

Exploring Cultural Identity: Perspectives from Social Sciences and Humanities

# A systematic review of early childhood environmental learning and its relationship with family socioeconomic status

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**Abstract** The development of a child's environmental awareness and sustainable habits depends on early environmental learning. One of the most significant measures of a student's performance and educational accomplishment is their academic achievement. Family socioeconomic status (SES) impacts educational achievement, the connection between SES and academic success may vary depending on the sociocultural context. India is the most populous in developing a country that has a substantial enrollment in basic education. We analyzed empirical evidence on early childhood environmental learning (ECEL) activities to comprehend the background of ECEL instructional methods and predicted outcomes. By focusing on recent years, we found 10 publications that met the criterion for inclusion. According to the research, these programs attracted children between the ages of 3 and 6 who participated in organized, instructor-driven activities. The sample studies examined how children's SES affects their exposure to environmental learning possibilities, environmental attitudes, pro-environmental actions, emphasizing environmental literacy growth, intellectual growth, and emotional and social growth. With the goal of supporting ECEL users in creating, putting into practice, and assessing the program including motivating researchers to continue to look at the components, processes, and concepts presumptions they contain, we provide an illustration that summarizes cross-sample data. The research demonstrates the complex relationships between ECEL and SES. Although children from better socioeconomic homes have more access to assets and chances for environmental learning, the effect of family values and parenting techniques on a child's environmental awareness and conduct is crucial.

**Keywords:** childhood, environmental learning, academic achievement, socioeconomic

## 1. Introduction

Early childhood environmental learning (ECEL) is a rapid expansion in investigation and implementation because of environmental issues as well as growing interest in the well-established advantages of exposing young children to natural environments. It conducted a comprehensive assessment of empirical studies of ECEL programs to obtain a better knowledge of the environment in which ECEL teaching approaches are utilized and anticipated results. ECEL is a special kind of environmental education that can influence the emergence of different approaches and philosophical orientations because of the significance of early childhood in laying the groundwork for environmental sensitivity, interest, and behavior later in life (Ardoin and Bowers 2020). As children's play areas change from standard playgrounds to natural play areas to significant financial and resource investment from government entities, nature play is becoming more and more popular (Dankiw et al 2020). Early children might be encouraged to adopt an environmental viewpoint by thinking about how severe weather may affect birds that are breeding or how floods may damage certain animals' houses or cut them off from their supply of food (Wilson 2019). From birth to kindergarten, a child's growth is crucial. Children between these ages have unique developmental requirements. Child care is a high-quality facility as well as programs for preschoolers which includes a wide range of activities to assist a children's developmental skills across the curriculum. Nature play is an important part of development for babies and young children, as well as toddlers from three to five years (Schiffman 2019). Institutions that provide early childhood education (ECE) include preschools, nurseries, and practicum schools, which teaches a young child. For children in ECE facilities, a rich learning environment has been created through the academic program. The goal is to optimize children's physical, social-

emotional, linguistic, and cognitive development and to provide them with the skills they need to take care of themselves and prepared for primary school (Dere 2019).

SES is considered to be one of the most important elements determining a country's health. It is a measure of an individual or a family social status and has a large influence on an individual or family health, educational achievement, food, lifestyle, and so on. Citizens' per capita income is a fundamental determinant of the population's SES. The socioeconomic profile of the population influences the affordability and usage of health care services (Wani 2019). A poor SES has been connected to more prevalent psychological well-being issues. An individual with the least SES is expected to occur between two and three times more probable to suffer from a psychological condition than those with the greatest SES. Here, typically clarified through the concept of stress reactions are the consequence of supply-demand imbalances, since those with lower SES experience higher expectations from an environment that endanger their welfare and well-being while having fewer resources to deal with such issues (Kim and Cho 2020). During childhood, SES refers to a family's social and economic position. It takes into account criteria such as income, education, and employment. There is a considerable correlation between early socioeconomic position and intellectual success in secondary school. Academic achievement is better for children who came from higher socioeconomic families because they have access to greater resources, educational assistance, and a favorable learning environment. Lower-income students, encounter challenges that might impede their academic progress, such as restricted access to educational opportunities, resources and increased stresses, hurting their secondary school accomplishment (Henry et al 2020). Academic accomplishment is a key metric for evaluating children performance and achievement in school. Family SES is the most important factor in predicting academic performance; nevertheless, the connection of SES and academic accomplishment varies depending on the sociocultural context. (Liu et al 2020). Children from lower-income households have greater degrees of instability than their counterparts from high-income families, however the degree of this connection and the specific features among SES, the majority associated with the psychological well-being of children vary among research. Similarly, the intensity of the connection link SES and psychopathology in children varied by kind of psychological disorders, age, and linked characteristics in unknown ways, including ethnic background, gender, and race (Peverill et al 2021).

