

The Origin and Positive Effects of Nature Education in China

Siyue Liu^{1, †}, Yihan Lyu^{2, †}, Yuechen Qian^{3, †, *}, Ao Shen^{4, †}

¹School of Product Design, Xihua University, Chengdu, China

²Department of Economics, University of California, Santa Barbara, CA, U.S.

³School of Psychology, Language and Culture University, Beijing, China

⁴School of Oriental Languages and Cultures, South China Business College Guangdong University of Foreign Studies, Guangdong, China

*Corresponding author: 202211680687@stu.blcu.edu.cn

†These authors contributed equally.

Abstract. With the improving consciousness of people to care for nature and the environment, the research of nature education in China is an emergent field, and the research direction involves various aspects. This review mainly expounds on the positive effect of nature education on early childhood, school children, and teenagers, which could promote the development of children's physical and mental aspects through natural education activities. Meanwhile, it also discusses the origin of nature education from three related theories: naturalism education, natural history, and environmental education. Moreover, this review states the current problems and future prospects of natural education in China, and puts forward suggestions on how to develop it scientifically and orderly. It leads to a thorough consideration of the importance of nature education and its main purpose: promoting the physical and mental health of children and teenagers while experiencing, appreciating, and protecting nature. Giving them a sense of symbiosis and responsibility for the natural environment.

Keywords: nature education, positive effect, China, origin, children and teenagers.

1. Introduction

The development of nature education is closely related to people's understanding of the relationship between humans and nature. At all times and all over the world, various scholars have different interpretations of the meaning of "nature education."

The definition of "nature education" in this paper is based on the natural environment with the promotion of harmony between humans and nature as the core and with participation and experience as the main way. It aims to guide people to recognize and appreciate nature, understand and identify with nature, respect and protect nature, and ultimately achieve the goal of self-development and harmonious coexistence between humans and nature.

1.1 Research background

In the historical development of nature education, most countries start from the original intention of protecting the natural environment. At present, the United States has formed a parallel model of "Teaching+ Natural School +Project" of formal education and informal education [1]. In the 1950s, natural education started in Europe, affecting developed countries such as Germany, Britain, and South Korea. These countries mainly rely on national parks, outdoor farms, and other bases to build nature schools, and carry out nature education through exploratory education projects like outdoor camping [2]. Australia is rich in natural resources, so its natural education model is an "all-around" one centered around family, school, and society [3]. The Japanese government has received strong support from non-governmental organizations such as the Japanese Wild Bird Association. It has focused on the natural education experience and formed a practice model of "Natural School +Society +Community" [4]. The South Korean government relies on forest resources and focuses on the "Forest Experience" natural education model.

In recent years, research on the development model combining environment and education has surged in China. The main academic achievements include the following three aspects:

1) The research on summarizing, collating, and analyzing the current development process of natural education in China, provides a reference for its future development.

2) The research on the impact of natural education on children's physical and mental health, explores the main reasons for the lack of family natural education and proposes the development of preschool children's health education from the theory of natural education.

3) The research on the development of China's natural education industry, studies how to put natural education into practice effectively, supported by the concept and significance of nature education.

1.2 Research Aim

Although China's natural education started later than many western countries, the development of various natural education institutions has emerged rapidly. However, the lack of natural education legislation, theoretical research, industry regulation construction, and professional training still hinders the thriving and prosperity of nature education in China. By exploring the origin and positive effect of nature education, this paper aims to investigate how it would impact China's modern nature education system, and its influence on Chinese children and youth, in order to shed light on the education system in China. The main purpose is to encourage more people to walk into nature, learn from nature, and form values and behaviors that respect, appreciate, and protect nature.

2. The Origin of Nature Education Concept

Since nature education has not formed a systematic subject yet, there has no clear literature to prove its historical origin. However, this paper detects the figure of nature education over many related theories, such as naturalism education, natural history, and environmental education. Even though these related theories do not directly refer to today's nature education concept, the following section will analyze how they shed light on the theoretical connotation and methodological practice of nature education.

