



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT



[www.hrmars.com](http://www.hrmars.com)

ISSN: 2226-6348

## Effect of Kindergarten Environment Creation Quality on Children Health, Language, Social, Science and Art

Su Dong Mei and Loy Chee Luen

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v12-i2/16714>

DOI:10.6007/IJARPED/v12-i2/16714

**Received:** 08 February 2023, **Revised:** 10 March 2023, **Accepted:** 26 March 2023

**Published Online:** 12 April 2023

**In-Text Citation:** (Mei & Luen, 2023)

**To Cite this Article:** Mei, S. D., & Luen, L. C. (2023). Effect of Kindergarten Environment Creation Quality on Children Health, Language, Social, Science and Art. *International Journal of Academic Research in Progressive Education and Development*, 12(2), 187–219.

**Copyright:** © 2023 The Author(s)

Published by Human Resource Management Academic Research Society ([www.hrmars.com](http://www.hrmars.com))

This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

Vol. 12(2) 2023, Pg. 187 - 219

<http://hrmars.com/index.php/pages/detail/IJARPED>

JOURNAL HOMEPAGE

Full Terms & Conditions of access and use can be found at  
<http://hrmars.com/index.php/pages/detail/publication-ethics>



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT



[www.hrmars.com](http://www.hrmars.com)

ISSN: 2226-6348

## Effect of Kindergarten Environment Creation Quality on Children Health, Language, Social, Science and Art

Su Dong Mei and Loy Chee Luen

Department of Early Childhood Education, Faculty of Human Development, Universiti  
Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia

### Abstract

The purpose of this study was to determine the impact of the quality of the kindergarten environment created on the development of children in the areas of health, language, social, science and art. The study was designed using a quantitative approach with a sample of 368 kindergarten teachers in Lanzhou, China, who taught children between the ages of 3 and 6 years. The sample for this study was selected through random sampling and the research instruments were a child development assessment form and a questionnaire to assess the quality of the environment created. The results of the study show a positive correlation between the quality of the kindergarten environment creation and the impact on the development of young children. In order to promote the holistic development of preschool children, we conclude the study with the following educational recommendations: kindergarten educators should focus on the quality of kindergarten environment creation and raise awareness of environment creation. Establish a physical and spiritual environment that is suitable for the development of young children. Children should have full contact with the quality of their kindergarten environment during their kindergarten life and learning. In doing different types of activities, children will develop more fully in the areas of health, language, social, science and art. Educators need to make use of a variety of materials in the kindergarten environment and also intervene when children are playing to create a quality and prepared environment for children. In future research, it is recommended that mixed methods (qualitative and quantitative) be used, including interviews or observations, to give more depth to the study and to give a true picture of the impact of the quality of the environment on children's development.

**Keywords:** Kindergarten Environment Creation Quality, Children Development

### Introduction

Preschool education has a positive impact on children's development by fostering their multifaceted growth and helping them develop self-awareness and self-confidence. It plays a crucial role in shaping their future and facilitates their understanding of emotions and building good relationships with peers (Zembat, 2010).

Early education is not isolated from the child's environment, as learning starts from birth and takes place in various settings. Research on early brain and child development confirms that contextual factors and experiences significantly impact human development. As early as infancy, children acquire skills such as emotional regulation, problem-solving, and self-expression, which they utilize as they transition to formal schooling (Williams, 2017). The environment is an extremely important part of the early childhood education process, and teachers and parents must create a healthy and good educational environment for young children to grow better. The kindergarten is the place where children live and learn, and the classroom environment provides a place for children to actively participate in activities and creates very favourable conditions for their growth. The kindergarten classroom environment plays a vital role in the development of children.

Montessori (1912) attached great importance to the environment and believed that children would reveal amazing characteristics and intelligence if they were placed in an environment that was conducive to their natural development and allowed them to move at their own needs, pace and speed of development. Children's development is 'achieved through the experiences they gain when exploring their environment'. The environment is important to the physical and mental development of young children, and without it children's development may stagnate. She argues that children should be provided with a 'prepared environment' and that 'in education, the environment plays a very important role and everything that children absorb from it, they incorporate into their own lives. Gaobo believe that a good educational environment should be one that is suitable for the child's age and psychological characteristics and protects the child's self-esteem and self-confidence (Gaobo, 2008).

However, at present, there are many shortcomings in the creation of kindergarten environment, such as a bias towards the physical environment and a neglect of the importance of the physical environment, a lack of other aspects of creation, a single-minded approach to creating the environment and a lack of variety. The current situation of kindergarten classroom environment creation has become a common concern of early childhood educators.

The consciousness of the kindergarten teacher in creating the environment influences the quality of the environment created for the children, which between them affects the development of the children, so the improvement of teachers' instructional practices is particularly important for kindergarten education, where teachers play a key role in helping children achieve a balance of intellectual, physical and socio-emotional development as a foundation for life. How confident kindergarten teachers are about their professional competence will influence children's learning (Guo et al., 2011; Sheridan et al., 2009). This study focuses on the health, language, social, scientific and artistic development of pre-school children and, in order to gain a deeper understanding of this issue, this study will attempt to answer these research questions:

- (1) Does the kindergarten physical environment creation quality have a significant effect on children's development (health, language, social, science, art)?
- (2) Does the kindergarten mental environment creation quality have a significant effect on children's development (health, language, social, science, art)?

## Significance of the Study

### *Theoretical Significance*

Through the collection and analysis of relevant data, it was found that the previous data studies focused more on the practical aspects of kindergarten environment creation, and relatively little time was spent on the theoretical aspects of the study, and the theoretical basis was relatively weak, and the problems of the researcher were not focused, and there was no in-depth and systematic research on the invisible educational influences conveyed to children in the creation of the environment. Through this study, we hope to enrich and enrich the theories related to the creation of kindergarten classroom environments, to help early childhood teachers deepen their understanding of the implicit influences conveyed by the creation of classroom environments, and to enrich the theoretical basis for the creation of kindergarten environments.

### **Practice Significance**

This study focuses on the actual situation of kindergarten educational environment creation. Through a combination of quantitative and qualitative discussions, not only can the data analysis be used to understand whether the quality of kindergarten environmental creation has an impact on children's development, but also through in-depth interviews with kindergarten teachers, we can truly understand the current situation of environmental creation, understand the problems encountered in kindergarten educational environment creation, and explore its causes and countermeasures.

## Literature Review

### **Kindergarten Environment Creation**

Recent evidence suggests that the environment is an important educational resource and that it should be created and used to effectively promote children's development. Teachers should create a relaxed environment for children's exploratory activities; provide a wealth of activity materials so that each child can use multiple senses and explore in multiple ways (*The Kindergarten Education Guidelines, 2009*). At the same time, young children play their part in interacting with the kindergarten environment (Naixiang, 2020). The kindergarten environment should be created according to the developmental needs of children and the educational requirements of the kindergarten, making full use of the educational factors in life and creating a context in which children can actively interact with the environment (Li & Zhen, 2013).

Different researchers have their own definitions of what the concept of kindergarten environment creation is. Firstly, in terms of the overall kindergarten creation, Dong Jin believes that kindergarten learning is the sum of subjective and objective factors that influence children's development in the kindergarten environment through educational and teaching activities and life events in the physical and classroom environments. Therefore, the creation of kindergarten learning environments can be divided into two categories: physical learning environments (objective factors) and mental learning environments (subjective factors) (Jin, 2015). The environment is one of the most important factors in kindergarten's composition, which will directly affect children's education. Therefore, strengthening the optimization of the environment plays a very important role in ensuring the quality of preschool education for children (Yoleri, 2014), and Feresin also suggests that in order for kindergarteners to acquire new knowledge, skills, and improve their life skills, it is necessary

to provide them with a high-quality learning environment that fosters creativity and self-expression (Feresin, 2017).

