

The Long-Term Impact of Early Childhood Education on Academic Performance - A Narrative Literature Review

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Abstract

This literature review focuses on the long-term impact of early childhood education (ECE) on academic performance, particularly in China, but concerning international insights. Based on sixteen empirical studies, the review outlines the advantages of ECE on cognitive, social, and emotional development, particularly for disadvantaged children. High-quality ECE programs are indicated as having a robust positive impact on academic resilience. However, the benefit dissipates as students advance to middle and high school in terms of program quality, socioeconomic standing, and cultural setting. Future studies should examine the role of such as cultural differences, family dynamics, technology, and innovative approaches in optimizing the impact of ECE on the academic performance of students.

Keywords: Early Childhood Education, Academic Performance, Cognitive Development, Educational Resilience, School Readiness

1. Introduction

This literature review explores the long-term effects of early childhood education (ECE) on academic performance with a particular focus on China based on related empirical research. In China, Kindergarten is the primary form of ECE in urban and rural areas, while preschools are accessible through private, community, and national childcare centers (Gong et al., 2014).

2. Methodology

This review focuses on early childhood education and its long-term academic impact globally, with a particular emphasis on China. Google Scholar is the search engine that has been used to find relevant articles using keywords including Early Childhood Education, Preschool, Kindergarten, Pre-primary, Middle School, Junior High School, Primary School, Impact, Effect, Academic, Cognitive, and China. This paper reviews sixteen empirical articles that examine the impact of early childhood education on academic performance, using both qualitative and quantitative approaches. Reviews are categorized by educational stages.

2.1 Long-Term Effects of Early Childhood Education on Academic Performance Observed in Early Childhood Education Settings

According to Mthiyane & Mudadigwa (2021), the current state of ECE in Pakistan is not up to the standard, with challenges such as lack of training, financial resources, and monitoring and evaluation. These factors significantly impact the effectiveness of ECE programs and students' academic outcomes.

Meanwhile, In the Philippines, early childhood education is found to have a positive influence on cognitive abilities, attitudes, skills, and behaviors in children aged 4-6. Children who attend ECE programs show improved cognitive skills, better academic performance, and social and emotional development. Parents and teachers also observe better problem-solving skills, independent learning ability, and teamwork abilities (Wang, 2024). Li and Lei (2023) use the China Education Panel Survey to find that ECE significantly enhances academic resilience in disadvantaged children, especially in rural areas, by providing foundational cognitive skills for children and compensating for socio-economic disparities. Similarly, Tang et al. (2023) found that structured kindergarten programs significantly improved cognitive skills and reduced grade retention rates in rural Chinese children, emphasizing the importance of quality early education.

2.2 Long-Term Effects of Early Childhood Education on Academic Performance in Primary School

Researchers from India found effective ECE programs improve primary school enrollment, reduce drop-out rates, and prepare children for Grade 1 (Fathima & Pandey, 2024). According to De Guevara Rodríguez et al (2023), preschool significantly impacts reading performance, identifying underperforming students and improving future performance, driving equal opportunities in education. Tang et al (2023) used alternative matching methods and relevant tests and found that children with Early Childhood Education experience perform better in cognitive skills. Ma et al (2024) indicates that children with economic disadvantages benefit more from ECE, with cognitive abilities often lower without ECE. On the other hand, Unequal opportunity for ECE is prevalent due to higher socioeconomic status, which enriches educational resources, leading to better cognitive abilities. This could result in unequal opportunities for future learning stages (Shen & Tsai, 2023).

2.3 Long-Term Effects of Early Childhood Education on Academic Performance in Middle School

Wang (2022) found preschool attendance positively impacts middle school children's academic performance and positively influences their peers, meanwhile, promoting non-cognitive outcomes like self-confidence and prosocial behaviors. On the other hand, Zhang (2016) found that despite there being a decrease in the cognitive benefits of ECE in middle school compared to earlier educational stages, economically disadvantaged children still experienced ongoing gains from early childhood education.

2.4 Long-Term Effects of Early Childhood Education on Academic Performance in High School

Universal preschool boosts high school graduation probability by 2.8%, improving results towards the end of high school, benefiting both boys and girls, regardless of gender (DeMalach & Schlosser, 2024). Zhang (2016) found that preschool education provides economically poor high school students with long-term academic resilience, even though benefits faded by ninth grade, result suggesting that early education can still benefit vulnerable populations. As highlighted by Li and Lei (2023), Early education significantly impacts high school academic results by developing brain skills and equipping students with resilience to face college challenges.

3. Discussion

Early Childhood Education Programs are beneficial for students in their early stages, but less so as they age. Long-term effects depend on quality programs, family background, and culture. High-quality programs with trained teachers, structured curriculum, and supportive learning environments help children develop cognitive and non-cognitive skills for academic success. (Liang et al. 2020; Berlinski et al. 2008). However, the benefits of ECE vary depending on the quality of the education experience, with

programs lacking resources or stimulating environments not yielding the same positive results. (Heckman 2006).

Family background also influences the long-term effects of ECE, with socioeconomically disenfranchised students benefiting more from ECE, as demonstrated in China and India (Liang et al., 2020; Kaul et al., 2017). Also, ECE benefits may be weaker in areas where the value of preschool is not highly valued, and cultural norms, such as gender roles, may influence access (Kaul et al. 2017). In this way, understanding cultural sensitivity is crucial for effective ECE intervention, incorporating factors like educational quality, family history, and culture to enhance long-term success and effectiveness.

Future ECE studies should explore long-term impacts related to cultural differences, family dynamics, technology, and innovative approaches, as well as their impact on college success, career paths, and economic growth.

4. Conclusion

This literature review shows that high-quality Early Childhood Education programs significantly enhance students' academic performance, and can improve intellectual and social-emotional development. ECE benefits children with improved cognitive skills and higher grades. However, as they progress through middle school and high school, the benefit decreases. Factors like program quality, socioeconomic status, and cultural context influence ECE efficiency. Investing in ECE benefits not only children and schools but also lifelong education and social well-being.

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