2.1 Naturalism Education

Naturalism education is a shining star in the history of western education. The basic principle of this theory is to carry out educational behavior according to the natural nature of human beings and the law of somatopsychic development. Representative figures of naturalism education include Comenius, Rousseau, Pestalozzi, Dewey, and Richard Louv.

2.1.1 Obey the "Order" of Nature

The 17th-century educator Comenius asserts that humans, as a part of nature, should be educated according to the natural "order" [5]. Liu mentioned that Comenius was the first person to unveil the prelude of nature education from the pedagogy perspective [6]. Comenius's viewpoint of "education adapting to nature" greatly impacts the subsequent development of naturalism education.

Many researchers suggest that "adapting to nature" here has two connotations. Firstly, pedagogy must obey the natural "order" of nature, indicating that nature contains unwavering natural laws that govern the existence and development of everything. Only by adapting to these laws can the desired effect be realized. Secondly, Comenius attaches great importance to differences in human personality. He asserts that in addition to the "order" of nature, human beings also have their own laws of development and natural nature, which cannot be ignored or violated. Similar to bees choosing the best route to collect honey and architects picking high-quality stones to build foundations, everyone's natural nature is different. Hence, the most crucial point is discovering personal strength and developing it [6]. The principle of "natural adaptability" proposed by Comenius tried to make a far-fetched analogy between human educational activities and natural phenomena, making his theory appear rigid and mechanical, called "objective nature" [7]. Although Comenius could not surpass the

limitation, he still established Western naturalism education's theoretical and logical milestone — educating according to children's innate nature.

2.1.2 Humanization of Pedagogy

During the French Enlightenment, scholars begin to pay attention to human values and subjective consciousness. Rousseau was one of the representatives. Unlike Comenius, his understanding of "nature" has been humanized, purely referring to children's natural nature and natural development process [8].

Firstly, Rousseau clarifies that the core connotation of naturalistic education is the natural development of children's nature. He advocates removing human intervention and enabling children to grow freely, returning to natural status. Mentioned in his book "Emile" published in 1762, he states that educators should let the seed of character express freely, without any restraint, so as to observe it comprehensively and thoroughly [9]. This indicates that only a detailed understanding of each child can pedagogy detect the suitable way to develop their personality. Secondly, he also proposed that education aims to develop the "natural person," that is, an independent, free, and rational person. This kind of person can rationally analyze things around him/her and gain experience from nature since a young age.

Rousseau started the period of humanization education. His naturalistic education is more subjective, humanistic, and flexible than Comenius's, called "subjective nature" [10]. Scholars suggest that Rousseau has made a huge contribution on the basis of Comenius and established a genuine naturalistic education system. It is the foundation of modern nature education, enlightening its theory and practice development [11].

2.1.3 Psychologicalization of Education

Pestalozzi is the first great educator to propose linking nature education with psychology after Rousseau's "subjective nature." He believes that education should be psychological, understanding children's innate nature as children's psychological activities. This theory closely links natural education with human psychological development and attaches importance to education in outdoor environments and children's psychology, bringing the theory of natural education into practice [17]. Pestalozzi asserts that education should stimulate the natural potential of people, enabling the seeds of children's nature to germinate and grow [11]. He also believes that education should consider children of different ages. This concept is similar to Rousseau's "human-oriented" thought but focuses more on children's psychological aspects, which exerts a significant positive impact on the study of modern child psychology [12]. Pestalozzi's research has brought naturalistic education into a new stage - "educational psychology." It has promoted natural education to a scientific and psychological transformation [11].