However, in terms of the specificity of the content of the kindergarten environment, the physical environment of kindergartens can be divided into two parts: the natural physical environment and the social physical environment, which together constitute the material conditions and basis for children's activities in the kindergarten. The natural material environment is the sum of the various natural conditions of the kindergarten, such as flowers, plants and trees, which are educational resources that can be used directly for kindergarten educational activities, while the social material environment consists mainly of the kindergarten activity rooms, outdoor activity grounds, various equipment and activity materials, spatial structures and environmental arrangements. The mental environment of the kindergarten specifically refers to the interpersonal relationships between children and teachers, between teachers and children, and the mental atmosphere of the kindergarten, such as the classroom style and garden style (Su Yanxia, 2012).

If the kindergarten environment is to be created for the purpose of promoting children's development, kindergarten teachers must make full use of the resources around them according to the laws of children's physical and mental development, and provide interactive scenarios for children, so as to promote their positive physical and mental development (Sun, 2020).

### **Related Theory**

Piaget (1922); Vygotsky's (1978) Constructivism Theory and Montessori's (1912) Environmentalism were used in this study.

Piaget (1922); Vygotsky (1978) had different perspectives on cognitive development, but both agreed that the environment plays a crucial role in shaping children's cognitive abilities. Piaget's cognitive constructivism emphasized the continuous construction of cognitive schema through maturation, physical environment, social environment, and self-regulatory action. On the other hand, Vygotsky's sociocultural constructivism focused on the importance of interpersonal interactions and socio-cultural transmission in achieving cognitive development. While Piaget emphasized the role of children's internal processes, Vygotsky emphasized the role of social and cultural interactions in knowledge production. Nonetheless, both scholars recognized the importance of creating a supportive and stimulating environment for children's optimal cognitive development. In conclusion, by applying Piaget and Vygotsky's constructivism theories, a high-quality kindergarten environment can be created that supports children's cognitive development. This can be achieved by providing a safe and stimulating physical environment, promoting social and cultural interactions, and catering to individual differences in cognitive abilities and interests.

For Montessori's approach to environment creation can be applied to kindergarten settings, to create environments that are conducive to children's growth and development. By carefully observing the children and their needs, organizing the environment in a way that promotes independence and self-direction, stimulating the senses, and acting as a facilitator, teachers can create environments that support children's natural development. By providing a supportive environment that allows children to learn and grow at their own pace, educators and caregivers can facilitate healthy development and help children reach their full potential. The theoretical framework as the following

### Theoretical Framework

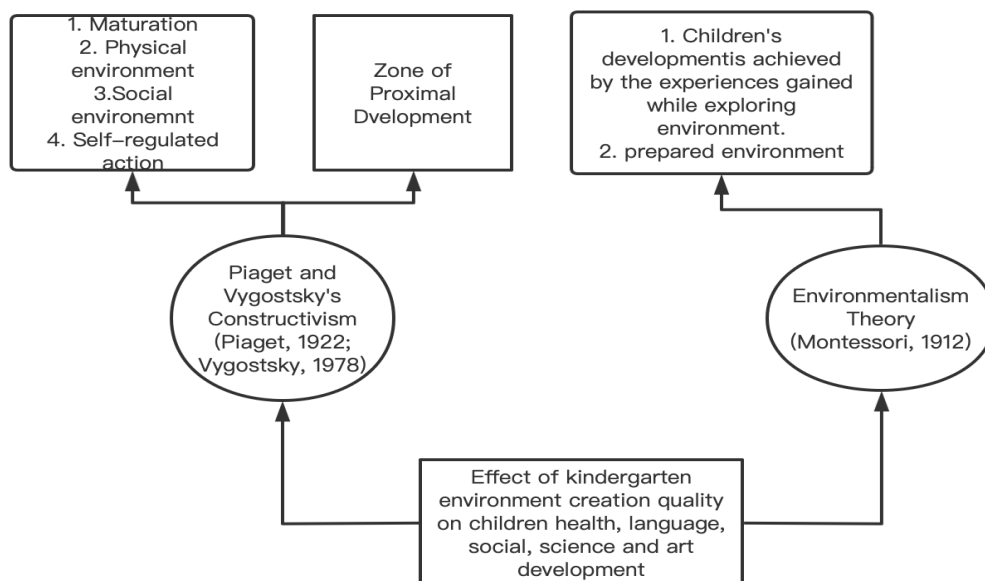


Figure 1

### Conceptual Framework

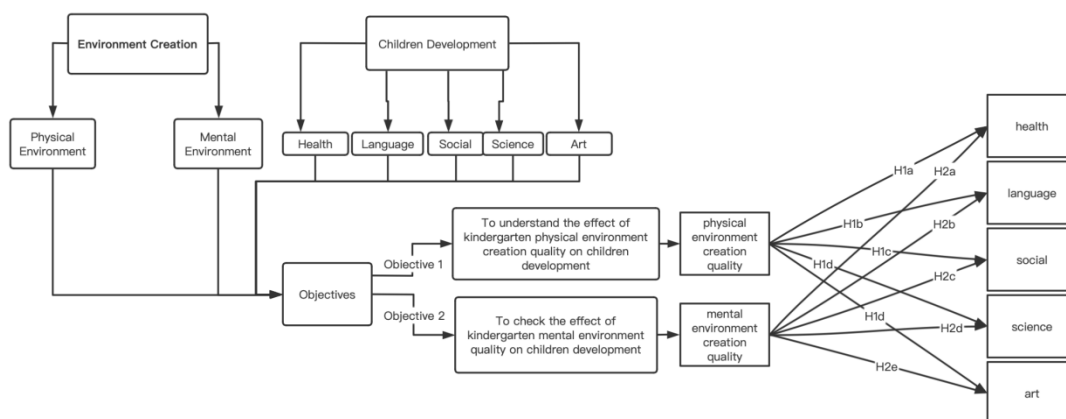


Figure 2

**Independent variable :** Firstly, this study assesses the effect of kindergarten environment creation on children's development, which include two IV (physical environment and mental environment) through a questionnaire from the kindergarten teachers' perspective, and then the data is analyzed to confirm the research hypothesis.

**Dependent variable:** This study investigates the ability of teachers from different educational background in kindergarten to create environment in which children's development is explored in the areas of health, language, social, science and art, which is DV. The results of the questionnaire data on the teachers' ability to create and the quality of the

environment were analyzed to assess the extent to which the creation of the environment influences children's development.

### **Related Study**

#### **Health development**

Prior research has shown that healthy development of young children refers first and foremost to physical development, of which indicators include height, weight and chest circumference, as well as physical measurements (Pasichnyk, 2021). To achieve healthy physical development, physical activity should be engaged in early childhood, as otherwise it can lead to health problems such as obesity (Starc, 2012), making physical development of young children during kindergarten one of the most important tasks. Participation in physical activity is the most direct way to promote physical development in young children, which not only helps to keep them away from health problems, but also promotes their psychological (Backmand, 2006) and cognitive development (Carlson, 2008).

Secondly, the building of young children's emotional competence is an important criterion for healthy development. As children aged 3-6 years move from home to group settings, they experience a wider range of emotions, are exposed to different expressions of emotions from their peers, and learn and adopt emotion regulation strategies in peer relationships. The aim of emotion education is to enhance the development of children's emotional competence so that they can maintain stable, happy emotions and have some ability to manage their own emotions (Qian, 2022). Equally important to this is the development of young children's sociality. The ability of young children to adapt socially is not only an important factor in an individual's mental health and personality development, it is also an important sign of an individual's socialisation. Nie Yanguang also points out that social adaptability is an ability that young individuals must learn in order to adapt to the external social environment and to their own internal development (Yanguang, 2006).