Atilas et al (2021) examined how crucial the problems are early childhood educators confront, including inadequate readiness for distant instruction and learning, pre-and in-service preparation on how to address preschooler's demands for education remotely was limited, and caregivers must engage differently. The knowledge, abilities, and attitudes necessary for evaluating and engaging in online teaching and learning should be included in teacher preparation programs. Yigit and Gultekin (2022) investigated whether a nature-based education can be used to supplement reading and writing teaching with references to the Common Core Standards, which are designed to outline student's learning goals from kindergarten to grade twelve. They campaigned for the inclusion of reading and writing instruction. As a result, to help young children, reading and writing education should taught in normal schools. Chawla (2020) analyzed the good feelings and experiences; even as worldwide environmental shifts and biodiversity loss escalate. People's sentiments of anxiety, irritation, and sorrow as children gain knowledge about the degradation of the environment, they display that they are related to the biosphere. As a result, the summary contains studies examining how children and adolescents respond to learning about serious environmental issues and ways to remain optimistic. The study finishes by recommending how an integration might help studies on connecting with nature and dealing with environmental change (GülerYıldız et al 2021).

Richter et al (2019) determined that progress has been made in three measurement areas that contribute to this goal by utilizing the most recent data, population-level evaluations of preschooler's danger of having a poor early development, and the evaluation of population-level indicators of these children, national characteristics of early childhood development factors, drivers, protection and services were constructed in nine countries. As there has been development in these three areas, additional expenditure is needed to standardize measuring instruments, gather national data at the population stage on a regular basis, and strengthen the country's ability to collect, evaluate, and apply data important to tracking early childhood development outcomes. Guler et al (2021) described was done in two stages. According to the conclusions of the study, there is a need for more research that uses interventional, experimental and action research methodologies to address the pillars of sustainability holistically.

Karney (2021) determined a SES is linked to the emergence, growth, and breakdown of interpersonal connections. Overall, research has shown that an individual's SES favors some options while discouraging others. As a result, a wealthier and less benefited couples have distinct abilities for maintaining their relationships and various adaptive mating methods. An applied relationship science requires research that recognizes these gaps, as well as research that recruited, defined, and addressed socioeconomic difference between partners. Tazouti and Jarlegan (2019) examined in seven different schools, 203 parents and their children are in their first or second year of elementary school (CE1 or CE2). The study done on a group of French families was the first of its type. The results for moms support main involvement of parents and self-worth hypothesis affecting the academic attainment for children. Prediction was not validated in the case of dads, and they observed many discrepancies between moms and fathers.

Van et al (2021) described a secondary education has a long-term effect on happiness. The time and length of low SES were studied throughout childhood, as well as academic achievement in secondary school. Linear regressions were used to fit one sensitivity period model, two rigorous accumulation models, and 4 critical period models. Broer et al (2019) addressed SES

and associated variables, the relationship between SES and educational attainment, disparities between educational systems, and changes over time. Both used proxy factors for SES in education research as well as the pertinent elements obtained in the IEA's Trends in International Mathematics and Science Study (TIMSS) are recognized and examined. The magnitude of this association varies depending on the social environment and educational system, despite the fact that the research demonstrates a positive link between parental SES and student performance. To assess the scope of these international exchanges and chart their development over time, TIMSS data are employed. Walsh et al (2019) described adverse childhood experiences (ACEs) are associated with a higher risk of adverse life outcomes and as a result. The significance of childhood SES has to receive much discussion in political discourse despite ACEs organized. This study set out to undertake an analysis of the research on the relationship between ACEs and SEP in childhood. The Cochrane Library, ProQuest, MEDLINE, and PsycINFO databases were also searched. The Hamilton Tool was adapted to determine the research quality and bias risk.

