains)	
Developmental issues in alpine and montane communities are universal around the world and have learning values for Danba	
Foreigners have stereotypes on Chinese with regard to environmental protection	
National Park system is an advantage that EE in U.S possesses	
Strengths of NE in China compared to foreign NE or EE	
Conferences	

Name	Description
Hong Kong Make a Difference Conference	
Information on National NE Forum	
Families	
Kids	
Changes in kids after they receive Natur NE	
How do rural kids think of nature	
Kids and electronics	
Kids create emotional connection to nature through EN	
Kids establish connection with land through place-based features in nature	
Kids from the elite class can afford NE	
Kids need a coherent education process	
Kids need guidance during their play in nature	
Kids nowadays lack ecological literacy	
Parents	
Changes in parents after they receive Natur NE	
Clover NE offer events for families (parents and kids)	
Doing a NE program cannot penetrate families	
Parents always arrange their kids' activities in advance	
Parents OTG focused on bringing NE into families at its early stage	
Parents weigh NE over NF (Natural food) and lack	

Name	Description
knowledge on NF in Natur	
People choose commercial food products due to the group psychology	
People do not have knowledge of organic farming	
Formal Education in China	
Formal education is limited in practice in nature	
The purpose of formal education is to solve issues on thinking	
Lack of public trust and a credit system in China	
Modern life and food lack seasonality and locality	
Nature thinking	
Hatred and fear for nature	
Natural scenes and natural landscapes have locality	
Nature around us vs Big Nature	
Experience in nature (EN) in the NE field	
The meaning of EN in travels and tours	
The necessity and importance of nature that is around us	
Nature Deficit Disorder (NDD)	
Both urban and rural kids need nature	
NDO (Nature Deficit Orders) in Landscape Architecture students	
Nature has resilience	
Nature is an integrated system with human beings in it	

Name	Description
Respect and awe for nature	
The core of Taoism is Nature (Taoism concept)	
Wearing shoes is a sign of detaching from nature	
New Media (WeChat)'s role in community construction	
WeChat attracts seniors	
WeChat becomes a new source for information	
WeChat expands the community space	
WeChat provides a new way to share and communicate	
WeChat stimulates action from ideas through communication	
Politics	
Community members have easier time communicating with their Neighborhood Committee than NE orgs	
Dragon Expeditions and Danba Government	
Danba government wants to have a better tourism development plan for Zhonglu County	
Dragon Expeditions cannot substitute the government's role in solving environmental issues	
OTG tries to cooperate with local neighborhood committees	
OTG's NE activities take advantage of beneficial policies	
The role of Neighborhood committee and street office in community events	
Neighborhood Committee and Street Office's attitudes towards community events	



Name	Description
Social backgrounds behind the field of NE in China	
Social enterprises need enough funds to sustain their operations	
Social enterprises repay their debts to communities	
The definition of elite	
The issue of food safety	
The lack of awareness on food safety in China	
Theory vs practice	
OTG is founded to offer a platform which transfers theories into practice	
Practice of NE exists before the emergence of NE as a term or field	
There exists a big demand on food safety	
There were no channels to buy safe food products before the establishment of Natur	
Urban vs Rural	
Nature in rural places vs Nature in urban settings	
Rural	
Current practices in rural development programs and community construction in China	
It is hard to judge how kids consider nature in rural places	
Nature and human kind are integrated in rural places	
Rural communities decline	
Rural development programs make good uses of NE	

Name	Description
concepts	
Rural kids have more ecological literacy compared to city kids	
Rural places are at the crossroads of human kind and nature	
Sustainable practices in rural life and agriculture	
Three aspects of development issues in rural or suburban places	
The cultural aspect of rural places' developmental issues	
The development in rural places decrease local community's original public space and social space	
The phenomena and reason for the loss of young generations in rural places	
Tourism's impact on rural communities' culture	
Tourisms' impact on traditional architecture in rural places	
Tourism's impact on traditional diet in rural places	
The educational aspect on rural places' development	
The educational resources in rural places are relatively scarce	
The environmental aspect and environmental changes in rural places	
Rural environmental issues need governmental management	
Urban	

Name	Description
Characteristics of urban communities in industrial area	
Environmental change and environmental issues in cities	
The change in urban surroundings in Kunming City	
Urban crowds demand Spiritual Education for their kids	
Using events to connect the rural and the urban	
Connecting farmers	
EN activities can support rural community by consuming rural products	
Food and Agriculture Education (NF)	
Providing platforms for farmers to sell their products	
The collaboration between Clover NE and farmers	
Natur help farmers on planning	
The collaboration between OTG and farmers is determined by OTG's collaborations with other NGOs	
The seed library in Clover NE	