In addition, balance, strength and stamina are also important criteria to consider. Yu Youlin's study on the static upright balance function of children aged 3-6 years found that the centre of gravity support of children aged 3-6 years was mainly distributed on the heel and left foot (Youlin, 2009). Balance refers to a person's ability to maintain a certain posture in static or dynamic conditions, particularly the ability to control the body's centre of gravity on a smaller support surface (Karlsson, 2000). Zhang Ying defines early childhood physical fitness as the basic motor abilities that people possess through innate genetics and acquired exercise. Physical fitness is the most critical factor in determining young children's physical abilities, and includes elements such as speed, agility, strength, balance, endurance and flexibility (Zhang, 2011). And to promote this aspect of young children's abilities, physical activity is the most effective way, which Timmons more appropriately describes as 'play', and as such, play can be considered a form of physical activity with varying intensities, while the obvious function of motor play is for physical development: strength, endurance (Timmons, 2007).

Yet hygiene habits, self-care and safety awareness will also become standards of healthy development for young children. A habit is a way of behaving, a tendency to complete automatic actions in a relatively fixed way, the formation and consolidation of conditioned reflexes, and hygiene habits are 'taken-for-granted' hygienic behaviours that, through repeated practice and over time, naturally form hygienic habits (Tao, 2022). (The practice of hygienic behaviour is repeated and accumulated over time). The Code of Practice for Kindergarten Health Care issued by the Chinese Ministry of Health in 2012 emphasises personal hygiene in the development of good hygiene habits: children should be trained to

wash their hair, bathe and change their clothes regularly, wash their faces and brush their teeth in the morning and evening, rinse their mouths after meals, and wash their hands with soap and running water before and after meals. Self-care is the ability of young children to perform a range of activities on their own, such as eating, dressing, washing their faces and going to the toilet, without reliance on adults and without adult help. The ability to perform these activities is the most basic life skill that our children should have and is the basis for their learning to survive. The development of this ability promotes the physical and mental growth of young children, as well as their future development (Zhang, 2022). According to Yang Yang Li, self-care ability refers to the ability of young children to rely entirely on themselves and solve difficulties and things within their own cognitive scope on the basis of their current cognitive level (Li, 2017). The main content of safety education for kindergarten children includes three aspects: firstly, guiding children to develop a strong awareness of accident safety; secondly, educating children to learn the necessary safety knowledge about accident prevention and safety care; and thirdly, educating children on strategies to prevent accidental safety accidents (Xu, 2014).

All the aspects of early childhood development mentioned above are part of healthy development.

Prior research has shown that healthy development of young children encompasses several aspects, including physical development, emotional competence, social adaptability, balance, strength, stamina, hygiene habits, self-care, and safety awareness. Engaging in physical activity during early childhood is crucial to promote physical development and prevent health problems such as obesity. Physical activity also promotes psychological and cognitive development. Emotion education is important to enhance the development of children's emotional competence, and social adaptability is necessary for mental health, personality development, and socialization. Balance, strength, and stamina are also important criteria to consider, and physical activity is the most effective way to promote these abilities. Hygiene habits, self-care, and safety awareness are also essential standards of healthy development for young children. Developing good hygiene habits, self-care abilities, and safety knowledge and strategies are crucial for young children's physical and mental growth and future development.

### **Language Development**

Learning language is one of the key developmental tasks that children face in the kindergarten years. Human infants have neural systems adapted to evolve to enable them to notice and perceive the sound and temporal features of spoken language (Conti-Ramsden, 2012). McCawley (1968, p. 51) writes: "Each stage of language acquisition involves the modification of the grammar which the child has acquired to cover facts which the child has presented and which his grammar has not yet covered (Miller, 2012).

Extensive research has established that the development of children's 'listening' skills is a key component of children's ability to hear and understand the information they receive and to remember and translate language into meaning in their minds. The development of listening skills is an important element of language education for kindergarten children, and the Guidelines for Kindergarten Education call for the development of good listening behaviours in the language domain so that children can "listen to each other and understand everyday words" (Yi, 2017). Xu Feiting even emphasises the need for young children's language development to be based on phonics. Only when they have mastered a large number of phonics can they gradually develop into vocabulary, and then transition from



vocabulary to phrases, short sentences and eventually to long sentences. The development of young children's expressive language skills is based on interaction with their environment. Young children perceive visually the people, things and objects they come into contact with, as well as the natural world, and acquire an understanding of everything around them through sight, hearing, smell, taste and touch, which eventually develops into their full language (Feiting, 2022). The development of listening skills is an important element of language education for kindergarten children, and it is essential for them to develop good listening behaviors in the language domain. The development of young children's expressive language skills is based on interaction with their environment. Young children perceive visually the people, things, and objects they come into contact with, as well as the natural world, and acquire an understanding of everything around them through sight, hearing, smell, taste, and touch, which eventually develops into their full language.

Early reading is a cognitive process in which kindergartens and families provide infants with materials related to visual stimuli, such as books, pictures, videos, CDs, television, multimedia, slides, symbols, and signs. This cognitive process enriches young children's knowledge and promotes a corresponding improvement in their thinking, imagination, and oral expression skills, as well as their social cognitive and emotional development. Early literacy refers to the acquisition of movement, competence, and awareness of written language based on verbal expressive experiences. It is a communicative activity in which young children express experiences and describe their external environment through simple words, numbers, symbols, or pictures, and it is based on oral expression skills, which are at the core of young children's language skills.

In conclusion, learning language is an essential developmental task that children face during their kindergarten years. Teachers should understand the developmental level of each child and adopt appropriate methods to promote their development. The development of listening and reading skills is crucial for young children's language education. Young children's expressive language skills are based on interaction with their environment, and early reading and written expression are necessary aspects of young children's development. Early literacy refers to the acquisition of movement, competence, and awareness of written language, which is based on verbal expressive experiences. These findings have important implications for educators, parents, and policymakers in promoting language development in young children.

### **Social Development**

The social aspect of early childhood development referred to in some studies is the development of young children's communicative skills. Some studies have written that

Communicative competence refers to the fact that young children must be able to initiate and respond to social stimuli, take verbal turns, maintain social contact, and negotiate conflict (Beckman & Leiber, 1994). Craig-Unkefer describes communicative competence as receptive and expressive vocabulary, the use of sentences to request and comment, and socially pragmatic skills such as maintaining conversation topics and repairing communication break strategies (Craig, 2002).

In addition to this, young children's enjoyment of and adaptation to group life is part of the measure of their development of social aspects. For example, Tian Yu talks about children liking and adapting to group life in kindergarten, where they have more peers, which reduces the sense of unfamiliarity in kindergarten and facilitates the development of children's social

skills, which requires the cooperation of the classroom, parents and kindergarten managers to create a group life that children like and can adapt to more quickly (Tian Yu, 2013).

In addition to communicative skills, children's enjoyment of and adaptation to group life are important indicators of their social development. Children who adapt well to group life in kindergarten, where they have more peers, are better able to develop social skills. The cooperation of the classroom, parents, and kindergarten managers is crucial in creating a group life that children like and can adapt to more quickly.

Rules education in kindergarten is also a critical aspect of social development. It helps children form good behavioral habits, acquire social knowledge and interpersonal skills, and develop a basic sense of security, order, identity, belonging, and positive emotions. These skills and attitudes are essential for children to integrate into different groups and adapt to unfamiliar situations.

Overall, the social aspect of early childhood development encompasses various components, including communicative competence, interpersonal communication skills, adaptation to group life, and rules education. Developing these skills and attitudes early in life is critical in ensuring that children grow into well-adjusted individuals with the necessary social skills to navigate various social contexts. The cooperation of parents, educators, and the wider community is crucial in supporting children's social development.

### **Science Development**

For the development of the scientific aspects of early childhood, this simply refers to the period when scientific awareness is formed in early childhood. For young children, science is about continually figuring out, discovering and understanding. Science is thinking and doing, and bringing the two together. The ingredients, materials and events of science are all around, in the home, in the yard, in early childhood and primary centres and schools (Holt, 1977).