## 2. Early Childhood Environmental Learning (ECEL)

The primary goal of ECEL is to engage humans in actively working toward solutions to environmental challenges. Environmental education is also used to assist people in developing environmental consciousness and sensitivities, as well as an understanding of environmental issues and pro-environmental ideas, attitudes, and concerns. Environmental education, in a nutshell, teaches children how to detect and address an environmental issue while providing opportunities for them to participate in environmental-related activities. Environmental education has grown into an important learning subject to study in ECE. There is an enormous requirement to teach children from an early age on how to perform in a sustainable manner. Nowadays, children are born into a world plagued by serious environmental challenges such as the loss of bio-diversity, pollution and climate change. Most people on this planet, including politicians, academics, and the media, are very concerned about these issues. These are challenges that have been expressed and utilized as content for education in schools. ECEL involves young children from birth to the age of eight. However, this phrase is mostly used to describe instruction for early children who have not yet started kindergarten, usually before the age of five. Significantly, empirical evidence supports the relevance of ECE in developing a critical academic, social, and cognitive qualities that have long-term consequences for both individual and society. Furthermore, a huge body of literature from a variety of domains, including health, economics and neuroscience, shows that an early investment in human capital may provide a significant benefit to individuals and the greater community. As a result, ECEL has the potential to have a significant influence on the development of young children as well as the construction of a sustainable world (Vrijheid et al 2020).

### 2.1. Informal Learning in ECEL

Early childhood environmental education is going to be more engaging when provided in a casual context. Outside of a conventional classroom, informal learning takes place in places like zoos, aquariums, interactive science centers, forests, and botanical gardens. By having the learning process occurs in an environment where children may not be aware that they're learning and naturally motivated by their surroundings, informal learning can increase children's knowledge. This technique is more fascinating to follow than a traditional classroom atmosphere, where information is frequently provided orally or through letters and figures that must be deciphered. In contrast to conventional education, an informal learning allows youngsters to demonstrate a broader range of information and understandings. This is because a casual environment is not designed to link to the formal curriculum that children have encountered in straightforward ways. Due to their varied interests, exposure to a variety of books, CDs, websites, and television programs, as well as their various leisure and holiday activities, children from diverse backgrounds have varying access to distinct knowledge bases. Additionally, young children are likely to be exposed to a variety of free-choice activities in informal learning situations, allowing them to explore new ideas and build fresh knowledge and beliefs. A topic made more fascinating and engaging by using this type of learning, which can also be utilized to tie it to daily interactions and findings. The learning experience could become more memorable and harder to recall (Jin et al 2019).

### 2.2. Environment education and nature in ECEL

Preschool programs, like the Milwaukee's Schlitz Audubon Nature Center Preschool and West Saint Paul's Dodge Nature Center Preschool, are incorporating environmental education and nature into teacher education programs and laboratory preschools. Such initiatives bridge the gap between ECE and environmental education by offering practical outdoor experiences as well as planned and spontaneous environmental education (Rosa and Collado 2019).

### 2.3. ECEL for three play types

For children that have environmental education as a learning area, there are three ways to look at modeled play, framed play and open-ended play:

- Open-ended play: Playing experience in which the instructor presents items reflecting an environmental idea to the children and the capacity to investigate the components of a foundation to acquire knowledge regarding an environmental topic with tiny participation and interaction.
- Modeled play: Playing experiences involving the teacher demonstrates, clarifies, and suggests the use of objects that are indicative of an environmental idea before allowing children to use resources that require small adult involvement as the foundation for understanding the idea (VanZwieten et al 2021).
- Purposefully framed play: Playing activities where the teacher provides resources for children that are an environmental concept's representation and permit an open-ended play are followed by modeled play and teacher-child communication (Zhonggen 2019), as referred in Table 1.