2.1.4 Return to Experience and Nourish Spirituality

Dewey proposes a unique growth teleology, which opposes the externally imposed educational purpose and believes that education should return to children's experience world, that is, the real place of children's education and training. He believes that all education is related to experiences and comes from experiences [11]. Thereby, educators should let children experience various life experiences in nature, school, neighborhood, and family, so as to learn, accumulate, and enrich experiences day by day. This correlates with the concept of "Nature Deficiency Disorder" first proposed by Richard Louv in his book *The Last Child in the Woods*. Louv pointed out that the cause of nature deficit disorder is the alienation and rupture of the relationship between man and nature. [13]. Dewey's theory emphasizes the role of children's practical experiences, so the two theories echo each other. Louv highlights the importance and urgency of developing nature education and the many problems brought about by nature deficiency disease. This awakens the public's attention to nature education and promotes the initial start of nature education [14].

2.1.5 Summary

To sum up, naturalistic education has gone through three stages: "objective nature" - "subjective nature" - "psychological nature", and finally developed into a modern natural education theory. It should be noted that the "nature" understood by naturalistic education is an abstract concept, emphasizing the natural nature of human beings, while nature education is based on the objective nature, aiming to promote the harmonious coexistence between humans and nature and highlighting people's experience in nature [5].

2.2 Natural History Education

Natural history is a subject formed on the basis of human curiosity about nature. By actively exploring and understanding nature, today's natural history system includes botany, zoology, geology, ecology, and other branches [15]. It was formed during the Renaissance and peaked in the 19th century. In 1892, the Scottish biologist Geddes built a watchtower in Edinburgh to observe the natural environment. Geddes claims that the only way to truly learn and understand nature is through personal experience. This idea makes a connection between the natural environment and pedagogy and begins the practice of nature education for the first time.

It is crucial to notice that natural history does not mention the abstract concept and connotation of nature too much. Instead, it emphasizes the importance of applying scientific methods to understand nature and stresses learning in the natural environment. Therefore, it is the closest concept to today's nature education theory and provides a significant scientific basis. Apart from that, natural history pays more attention to the classification, acquisition, and accumulation of natural knowledge, while nature education focuses more on the development of personal abilities, the acquisition of emotions, and the cultivation of values. Therefore, not only in scientific methods but also in social foundations, natural history education lays an important foundation for the vigorous development of nature education [8].

2.3 Environmental Education

Environmental education is a broad concept characterized by interdisciplinary activities, which aims to arouse learners' awareness of environmental protection and develop the skills to solve environmental problems [16]. Global environmental problems have occurred frequently since the 20th century, causing the world to think deeply about the relationship between human development and environmental protection. People's attitudes towards the relationship between man and nature began to change slowly, realizing that people's erroneous environmental cognition causes environmental problems [8]. In 1948, the concept of environmental education was first proposed. Then, the "Belgrade Charter" in 1975 stated that environmental education aims to promote the understanding and care of the environment and promote human beings to prevent and solve environmental problems actively.

Thereby, it is obvious that environmental education and nature education are different in background, population, purpose, method, and content. Environmental education is oriented toward cognition and solving environmental problems. Whether it is the learning of knowledge or the cultivating of values, the ultimate goal is to solve and prevent possible environmental problems. However, the core purpose of nature education is to encourage people to respect, understand and protect nature and the healthy development of individuals. It changes the education method from passive acceptance to active action and pays more attention to cultivating harmonious values between humans and nature [17]. It has injected important value orientation into the development of current nature education.

To sum up, naturalism education, natural history, and environmental education have laid the foundation for the development of the current nature education industry in terms of basic principles, forms and methods, and value orientation.

3. Nature Education: Positive effects on children

In the research of nature education, the researchers should consider different stages of children's development. For preschoolers, nature education should enlighten kids to keep their curiosity and passion for learning basic knowledge of nature. At the teenage stage, content should be in accordance with the cognition of their age. More importantly, the educator should ensure the successful practice of theoretical learning, which is also related to the students' values and emotional attitudes toward nature. Therefore, this paper discusses the positive effects of nature education on children at different stages and in different situations, which are early childhood (0-5y), school children (6-12y) and teenagers (13-19y).