For early childhood exploratory skills, children will develop many scientific concepts through childhood exploration, but they will also develop scientific skills. Hand-eye coordination, fine motor skills, observation skills, classification skills and prediction skills will play a role in later science development. Children will learn about seasons, flowers, animals, trees, weather and much more. Throughout the early years of life, scientific concepts, knowledge and skills are being developed through exploration of children's world. Children's physical, emotional, cognitive, social and language development all influence the quality of their early exploration (Johnston, 2005). Chinese researcher Liu Hongmei refers to a similar concept: children have an innate interest and desire to explore the world around them, and they are constantly using their bodies and senses to explore the mysteries of the world. The natural world, the surrounding environment and the things and phenomena in children's daily lives all stimulate children's curiosity and motivation to explore. Young children are always manipulating, exploring and learning science. Therefore, teachers should pay special attention to developing and nurturing children's inquisitive skills in kindergarten science education activities, and should guide children to ask questions from nature and the wider society and to solve them through personal inquiry. The teaching objectives of science lessons should focus on developing young children's interest in scientific inquiry, mobilising their enthusiasm for deeper inquiry, valuing their personal practice and novel experiences, and developing their initial scientific inquiry and problem-solving skills (Liu Hongmei, 2022). In addition to young children's initial awareness of scientific inquiry, Yang Jiafu also states that the development of young children's scientific skills is also reflected in 'mathematical

awareness'. We live in a world of digital information, science and technology, where objects in the environment are represented in certain quantities, have certain shapes, vary in size and exist in certain spatial forms, so mathematics will have an important impact on the future development of young children. 5-6 years old is also an important period of transition from concrete image thinking to abstract thinking. Learning and using the logic and language of mathematics to understand has a positive impact on the agility, flexibility, insight and originality of children's thinking. Learning mathematics also promotes the development of children's spatial imagination and mathematical problem-solving skills (Yang, 2014).

In conclusion, the development of young children's scientific aspects involves the formation of their scientific awareness, the development of scientific concepts and skills, and mathematical awareness. This development takes place through exploration of the world around them and is influenced by their physical, emotional, cognitive, social and language development. Teachers play a crucial role in nurturing children's inquisitive skills, guiding them to ask questions and solve problems through personal inquiry, and developing their interest in scientific inquiry and problem-solving skills. The development of young children's scientific aspects is essential for their future success in the digital age.

### **Art Development**

Previous research has provided important information on children art development.

Early childhood art appreciation is an aesthetic activity in which young children perceive, imagine and understand music and art works that meet their age cognitive level, with the aim of cultivating their interest in art works and gaining a pleasurable appreciation experience; developing their perception of art works and their ability to perceive beauty (Liu Yanxia, 2021). Yani Chen believes that art exists in all aspects of young children's lives and that developing their sensibility, expression and creativity in life, nature, literature and the art around them is particularly important in early childhood (Chen, 2014). In the description of the Guidelines for Learning and Development of Children Aged 3-6 (hereinafter referred to as the Guidelines), it is also clearly stated that "art education is aimed at the complete person, with the goal of cultivating young children's artistic cultivation as the domain goal, and the complete, comprehensive and harmonious development of young children as the ultimate goal, i.e. art education is a true education that shapes the complete person" (Li and Fen, 2015). Art education in kindergartens is no longer about cultivating specialized artists, but about improving the comprehensive quality of young children through art education; therefore, art education in kindergartens is not just about learning to draw, sing and dance, but about improving young children's comprehensive abilities to observe, feel, express and create through learning art, and promoting the sound development of their personalities (Hongjiao, 2018).

The development of children's artistic skills and appreciation is an important aspect of their overall growth and development. Previous research has shed light on the significance of art education for young children, highlighting its role in cultivating their interest, perception, and understanding of art, and promoting their ability to perceive beauty. Early childhood art appreciation is an aesthetic activity that involves young children in perceiving, imagining, and comprehending music and art works that meet their cognitive level. This experience is aimed at developing their perception of art works, their ability to appreciate them, and their interest in the arts.

Furthermore, art education is not just about cultivating specialized artists; rather, it is an approach to improving the overall quality of young children's lives. The Guidelines for Learning and *the Development of Children Aged 3-6* emphasize that art education aims at shaping the complete person and fostering comprehensive, harmonious, and complete development. Art education in kindergartens, therefore, is not just about learning to draw, sing, or dance, but also about improving young children's observational, expressive, and creative abilities through learning about the arts. This approach promotes the sound development of children's personalities and helps them become well-rounded individuals.

Art education in early childhood is a crucial component of children's overall development, as it helps them develop their sensibility, expression, and creativity. According to Yani Chen, art exists in all aspects of young children's lives, and developing their artistic sensibilities in nature, literature, and art around them is essential. This approach encourages young children to develop their artistic expression and creativity in everyday life, providing them with an opportunity to explore different forms of art and develop their personal interests.

In addition to developing children's artistic sensibilities and appreciation, art education also promotes the development of their cognitive and social skills. As children engage with different art forms, they develop their imagination, creativity, and critical thinking skills. They learn to communicate their thoughts and feelings through different mediums, improving their ability to express themselves effectively. Through collaborative activities and projects, children also develop their social skills, such as communication, teamwork, and problem-solving.

In conclusion, previous research has highlighted the significance of art education in early childhood for the development of children's artistic skills, appreciation, and overall well-being. Art education in kindergartens aims to cultivate the complete person and promote comprehensive, harmonious, and complete development. By developing children's artistic sensibilities, expression, and creativity, art education in early childhood provides young children with an opportunity to explore different forms of art and develop their personal interests. Through art education, children also develop their cognitive and social skills, improving their ability to express themselves effectively, collaborate with others, and solve problems.

## **Methodology**

### **Sample Characteristics**

368 in-service early childhood teachers from Lanzhou, China, participated in the study. They taught classes to preschool children aged 3 to 6 years. This survey used the Kindergarten Environment Quality and Early Childhood Development Rating Scale. The majority of teachers who participated in the scale assessment were between the ages of twenty-five and forty-two. The demographic characteristics of the participants are shown in Table 1.

Table 1

*Demographic variables of the respondents*

Demographic	Characteristics	Frequency	Percentage (%)
Gender	Male	53	14.4
	Female	315	85.5
Age	20 - 30	73	19.5
	30 - 40	242	65.2
	over 40	53	14.3
Teaching experience	0-2 years	73	19.8
	3-5 years	117	31.7
	6-10 years	91	24.7
	over 10 years	87	23.6
Educational Background	Postgraduate	37	10
	Undergraduate	147	39.9
	College	184	50
	Others	0	0
Major	Preschool Education	307	83.4
	Other education stage	61	16.5
	Others	0	0

**Instrument and Data Collection**

This study uses a questionnaire rating scale, which includes three sections. Demographics, an assessment form on environmental creation and early childhood development, and an assessment form on the quality of environmental creation in kindergartens. Three of the sections relate to educators' assessment of the quality of environmental creation in their kindergartens, kindergarten children's health development, language development, social development, scientific development and artistic development. The scale contains 51 items presented on a five-point Likert scale ranging from 'Strongly disagree', 'Disagree', "Not sure", "Agree", to "Strongly agree".

The questionnaire used was adapted and modified from other researcher paper. The specific 51 statements about environment creation and early children development Assessment Form (Health, Language, Social, Science, Art) were adapted from two researchers, namely (Yu Qin, 2020) and (Huang, X. C, 2022), and the China Kindergarten Education Environment Quality Rating Scale was adapted from three researchers named(Liu Yan, 2014), (Xu Guanghui, 2011; Chen Hong, 2011).

**Procedure****Validity of the Questionnaire**

In this study, six experts were invited to assess the validity of the questionnaire. Two of them were kindergarten administrators, three were university lecturers in preschool education and the remaining one was an early childhood teacher with over ten years' experience. Together they examined and evaluated the construct validity and content validity of the study (the original English version and the translated Chinese version). The results indicated that the structure, content and overall design of the questionnaire were relatively complete and had a high degree of validity and scientific validity. After receiving feedback from these six experts, the researchers removed seven questions from the original 58 questions in Part I of the ECD

assessment form and also added some items according to the experts' suggestions. The revised questionnaire was piloted with pre-school educators and its reliability values were found to be good.