**Table 1** Exploring the Interplay of Play-Based Approaches, Teacher Preparation, and Children's Perceptions of Learning.

Teacher-implemented play strategy	Notes on teacher planning before utilizing the play strategy	Description of learning by children following their participation in the game
Children are given resources for open-ended play. It was requested that dirty water made clean. There was virtually small activity discussion or modeling. The materials might be used for open-ended play by the children.	Planning notes are frequently extensive. Outline, for example, the activity supplies will be required to carry out the experience. There is small or no consideration for the intellectual notions involved in the activity or the pedagogical methods necessary to realize learning.	Children claim to learnt nothing. They were having fun.
Children demonstrate how items can be utilized to build a water filter. When the professor does it, the students do it as well.	The planning notes include an overview of the activity and the essential themes that the instructor will emphasize throughout the modeling session. There is small or no consideration for the educational procedures required understanding learning.	Children may define the activity and its objective, but not necessarily the mental ideas associated to the goal.
Children are provided with resources and encouraged to engage in unstructured playing. After the free-form play activity, the instructor shows the students how to use the object and facilitates a conversation about the activity. After participating in open-ended play, modeling, and conversation, children participate in the play experience.	The planning notes include an overview of the activity, significant take away, and some pedagogical techniques for learning into action.	Children are able to articulate the activity's purpose and results to recognize some of the intellectual concepts involved with the action.

**2.4. Design of a systematic review**

PRISMA is an unbiased scientific organization that recognized. We followed the criteria for performing and presenting meta-analyses and comprehensive reviews. We used approaches offered by social science academics to supplement the PRISMA methodology and account for field-specific viewpoints as shown in Figure 1.