3.1 Positive Effects on Early Childhood

3.1.1 Nature Education and Physical Health

Early childhood is an important stage for children's body growth and development. When kids explore the natural environment, a series of body kinematics are needed. In most situations, kids need to run, jump or even climb to accomplish certain tasks during nature education. Therefore, the process of nature education significantly increases their coordination ability. More importantly, it strongly impacts early childhood, making children fall in love with sports and exercise. In recent years, kids in China often lack enough exercise, and many of them resist sports activities due to academic pressure. Nature education provides a perspective of combining physical exercise and education of good quality. Furthermore, the somatic function is boosted along with body growth in nature education.

3.1.2 Nature Education and Mental Health

3.1.2.1 A Perfect Way to Learn the World

Nature education plays a perfect pathway to learn about the world since it obviously improves the children's cognition level in early childhood [18]. The famous developmental psychologist Jean Piaget put forward the theory of cognitive development, which divides the development of cognitive structure into four stages: the perceptive motor stage, the pre-operational stage, the concrete operational stage, and the formal operational stage. It suggests that the premise of children's cognitive development is their perception, such as utilizing the perception of the surrounding environment to understand the world [19]. Early childhood is a period when kids boost in curiosity, and nature education encourages kids at this age to explore the world. Contact with nature greatly improves young children's sensibility, which leads to a better understanding of the surrounding. The ages of 0 to 5 is a critical period of brain development, and experiences during this period determine how young children learn and perceive the world [20]. As more kids become addicted to electronic devices and obtain natural deficit disorder, nature education is an ideal regulatory mechanism to mitigate this problem.

3.1.2.2 Nature Education Improves Language Competence

Early childhood is crucial in forming the mother tongue [21]. During nature education, young children have a chance to cooperate with their peers and tutors. On the one hand, the young participants are required to listen carefully to what the tutors say, which elicits a desire for expression. It naturally encourages kids to express themselves and therefore improve their language skills.

3.1.3 Nature Education and Emotions

3.1.3.1 Nature Education is Conducive to The Formation of a Positive Attitude

According to previous research results, 50 percent of families in China's urban areas only have a single child, and these children inevitably have some "weaknesses". The love of the family concentrated on a child, whenever they encountered difficulties, there will be someone to help them solve problems. However, this makes children lose the ability to stay independently and develop a positive attitude towards life. Education plays a leading role in people's physical and mental

development. As the basic stage of education, kindergarten has a crucial influence on children. In the natural education activities of kindergarten, children can always explore new problems. Teachers let children themselves to solve problems so that children can get a sense of achievement, which cultivates children's courage and attitude of not afraid of difficulties [22]. As a result, children can form a specific thinking ability and habits during continuous activities and then apply them to daily life [23].

3.1.3.2 Nature Education Develops Spiritual Quality

The core of nature education is the enlightenment of respect and love, which raises the spiritual quality of children in all aspects. Nature education strengthens the consciousness of respecting and caring for nature [24]. The essence of nature education helps children extend respect and love for nature to people. Nature education largely cultivates emotional richness in early childhood as various challenges give children different emotional experiences. Furthermore, nature education improves the aesthetic ability of young children. Children are provided with a series of real situational experiences, from which they get in touch with beautiful and natural sceneries in person. According to the research, the effect of aesthetic education in nature is far better than in traditional classrooms [25].

3.2 Positive Effects on Schoolchildren and Teenagers

3.2.1 Environmental Protection Awareness

3.2.1.1 Nature Education Strengthens the Environmental Awareness

Nature education has been a crucial way to provide environmental education directly. The more the students get involved in nature, the more environmental awareness they have. During the nature education, schoolchildren and teenagers can develop the awareness of environmental protection, environmental ethics, and sustainable development. However, with the development of the urban and technology, there are less and less chances of getting in touch with nature while the environmental pollution is getting severer. Being exposed in pollution has negative effects on students' cognitive development [19]. On the contrary, when students participate in nature education programs, they can get a direct feeling of nature's problems, to build up their empathy, care, and responsibility for environmental problems [26]. Turkey found an ecology-based nature education program, which contributed significantly to children's responsible environmental behavior [27].