### Pilot Test

In this study, a pilot test was administered to 35 respondents, selected from the actual sample of full-time teachers from the same area who were currently working in various kindergartens in Lanzhou. The aim was to explore the level of understanding of the items in the questionnaire. The software used was SPSS software to test the reliability and validity of the results. The results provided a clear picture of the respondents and yielded a more reliable result. If the results were less reliable, the questionnaire had to be redrafted and more questions suitable for the target respondents (kindergarten teachers in Lanzhou) needed to be found, after which the test was repeated until reliable results were obtained.

The reason why 35 was chosen as the sample for the pilot study of kindergarten teachers is based on Duval (1993) who states that if the bootstrap approximations of parameter estimates and confidence intervals are of relatively high quality, then the range required for  $n$  is 30-50, which requires the sampling procedure to be truly randomly generated (Johanson & Gordon, 2009).

### Reliability of the Questionnaire

The reliability of the questionnaire was 0.984. questionnaires with a reliability higher than 0.7 are acceptable. the corrected total item correlations for all 51 items were higher than 0.6. in other words, the 51 items had significant correlations and should be retained. The Cronbach's alpha between all dimensions is greater than 0.85, indicating that the scale has a high degree of reliability.

### *Internal Consistency of the Instruments used for the Research*

Table 2

<b>Instrument</b>	<b>Number of items</b>	<b>Cronbach's Alpha</b>
Environment	25	0.961
Creation Quality	6	0.880
Health	5	0.886
Language	5	0.857
Social	5	0.878
Science	5	0.916
Art	5	0.984
Overall	51	0.984

### Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS 27.0) and the findings were interpreted. This study focused on the effect of quality of the kindergarten

environment creation, which includes two independent variables (physical environment and mental environment), on the children development, which includes the five dependent variables (children's health, language, social, science and artistic development). Pearson's Correlation Analysis and Multiple Regression Analysis were applied to investigate the effect of the independent variable (quality of the kindergarten environment) on the dependent variable (children's health, language, social, scientific and artistic development).

**Finding**

**Correlations Coefficients Analysis**

The correlation matrix between independent variables and dependent variable are exhibited in Table 3 below.

**Table 3**  
*Correlations Coefficients among variables*

Variables		Children Health Development	Children Language Development	Children Social Development	Children Science Development	Children Art Development
Environment Creation Quality	Pearson Correlation	1				
	Significance (two-tailed)					
Children Health Development	Pearson Correlation	.960**	1			
	Significance (two-tailed)	.000				
Language Development	Pearson Correlation	.956**	.925**	1		
	Significance (two-tailed)	.000	.000			
Social Development	Pearson Correlation	.953**	.929**	.922**	1	
	Significance (two-tailed)	.000	.000	.000		
Science Development	Pearson Correlation	.954**	.927**	.927**	.925**	1
	Significance (two-tailed)	.000	.000	.000	.000	
Art Development	Pearson Correlation	.954**	.928**	.930**	.923**	.929**
	Significance (two-tailed)	.000	.000	.000	.000	.000

\*\*Correlation is significant at the 0.01 level (2-tailed)

Table 3 indicate that the significance of the correlation coefficient between "health, language, social, science and art development of young children" and "quality of environment creation" corresponds to  $P=0.00 < 0.01$ , which means that there is a significant correlation between "development of young children" and "quality of environment creation". This means that there is a significant correlation between "early childhood development" and "quality of environment creation".

Furthermore, the correlation coefficients between "early childhood health, language, social, science and art development" and "quality of environment creation" were  $0.960 > 0$ ,  $0.956 > 0$ ,  $0.953 > 0$ ,  $0.954 > 0$  and  $0.954 > 0$  respectively. This means that there is a significant positive correlation between 'child development' and 'environmental quality', meaning that the higher the 'environmental quality', the better the 'child development'. The higher the quality of the environment, the better the development of the child.

***H<sub>1a</sub>*: The kindergarten physical environment creation quality has a significant effect on children's health development.**

Table 4

		Physical Environment Creation Quality	Children Health Development
Physical Environment Creation Quality	Coefficient correlation	1	
Children Health Development	Coefficient correlation	.985**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children health development" and "quality of physical environment" corresponds to a significant  $P=0.00 < 0.01$ , implying that there is a significant correlation between "healthy development of young children" and "quality of physical environment". The correlation between "healthy child development" and "quality of physical environment" is significant.

Thus, the correlation coefficients between "healthy development of young children" and "quality of physical environment" were  $0.958 > 0$ , implying that there is a significant correlation between "healthy development of young children" and "quality of physical environment". "This means that the higher the quality of the physical environment, the better the health development of the children.

***H<sub>1b</sub>*: The kindergarten physical environment creation quality has a significant effect on children's language development.**

Table 5

		Physical Environment Creation Quality	Children Language Development
Physical Environment Creation Quality	Coefficient correlation	1	
Children Language Development	Coefficient correlation	.946**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children language development" and "quality of physical environment" corresponds to a significant  $P=0.00 < 0.01$ , implying that there is a significant correlation between "children language development" and "quality of physical environment". The correlation between " children language development" and "quality of physical environment" is significant.

Thus, the correlation coefficients between "children language development" and "quality of physical environment" were  $0.946 > 0$ , implying that there is a significant



correlation between "children language development" and "quality of physical environment". "This means that the higher the quality of the physical environment, the better children language development.

**$H_{1c}$ : The kindergarten physical environment creation quality has a significant effect on children's social development.**

Table 6

		Physical Environment Creation Quality	Children Social Development
Physical Environment Creation Quality	Coefficient correlation	1	
Children Social Development	Coefficient correlation	.946**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children social development" and "quality of physical environment" corresponds to a significant  $P=0.00 < 0.01$ , implying that there is a significant correlation between "children social development" and "quality of physical environment". The correlation between " children social development" and "quality of physical environment" is significant.

Thus, the correlation coefficients between "children social development" and "quality of physical environment" were  $0.946 > 0$ , implying that there is a significant correlation between "children social development" and "quality of physical environment". "This means that the higher the quality of the physical environment, the better children social development.

**$H_{1d}$ : The kindergarten physical environment creation quality has a significant effect on children's science development.**

Table 7

		Physical Environment Creation Quality	Children Science Development
Physical Environment Creation Quality	Coefficient correlation	1	
Children Science Development	Coefficient correlation	.947**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children science development" and "quality of physical environment" corresponds to a significant  $P=0.00 < 0.01$ , implying that there is a significant correlation between "children science development" and "quality of

physical environment". The correlation between " children science development" and "quality of physical environment" is significant.

Thus, the correlation coefficients between "children science development" and "quality of physical environment" were  $0.947 > 0$ , implying that there is a significant correlation between "children science development" and "quality of physical environment". "This means that the higher the quality of the physical environment, the better children science development.

**$H_{1e}$ : The kindergarten physical environment creation quality has a significant effect on children's art development.**

Table 8

		Physical Environment Creation Quality	Children Art Development
Physical Environment Creation Quality	Coefficient correlation	1	
Children Art Development	Coefficient correlation	.950**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children art development" and "quality of physical environment" corresponds to a significant  $P=0.00 < 0.01$ , implying that there is a significant correlation between "children art development" and "quality of physical environment". The correlation between " children art development" and "quality of physical environment" is significant.

Thus, the correlation coefficients between "children art development" and "quality of physical environment" were  $0.950 > 0$ , implying that there is a significant correlation between "children art development" and "quality of physical environment". "This means that the higher the quality of the physical environment, the better children art development.

**$H_{2a}$ : The kindergarten mental environment creation quality has a significant effect on children's health development.**

Table 9

		Mental Environment Creation Quality	Children Health Development
Mental Environment Creation Quality	Coefficient correlation	1	
Children Health Development	Coefficient correlation	.946**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children health development" and "quality of mental environment" corresponds to a significant  $P=0.00<0.01$ , implying that there is a significant correlation between "children health development" and "quality of mental environment". The correlation between " children health development" and "quality of physical environment" is significant.