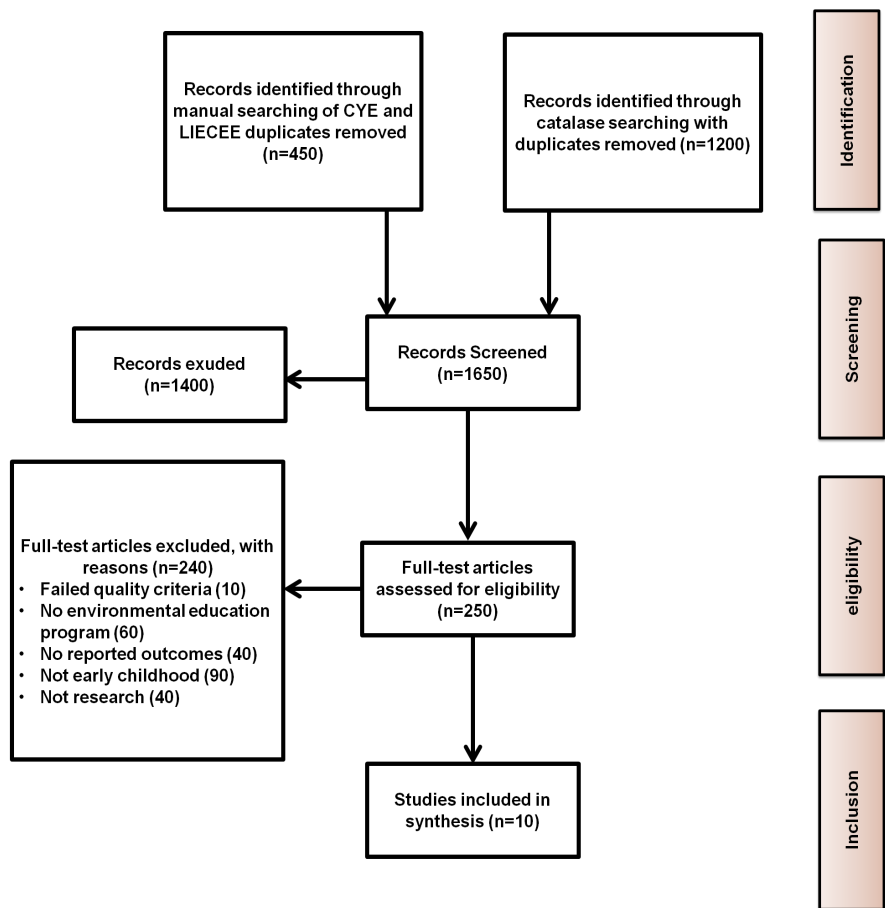


Figure 1 PRISMA flow diagram.

2.4.1. Eligibility and screening for the study

- At least two members of the research team examine each paper is reviewed, and a decision tree is used to choose appropriate research based on the criteria that follow:
- Within the educational system, emphasis is placed on early children from birth to age 8 and/or 3 grade.
- Based on an educational experience and curriculum about the environment. We saw conservation and sustainable development education as identical with environmental education throughout the study, and our explanations of terminology referring to early children, such as forest schools and environment preschools, were fairly wide.
- Intended for empirical investigation. This criteria was used to eliminate other evaluations including long-form discussion articles that focused on theoretical issues.

We removed papers from practitioner-oriented publications during the initial screening round, which resulted in the elimination of articles created for instructors in the classroom, documenting educational activities, or offering detailed lesson plans. Dissertations, textbooks, and conference presentations that were not available as published materials were also removed. We removed 1400 citation records after evaluating the abstracts, many of them included children who were outside the required age range, were oriented on instructors rather than children, and failed to fulfill the other screening requirements. The entire text versions of the remaining 250 citations were found. We concentrated on qualification for participation during the final study. Over 250 records are evaluated by two or more team members to ensure they met the stated first selection criterion. Following a review of the entire data version of the 250 citations, here we deleted 240 of them since they did not match the original inclusion requirement. The last sample contained 10 research papers (9 publications with peer review) and (1 conference paper with peer review) as shown in Figure 2.

Cognitive processing and reflecting are key components of intellectual inquiry in the process of knowledge production. People organize their information into a broad graph while they gather it from their individual experiences, utilization and control of many sources of data.

2.4.2. Program features of the studies analyzed

The 10 research in our sample featured programs with participants ranging in age from infancy to early childhood. Despite the fact that the distribution among research was typical, 4 and 5-year-olds were likely to pay attention. Out of 10 studies, 7 detailed lengths of the program. 2 studies concentrated on one-time initiatives of various durations. 1 study



concentrated on initiatives that were carried out during 1 to 8-week span, sometimes as a component of a curriculum module. 4 studies focused on continuous environmental education initiatives that were deemed to be an essential component of the official curriculum, such as integrated environmental curricula, forest schools, nature kindergartens, or schools with daily outdoor play activities as shown in Figure 2.

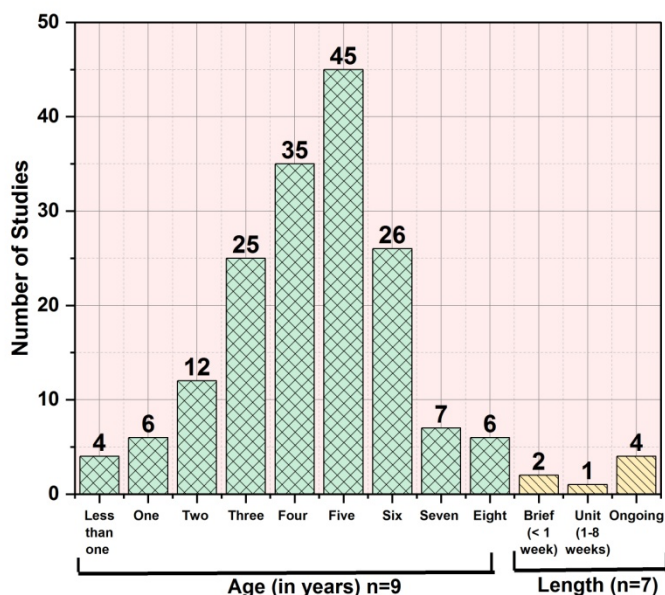


Figure 2 Age and length.