3.2.1.2 Nature Education Contributes to Environmental Protection

School children and teenagers with rich natural experiences tend to contribute more to environmental protection. According to the research, nature education is a fundamental part of environmental protection in Germany as the main contents of German nature education include environmental pollution prevention education, ecological environment moral education, and environmental action practice education. [28] Children will see themselves as part of nature and build an attachment to the natural environment, so they will be friendly to nature and build more connections with nature, exhibiting more sustainable behaviors later [29]. China is currently facing severe environmental problems, including population increase, forest coverage rate decline, garbage pollution, etc. Therefore, the awareness and responsibility of the young generation in China is part of the solution to those environmental problems.

3.2.2 Improves Learning Capacity and Viability

3.2.2.1 Nature Education is Beneficial to Cognition Development

School children and teenagers are in their crucial period of improving learning capacity and personal development. Therefore, it is also an important period when working memory capacity increases rapidly. Nature education is an effective method to promote students' working memory. According to the research, after participating in the nature education program in Spain, students took a test that shows that their average working memory increased by 22.8%, and their superior working

memory increased by 15.2%. Meanwhile, inattentiveness decreased by 18.9% in the following test. When being exposed to green nature space, children are exposed to multiple sensory stimuli at the same time; thus, they tend to focus for a longer time, along with better imagination and creativity [30]. Moreover, children may get the opportunity of discovering more connections from nature and linking their discovery with their learning. Traditional education in China usually values gaining knowledge from textbooks in the classroom but lacks practice in the real world. Nature education provides a perspective to fill this gap and promotes students' multi-dimensional development.

3.2.2.2 Nature Education is Beneficial to Viability

Nature education improves multiple abilities of schoolchildren and teenagers. The experience of attending nature education programs significantly impact the students' learning, observation, hands-on, teamwork, and social communication skills [24]. Students might come across various challenges and difficulties in nature education. It is necessary for them to work in teams, cooperate and communicate with their partners, work out the solution to the problem on their own, and finally overcome the challenges in person. The entire process of nature education improves the all-around viability of children. The research shows that in terms of learning, hands-on, and teamwork ability, the younger the children, the greater the degree of improvement. The number of activities has a significant impact on the improvement of each ability. The more times students participate in activities, the more significant the improvement of each ability [31].

Other positive effects are mainly in building confidence, acquiring social skills, improving language and communication skills, developing perseverance and concentration, enhancing physical fitness and motor function, learning knowledge, and practicing understanding [32].

3.2.3 Physical and Mental Health

3.2.3.1 Nature Education Provides a Healthy Body

Nature education enhances immunity and exercise adaptability, and dramatically relieves mental fatigue and stress. Challenging activities in nature help children learn about their bodies and manage risks, and self-adapt. When most students spend too much time on screen, nature education provides a great opportunity for more physical exercise and abundant outdoor activities. The research also indicates that children increase their preferences for fruits and vegetables after being nature-educated.

3.2.3.2 Nature Education Provides a Healthy Mind

Nature education contributes to schoolchildren and teenagers' happiness remarkably [33]. Natural resources, natural education activities and the interpretation system significantly affect the well-being of adolescents from the perspective of natural education. The frequency of participation also has a reverse regulating effect on the relationship between natural education perception and adolescent happiness. During the COVID-19 pandemic, students are relatively isolated and kept indoors, nature education offers the outdoor experience that makes the connection with people.

4. Limitations and Future Prospects of Nature Education in China

4.1 Limitations of Nature Education in China

The content and methods of nature education in China are mainly based on landscape effects, ignoring the natural science popularization and ecological education functions of forest parks.

4.1.1 The Research Topics Limitations

At present, the theoretical and practical research on nature education mainly focuses on children and adolescents, lacking attention to the participation of adults in nature education. The nature education institutions of non-governmental organizations offer limited courses for adults, and only involve special lectures, parent-child nature experience, and nature educator training, which makes the audience of adult nature education relatively narrow.