Thus, the correlation coefficients between "children health development" and "quality of mental environment" were  $0.950>0$ , implying that there is a significant correlation between "children health development" and "quality of mental environment". "This means that the higher the quality of the mental environment, the better children health development.

**$H_{1b}$ : The kindergarten mental environment creation quality has a significant effect on children's language development.**

Table 10

		Mental Environment Creation Quality	Children Language Development
Mental Environment Creation Quality	Coefficient correlation	1	
Children Language Development	Coefficient correlation	.951**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children language development" and "quality of mental environment" corresponds to a significant  $P=0.00<0.01$ , implying that there is a significant correlation between "children language development" and "quality of mental environment". The correlation between "children language development" and "quality of mental environment" is significant.

Thus, the correlation coefficients between "children language development" and "quality of mental environment" were  $0.951>0$ , implying that there is a significant correlation between "children health development" and "quality of mental environment". "This means that the higher the quality of the mental environment, the better children language development.

**$H_{1c}$ : The kindergarten mental environment creation quality has a significant effect on children's social development.**

Table 11

		Mental Environment Creation Quality	Children Social Development
Mental Environment Creation Quality	Coefficient correlation	1	
Children Social Development	Coefficient correlation	.945**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children social development" and "quality of mental environment" corresponds to a significant  $P=0.00<0.01$ , implying that there is a significant correlation between "children social development" and "quality of mental environment". The correlation between "children social development" and "quality of mental environment" is significant.

Thus, the correlation coefficients between "children social development" and "quality of mental environment" were  $0.951>0$ , implying that there is a significant correlation between "children social development" and "quality of mental environment". "This means that the higher the quality of the mental environment, the better children social development.

**$H_{1d}$ : The kindergarten mental environment creation quality has a significant effect on children's science development.**

Table 12

		Mental Environment Creation Quality	Children Science Development
Mental Environment Creation Quality	Coefficient correlation	1	
Children Science Development	Coefficient correlation	.947**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children science development" and "quality of mental environment" corresponds to a significant  $P=0.00<0.01$ , implying that there is a significant correlation between "children science development" and "quality of mental environment". The correlation between "children science development" and "quality of mental environment" is significant.

Thus, the correlation coefficients between "children science development" and "quality of mental environment" were  $0.951>0$ , implying that there is a significant correlation between "children science development" and "quality of mental environment". "This means that the higher the quality of the mental environment, the better children science development.

**H<sub>1e</sub>: The kindergarten mental environment creation quality has a significant effect on children's art development.**

Table 13

		Mental Environment Creation Quality	Children Art Development
Mental Environment Creation Quality	Coefficient correlation	1	
Children Art Development	Coefficient correlation	.944**	1
	Significance (two-tailed)	.000	

\*\* . Correlation significant at 0.01 level (two-tailed).

Based on the table the correlation coefficient between "children art development" and "quality of mental environment" corresponds to a significant  $P=0.00 < 0.01$ , implying that there is a significant correlation between "children art development" and "quality of mental environment". The correlation between "children art development" and "quality of mental environment" is significant.

Thus, the correlation coefficients between "children art development" and "quality of mental environment" were  $0.951 > 0$ , implying that there is a significant correlation between "children art development" and "quality of mental environment". "This means that the higher the quality of the mental environment, the better children art development.

#### Multiple Regression Analysis

Multiple regression analysis is used to understand the relationship between the quality of the kindergarten environment created and the development of young children. It also shows the relative contribution of each independent variable to the dependent variable. In this study, we predict the impact of the quality of kindergarten environment creation on young children's development (health, language, social, science and art) based on two independent variables (physical environment and spiritual environment).

Table 14

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics Change	Sig. F
1	.985a	.970	.970	.18718		1.953

a.

Predictor variables: (constant), quality of the mental environment, quality of the physical environment

b. Dependent variable: Children development

As refer to Table Model Summary predicting children development showed an R of 0.985 and an R-squared of 0.970. with an adjusted R-squared of 0.970, implying that 97% of the variance in children development could be predicted by the independent variables physical and mental environment.

Table 15

*Beta Coefficient for Children Development*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(constant)	-.003	.036		-.077	.939
	Physical Environment Creation Quality	.549	.037	.544	14.754	.000
	Mental Environment Creation Quality	.450	.037	.448	12.148	.000

a. Dependent Variable: Children Development

The following assumptions were made before the analysis of this table:

Dependent factor: Children Development

Y = CD (children development)

Independent factor: Kindergarten Environment Creation Quality

X1 = Physical Environment

X2 = Mental development

C = Constant

The 'coefficients' table gives the effect of each variable on 'early childhood development'. Physical environment" can significantly and positively affect "ECD" with a regression coefficient of  $0.549 > 0$ ,  $p = 0.000 < 0.05$ , meaning that an increase of 1 in "physical environment" directly leads to an increase of 0.549 in "ECD". 1 directly leads to an increase of 0.549 in "ECD". "The regression coefficient of  $0.540 > 0$ ,  $p = 0.000 < 0.05$ , implies that a 1 increase in "spiritual environment" directly leads to a 0.549 increase in "early childhood development". 1 directly leads to a 0.540 increase in ECD.

**Discussion and Conclusion**

The preschool period is crucial for the development of one's personality, language, social, emotional and cognitive abilities (Katz, 1999). The preschool period is crucial for the development of one's personality, emotional, social and cognitive abilities (Katz, 1999), so the kindergarten years are extremely important for young children's development, and the creation of the environment has been valued by many educators as an important factor that can influence young children's development. when children engage in activities provided in their learning environment, which includes both indoor and outdoor spaces. The teachers in charge of the environment make sure that it is structured in a way that fosters meaningful learning experiences for the children (Early et al., 2010; Howes et al., 2008). Therefore, the early childhood teacher, as the main factor influencing the quality of the environment created, is required to create a developmentally appropriate physical and spiritual environment as the kindergarten teacher conducts the teaching and learning process. For healthy development, teachers should set up developmentally appropriate indoor and outdoor activities, as well as teaching students good habits in the classroom, such as hygiene and safety awareness, which

can promote healthy development. The results of the data also show that there is a significant positive correlation between the quality of the environment created and the development of young children's health. For language development in young children, there are two main areas of development, namely listening and expression; reading and writing skills, so kindergarten teachers are required to focus on these four areas of development when creating the environment in order to truly promote language development in young children. The results show that there is a positive correlation between the quality of the educational environment and the language development of preschool children. To promote the social aspects of children's development, including social skills, adaptability and a love of group life, teachers need to make an effort to create an environment in which they can choose activities that children enjoy in the physical environment, and in which they can consciously interact with children in the mental environment and actively lead them to interact with each other. The primary location for outdoor activities for kindergarten-aged children is the outdoor landscape. This area promotes healthy development, expands the children's interests and understanding of the world, enhances their intelligence, and provides them with opportunities to connect with and learn about nature. It is clear that the creation of outdoor activities is important for the development of young children's scientific inquiry skills. Finally, in the early years, we only need children to be able to create and share simple works of art so that they can experience the beauty of art. Therefore, when creating environments, teachers should choose colours and shapes that are appropriate for children's development and create themes that are truly appropriate for the development of children's artistic abilities. With regard to the aspects of early childhood development mentioned above, the results of the data show that the quality of the environment created shows a significant positive correlation with early childhood development.

At present, many nurseries have limited access to the environment, or the children do not actively participate in the impact of the environment when it is being created. This is due to the fact that teachers and managers do not know enough about the environment and do not have a deep enough understanding of the concept and value of the environment. In this case, more training on the topic of environmental creation is needed in order to raise the importance of environmental creation among educators.