We attempted to extract an information regarding program settings, such as the program was linked to a park, museum, or other out-of-the-ordinary visit of an organized school/childcare experience (non-formal setting) whether it took place as a component of an educational or daycare experience. Six studies mostly looked at a structured program that took place on-site in a school, daycare, or ECE facility; Programs taking place in a non-formal setting were documented in 4 studies. We took into account whether the study's activities required children to spend time in or near natural environments or outdoors. Out of 10 studies, the majority of 7 studies looked at activities that involved spending time outside in a natural setting, a place that is abundant in nature, or a place that has many elements that are inspired by nature. 2 studies discussed indoor programs as shown in Figure 3.

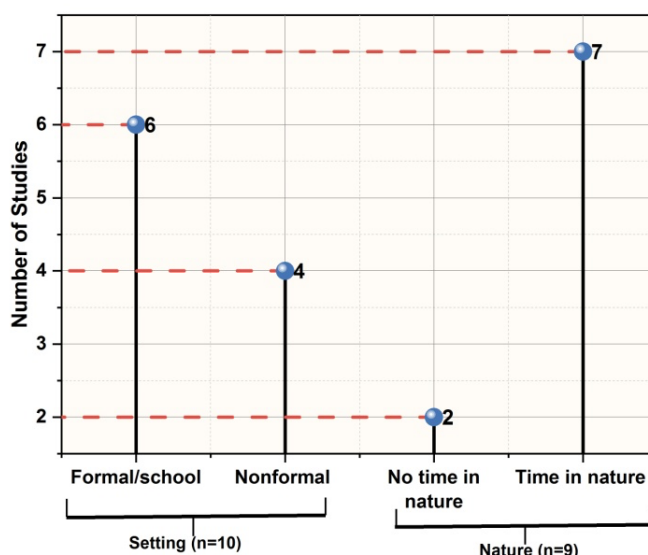


Figure 3 Setting and nature.

Almost every research indicated who allowed or led environmental education initiatives. Some initiatives included a variety of facilitators and instructors who collaborated with parents and researchers. Teachers and other school workers are conducted the bulk of the program's 7 studies. In 5 of the studies, Personnel from the program for environmental education either visited the ECE center to discuss an activity; otherwise, the children and instructors went to participate in a program



organized by Staff members of the program provider. In 4 studies, a researcher observed their parents or other family members acting as facilitators. In 3 studies, the researcher assisted with program implementation, as shown in Figure 4.

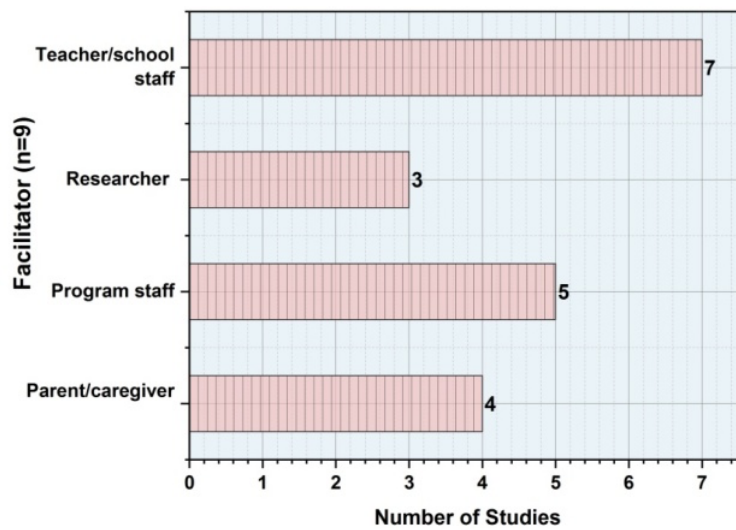


Figure 4 Facilitator.