4.1.2 From Qualitative Research to Quantitative Research

The early studies on nature education were basically qualitative studies using literature and content analysis. Since 2015, due to the introduction of relevant policies by the state, research has begun to focus on empirical research on nature education. The article mainly collects information through questionnaire surveys, and conducts mathematical and statistical analysis in combination with cluster analysis, factor analysis, and other methods. Future research will focus on quantitative research exploration.

4.1.3 Nature Education v.s. Mainstream Education System

The entrenched nature of exam-oriented education has led to difficulties in developing China's nature education. On the one hand, indoctrination-style school education greatly restricts students' ability to think independently and explore the truth; on the other hand, the squeeze of extracurricular training classes gives students basically no chance to get close to nature and develop freely. Many parents have a weak view of nature education, thinking that nature education is not suitable for the development model of my country's exam-oriented education. Also, since children's willingness to participate in nature education is low, many schools lose interest in establishing nature schools.

4.1.4 The Structural System and the Practice Model

China learns from the experience of other countries, integrating all foreign environmental education models to provide students with nature education. Despite this, the practice model of nature education in China has not yet been fully finalized, and the school's internal education system lacks practices, demonstrating narrow thinking and insufficient stamina for practice. There are flaws in the design and planning of nature education courses, supporting facilities, and talent reserves. At present, nature education in protected areas applies mostly a "protected area + institution cooperation" model, but nature education in protected areas faces problems like a monotonous form, and nature education institutions also have many unpromising projects and unstable markets.

4.2 Prospects of Nature Education in China

4.2.1 Accelerate the Legislative and Guarantee for the Implementation

Due to the lack of support from the legal system, China's resource-sharing platforms and nature education professionals are scarce, and the practice of nature education also lacks theoretical guidance [34]. Government legislation needs to occupy a dominant position and guarantee the popular awareness of citizens and the emphasis on nature education so that a law-based nature education can be implemented more standardized and securely.

4.2.2 Create a Pleasant Social Environment

The outlook on life and values in childhood have not been fully formed, and the surrounding environment has an important impact on the formation of children's personalities and habits. The traditional education in China is biased towards knowledge "instilling." Many parents regard grades as the standard for judging a child [34]. Outdoor practice is mostly considered a waste of time. Children are easily influenced by this kind of thinking in the early stage, and gradually lose interest in outdoor activities and nature, leading to difficulty in implementing natural education. Children's learning is not only for grades, but the learning process is also a process of shaping the whole body and mind. Parents, schools, and society should have a correct orientation, comprehensively exaggerate the concept of nature education, encourage children to engage in outdoor activities and walk into nature, and improve children's proper perception of nature [35].

4.2.3 Multi-party Cooperation and Integration of Resources

The development of nature education should combine multi-party cooperation to create diversified natural education resources [36]. In developing nature education, the government, non-governmental environmental organizations, communities, protected areas, and even enterprises must carry it out jointly. At the same time, many volunteer teams are encouraged to join the team of nature education,

so that nature education has a wider range of natural education resources. Under the concept of "government-led, multi-party cooperation," multiple forces should be integrated to carry out nature education in schools, society, and protected areas. In addition, it is necessary to emphasize the public welfare of nature education. Nature education is a topic of human well-being. It not only heals contemporary people's physical and mental health but also leaves them green for future generations. Therefore, nature education can be carried out on a large scale and receive much attention, leading to good effects.

4.2.4 Children with Special Needs

In China, there is little theoretical research and practice on nature education for children with autism, depression, and attention deficit disorder. The education model of "one size fits all" ignores children's differences in abilities, personalities, needs, interests, etc. As a result, it seriously affects the rehabilitation and initiative of children with special needs [37]. At the time of educational reform, nature education should be taken as a guide to reform the Chinese traditional education system, promoting the healthy development of special education in China.

5. Conclusion

Nature education has a positive impact on the physical health, mental health, emotional cognition, and learning ability of children and teenagers. China should create a good atmosphere to advocate the development of nature education and solve the current problems faced by nature education in China. Theoretical research and practical method should continue to be explored.

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