Finally, a suggestion for future research could be that some qualitative research could be added in, such as interviews and observations, which would also allow for the collection of deeper information. Data could also be collected from different perspectives, for example; early childhood management. This can also provide a multifaceted understanding of the current situation of environmental creation and the problems encountered in creating the environment from different perspectives, which can lead to more comprehensive suggestions and opinions on the creation of the kindergarten environment, in order to make it easier for teachers and managers to make better and more rational decisions for the quality of environmental creation.

## References

- Backmand, H., Kaprio, J., Kujala, U. M., Sarna, S., & Fogelholm, M. (2006). Physical and psychological functioning of daily living in relation to physical activity. A longitudinal study among former elite male athletes and controls. *Aging Clinical and Experimental Research*, 18(1), 40–49. <https://doi.org/10.1007/bf03324639>
- BECKMAN, P. J., & LIEBER, J. (1994). The Social Strategy Rating Scale. *Journal of Early Intervention*, 18(1), 1–11. <https://doi.org/10.1177/105381519401800101>
- Carlson, S. A., Fulton, J. E., Lee, S. M., Maynard, L. M., Brown, D. R., Kohl, H. W., & Dietz, W. H. (2008). Physical Education and Academic Achievement in Elementary School: Data From the Early Childhood Longitudinal Study. *American Journal of Public Health*, 98(4), 721–727. <https://doi.org/10.2105/ajph.2007.117176>
- Conti-Ramsden, G., & Durkin, K. (2012). Language Development and Assessment in the Preschool Period. *Neuropsychology Review*, 22(4), 384–401. <https://doi.org/10.1007/s11065-012-9208-z>
- Craig-Unkefer, L. A., & Kaiser, A. P. (2002). Improving the Social Communication Skills of At-Risk Preschool Children in a Play Context. *Topics in Early Childhood Special Education*, 22(1), 3–13. <https://doi.org/10.1177/0271121402200101>
- Dong, J. (2015). A study on children's participation in the creation of kindergarten learning environment. *Kns.cnki.net*. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201601&filename=1015336159.nh>
- Early, D. M., Iruka, I. U., Ritchie, S., Barbarin, O. A., Winn, D.-M. C., Crawford, G. M., Frome, P. M., Clifford, R. M., Burchinal, M., Howes, C., Bryant, D. M., & Pianta, R. C. (2010). How do pre-kindergarteners spend their time? Gender, ethnicity, and income as predictors of experiences in pre-kindergarten classrooms. *Early Childhood Research Quarterly*, 25(2), 177–193. <https://doi.org/10.1016/j.ecresq.2009.10.003>
- Gao, B. (2008). "Chasing Butterflies" A child's willingness to learn to turn tables alone. *Journal of Shandong Education College*.
- Holt, B.-G. (1977). *Science with Young Children*. In ERIC. National Association for the Education of Young Children, 1834 Connecticut Avenue, N. <https://eric.ed.gov/?id=ED139522>
- Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Ready to learn? Children's pre-academic achievement in pre-Kindergarten programs. *Early Childhood Research Quarterly*, 23(1), 27–50. <https://doi.org/10.1016/j.ecresq.2007.05.002>
- Johnston, J. (2005). *Early explorations in science*. Open university press.
- Karlsson, A., & Frykberg, G. (2000). Correlations between force plate measures for assessment of balance. *Clinical Biomechanics*, 15(5), 365–369. [https://doi.org/10.1016/s0268-0033\(99\)00096-0](https://doi.org/10.1016/s0268-0033(99)00096-0)
- Katz. (1999). *Another look at what young children should be learning Campaign*, IL: ERIC Clearinghouse on Elementary and Early Childhood Education. University of Illinois.
- Li, Z. (2013). *Creating a Kindergarten Environment*. Jiangsu University Press.
- Liu, H. (2022). A study on the current situation of scientific investigation skills of older children. *Kns.cnki.net*. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022604201.nh>
- Liu, Y. (2021). Research on teacher guidance in the appreciation of young children's artworks. *Kns.cnki.net*.



- <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202201&filename=1021694377.nh>
- Liu, F. (2017). Creating a Kindergarten Environment (4th Edition). Item.kongfz.com. <http://item.kongfz.com/book/38658971.html>
- Miller, M. (2012). Logic of language development in early childhood. (R. T. King, Trans.). Springer.
- Nie, Y., Zhen, S., Wan, H., & Ding, L. (2006). Structural and theoretical models of socially adaptive behaviour. Journal of South China Normal University (Social Science Edition). <https://wenku.baidu.com/view/778f3943551252d380eb6294dd88d0d233d43cc1>.
- Pasichnyk, V., Khimenes, K., Pityn, M., Bas, O., Hlukhov, I., Hnatchuk, Y., & Drobot, K. (2021). Physical condition of preschool children with disabilities in psychological and physical development. Journal of Physical Education and Sport ® (JPES), 21(1), 352–359. <https://doi.org/10.7752/jpes.2021.01033>
- Su, Y. (2012). A study on the quality of the physical environment of kindergartens in urban areas in western Inner Mongolia - taking Erdos and Bayannur cities as examples. Baidu Scholar. [https://xueshu.baidu.com/usercenter/paper/show?paperid=fc278fc525f7c11298479d9002bfbebc&site=xueshu\\_se](https://xueshu.baidu.com/usercenter/paper/show?paperid=fc278fc525f7c11298479d9002bfbebc&site=xueshu_se)
- Sun, Y. (2020). A case study on the creation of a low cost and quality kindergarten outdoor environment. Kns.cnki.net. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202101&filename=1020970965.nh>
- Starc, G., & Strel, J. (2012). Influence of the quality implementation of a physical education curriculum on the physical development and physical fitness of children. BMC Public Health, 12(1). <https://doi.org/10.1186/1471-2458-12-61>
- Song, H. (2018). A study on the current situation of art teaching activities in kindergartens under the concept of ecological art education. Kns.cnki.net. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201901&filename=1018233142.nh>
- Timmons, B. W., Naylor, P.-J., & Pfeiffer, K. A. (2007). Physical activity for preschool children — how much and how? This article is part of a supplement entitled Advancing physical activity measurement and guidelines in Canada: a scientific review and evidence-based foundation for the future of Canadian physical activity guidelines co-published by Applied Physiology, Nutrition, and Metabolism and the Canadian Journal of Public Health. It may be cited as Appl. Physiol. Nutr. Metab. 32(Suppl. 2E) or as Can. J. Public Health 98(Suppl. 2). Applied Physiology, Nutrition, and Metabolism, 32(S2E), S122–S134. <https://doi.org/10.1139/h07-112>
- Tao, M. (2022). A study on the development of hygiene habits of kindergarten children in relocation sites for easy poverty alleviation. Kns.cnki.net. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022566485.nh>
- Wang, Y. (2017). The foundation of language development - A practical study on developing young children's listening skills. Kns.cnki.net. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201801&filename=1017163446.nh>
- Xu, F. (2022). A practical study on the influence of famous painting appreciation activities on the language expression ability of older children. Kns.cnki.net.