### 3. Relationship with Family SES

SES is divided into three sections (high, middle, and low) to indicate the three categories into a family or individual may fall. When categorizing a family or an individual or all of the three characteristics (income, education, and occupation) might be evaluated (Antonoplis 2023).

#### 3.1. Children academic achievement and family SES

The culture places a high value on academic accomplishment, because enhanced academic achievement is a good strategy to reduce the intergenerational transmission of poverty. Families with poor socioeconomic position anticipate that great academic accomplishment would transform their children's fates, resulting in better futures and increased family standing. Contrarily, low-income families face additional difficulties and barriers in their efforts to raise academic achievement for succeeding generations. As a consequence, children from low-income homes may have less opportunity to access better educational resources and attain high levels of academic accomplishment, potentially having long-term consequences. Positive connections between family SES and academic performance have been reported in recent decades, and current research demonstrates that the significance of family SES in forecasting academic achievement in primary school and preschool children has been regularly proven. As a result, children from low-income homes are thought to outperform those from richer socioeconomic backgrounds on several standardized examinations. Furthermore, the accomplishment gap is widening as a result of family SES. Despite the fact that parental SES is strongly associated success in the academic performance of children, multiple systematic review studies have discovered that the size of this association ranges from minor to significant. Furthermore, earlier research on this relationship has been inconsistent. While some research indicates that parental socioeconomic position has small bearing on children's reading skills, others uncover a substantial but minor relationship. To explain the contradictions in previous studies, it is critical to explore the processes by which parental SES is connected to children's academic competence and under what conditions (Zhang et al 2020).

### 4. ECEL and its relationship with Family SES

Family socioeconomic position impacts ECEL because it determines the opportunities and resources accessible to children throughout their formative years. According to research, there is a substantial association between a family's economic condition and a child's environmental education. Children from higher SES homes have better access to enriched environmental experiences. They are more likely to reside in areas with green spaces, natural preserves, and well-funded schools with outdoor education programs. This exposure promotes a stronger bond with the environment and can lead to greater ecological knowledge. Furthermore, financially secure families can spend in educational materials such as books, scientific kits, and academic field excursions to supplement a child's environmental education.

Children from poorer socioeconomic families may have restricted access to such services. They may live in cities with fewer natural places or attend overcrowded and underfunded schools with no environmental education programs. This disparity in access may result in differences in environmental knowledge and awareness among children from various



socioeconomic backgrounds. The association between family SES and early childhood environmental learning is compounded by economic inequities in access to healthcare, nutrition, and housing, impairing a child's general well-being and capacity to engage with the environment.

To solve this issue, policies and programs must be implemented to give equitable access to enriching environmental experiences for all children, regardless of their family's financial condition. Such activities can help bridge the gap and ensure that every child has the chance to acquire a strong foundation in environmental learning, eventually contributing to a more fair and sustainable future (Vogel et al 2021).

One disadvantage of early childhood environmental learning is that it may be restricted by the socioeconomic position of the family. Children from lower-income households may have fewer opportunities to participate in meaningful environmental experiences, potentially leading to gaps in ecological knowledge and awareness. The success of environmental education initiatives as a whole is threatened by this socioeconomic divide.

## 5. Final considerations

ECEL is strongly linked to family SES. According to research, children from better socioeconomic origins are more likely to be exposed to meaningful environmental experiences. Access to natural surroundings, educational materials, and an extracurricular activity that promote environmental knowledge and appreciation is beneficial to these youngsters. Children from lower socioeconomic class households, may have restricted access to these chances, thereby impeding their environmental learning. This gap in early environmental exposure has long-term implications for children's ecological literacy and subsequent environmental activities. It is critical to close this gap to promote equity in environmental education. The children whose performance is higher academically, their SES will reach high by improving their environmental and educational skills. Policymakers and educators should work to ensure that all children have an equal access to enriching environmental experiences, regardless of socioeconomic background, so that all children may acquire a firm foundation in environmental learning, promoting a more sustainable and fair future.

## Ethical Considerations

Not Applicable.

## Conflict of Interest

The authors declare no conflict of interest.

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