- <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202202&filename=1022483067.nh>
- Xu, J. (2014). Scientific Research Methods in Preschool Education. Max.book118.com. <https://max.book118.com/html/2019/0109/8042142115002000.shtm>
- Yoleri, S. (2014). The relationship between temperament, gender, and behavioural problems in preschool children. *South African Journal of Education*, 34(2), 1–18. <https://doi.org/10.15700/201412071206>
- Yu, Y., & Zhang, J. (2009). Exploring the characteristics of static upright balance ability in 3-6 year old children. *Chinese Journal of Sports Medicine*. [https://www.baidu.com/link?url=E1D1DPoxl9vv\\_3HgbCY\\_NzU-dQu1G5YNypD-6P5HqBW-oryZ50iZGlgR2VmjlSngsK7JZ89lwDZf8AXE6DQf7K&wd=&eqid=b36fb6400004a82e0000000663ab19d5](https://www.baidu.com/link?url=E1D1DPoxl9vv_3HgbCY_NzU-dQu1G5YNypD-6P5HqBW-oryZ50iZGlgR2VmjlSngsK7JZ89lwDZf8AXE6DQf7K&wd=&eqid=b36fb6400004a82e0000000663ab19d5)
- Yang, F. (2014). A study on teachers' identification with China's "Guidelines for Children's Learning and Development at the Age of 3-6." Kns.cnki.net. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201402&filename=1014259306.nh>
- Zhang, Y. (2011). A study of physical exercise methods in early childhood. Baidu Scholar. [https://xueshu.baidu.com/usercenter/paper/show?paperid=d6ffd8f1b1d59dcad4defea71da07f6a&site=xueshu\\_se](https://xueshu.baidu.com/usercenter/paper/show?paperid=d6ffd8f1b1d59dcad4defea71da07f6a&site=xueshu_se)
- Zhang, M. (2022). An action research on the development of self-care ability of primary school children. Kns.cnki.net. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1022670252.nh>

**Appendix**

**China Kindergarten Education Environment Quality Rating Scale**

INSTRUCTIONS: For each statement below, please tick (✓) in the most appropriate box with your own opinion without being influenced or dictated by others. Please use a scale following as your guide.

- 1、 Very inappropriate
- 2、 Inappropriate
- 3、 Generally appropriate
- 4、 Appropriate
- 5、 Very appropriate

**Part A: Demographics**

- 1. Age:
- 2. Gender:
- 3. Teaching experience:  
A. 0-2 years B. 3-5 years C. 6-10 years D. above 10 years
- 4. Educational background  
A. Postgraduate B. Undergraduate C. College
- 5. Major  
A. Preschool Education B. Other Stage Education

**Part B: Kindergarten Environment Creation Quality**

	1	2	3	4	5
1. Is the current classroom wall settings appropriate early children’s development? (colour, decorations, classification of areas)					
2. Is the current design/decoration of classroom doors (height, colour) appropriate early children’s development?					
3. Is the current arrangement of classroom cabinets appropriate early children’s development? (height, material, colour, number)					
4. Is the current placement of tables in the classroom (number, colour, height) appropriate early children’s development?					
5. Is the current layout of the classroom curtains (colour, material, pattern) appropriate early children’s development?					

6. Is the current design (colour, design) of the nursery stand corridor appropriate early children's development?					
7. Is the current layout of the nursery stairs (colour, design, width of steps) appropriate early children's development?					
8. Is the current layout (size, amount of materials) of the free play area in the kindergarten appropriate early children's development? (size,material quantity)					
9. Is the current layout (size, decoration, amount of materials) of the craft and painting area in the nursery appropriate for children's development?					
10. Is the current layout of the reading area (size, number of books) in the nursery appropriate for children's development?					
11. Whether the materials used in physical activities are appropriate for the development of early children's development? (safety, physical fitness, motor requirements, reasonable quantities)					
12. Whether the materials used in music and art activities are appropriate for the development of early children? (quantity of materials, educational significance)					
13. Whether the materials used in intellectual activities appropriate for children's development? (interest building, intellectual development, age-appropriate)					
14. Whether the science materials presented are appropriate for early children's development? (scientific in nature, is it consistent with scientific principles)					
15. Whether the placement of constructive materials are appropriate for early children's					

development? (children's sense of construction, e.g.; building blocks/house)					
1. Is the way in which teachers interact with children to provide emotional comfort during educational activities appropriate early children's development?					
2. Is the way in which teachers guide children's daily activities in educational activities interactive and appropriate early children's?					
3. Is the way in which the teacher interacts with the children in educational activities by playing together appropriate for the early development of the children?					
4. Is the interactions in which children seek help from teachers during educational activities appropriate early children's development?					
5. Is the interactions in which children express their views to teachers during educational activities appropriate early children's development?					
6. Is the way in which children invite their peers to interact in educational activities appropriate early children's development?					
7. Is the way in which children cooperate and interact with each other in educational activities appropriate early children's development?					
8. Is the way in which children negotiate and interact with their peers in educational activities appropriate early children's development?					
9. Is the competitive interaction between children and their peers in educational activities appropriate early children's development?					
10. Is the chatting interaction between children and their peers in					

educational activities appropriate early children’s development?					
--	--	--	--	--	--

**Part C: Children development in health, language, social, science and art.**

INSTRUCTIONS: For each statement below, please tick (v) in the most appropriate box with your own opinion without being influenced or dictated by others. Please use a scale following as your guide.

1. Very bad
2. Bad
3. Average
4. Good
5. very good

**B1: Environment creation and early children’s health development**

		1	2	3	4	5
B1-1	What do you think of the physical health of the children in your class? For example: correct sitting posture, bones.					
B1-2	What do you think of the stable and happy mood of children in your class? For example, they will not cry randomly in the nursery.					
B1-3	What do you think of the balance, coordination and agility of children in your class?					
B1-4	What do you think of the strength and stamina of the children in your class? For example, the ability to do a sport for a set period of time and to hold weighted objects.					
B1-5	What do you think of the living and hygiene habits of the children in your class? For example: getting up and going to bed on time.					
B1-6	What do you think of the basic safety knowledge and the ability to protect themselves of the children in your class? For example: not opening doors to strangers, knowing basic distress calls					

**B2: Environment creation and early children’s language development**

		1	2	3	4	5
B2-1	How do you think the children in your class are developing their basic language?					

	For example, they can understand the teacher's requests and speak about topics that interest them.					
B2-2	What do you think of the speaking and expression of the children in your class?					
B2-3	What do you think of the he habit of using clear language of the children in your class? For example: adjusting the volume of sound					
B2-4	What do you think of the initial reading comprehension skills of the children in your class? For example; looking at pictures and telling stories					
B2-5	What do you think of the initial writing skill of the children in your class? For example: using pictures and conforming to represent things and stories					

**B3: Environment creation and early children's social development**

		1	2	3	4	5
B3-1	What do you think of the getting along with their peers of the children in your class? For example, they can resolve conflicts with their peers peacefully and do not bully them.					
B3-2	What do you think of the willingness to interact with others of the children in your class? For example, they are willing to play games with their partners on their own initiative and to do activities with their teachers.					
B3-3	What do you think of the respectful habits of the children in your class? For example, they can use polite language and show concern for the emotions of others around them.					
B3-4	How well do you think the children in your class enjoy and adapt to group life? For example, they enjoy going to kindergarten.					
B3-5	What do you think of the children's ability to follow basic rules of behaviour in your class? For example: not taking things that do not belong to them					

**B4: Environment creation and early children’s science development**

		1	2	3	4	5
B4-1	How well do you think the children in your class are able to get close to nature and enjoy exploring new things?					
B4-2	What do you think of the initial exploration skills of the children in your class? For example, through observation and analysis they can discover how different things change.					
B4-3	What do you think children’s understanding of the things and phenomena around them through exploration in your class? For example, recognizing plants and animals and discovering the differences between species					
B4-4	What do you think about children's ability to perceive the relationship between numbers and quantities in your class? For example: perceiving the thickness and weight of objects and being able to add and subtract within 10					
B4-5	What do you think about the children's ability to perceive the relationship between shapes and space in your class? For example: building objects, identifying their left and right					

**B5: Environment creation and early children’s art development**

		1	2	3	4	5
B5-1	What do you think about the ability of children in your class to enjoy the good things in nature and in life? For example, appreciating beautiful things in the environment and paying attention to features such as colour and form					
B5-2	What do you think about the children's ability to appreciate works of art in your class? For example, they can express their emotions, movements and language after appreciating art.					
B5-3	What do you think about the ability of children in your class to enjoy and be bold enough to share with their peers, teachers and parents? For example: actively participating in art activities and making artworks with different materials					



B5-4	What do you think children's initial artistic expression and creativity skills in your class? For example, they can make up their own stories and have artwork to decorate their environment.					
B5-5	What do you think children create their own artwork and share it with their peers, teachers and parents in your class?					