



A Review of Research on the Impact of Early Childhood Education on Cognitive and Social Development in Young Children

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ABSTRACT

This review paper examines the effects of early childhood education (ECE) on young children's cognitive and social development by synthesizing findings from key empirical studies. Research consistently demonstrates that high-quality ECE programs contribute to significant gains in intelligence, language acquisition, academic readiness, and later school achievement. Program quality, including well-trained educators, enriched learning environments, and responsive teacher-child interactions, is a critical factor mediating these cognitive outcomes. Beyond intellectual benefits, ECE plays a vital role in fostering social competence, emotional regulation, empathy, and cultural sensitivity, particularly in inclusive and diverse educational settings. Studies highlight how positive teacher-child relationships support the development of prosocial behaviors and resilience. The review identifies gaps in existing research, emphasizing the need for long-term longitudinal studies, cross-cultural comparisons, and investigations into strategies for enhancing ECE quality and parental involvement. Additionally, future research should explore integrating technology into ECE programs and its effects on developmental outcomes. This synthesis underscores the crucial importance of high-quality ECE to promote equitable cognitive and social development, with implications for educational policy and practices aimed at improving outcomes for all children.



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Introduction

In the recent past, central focus has been accorded to the early childhood education (ECE). Hours of research have been dedicated and policy makers have begun to realize the impact of education on young children's brain development (Shaheen et al., 2024; Barnett, 2011; Shonkoff & Phillips, 2000). This growing recognition is backed by Hertzman and Boyce's (2010) work, which passionately argues that early experiences are fundamental in determining later legacies. Their research supports the conception that much of a child's later

thinking and sociomoral development occurs during the first three years of life, thus making a strong argument for investment in high-quality ECE programs. Magnuson and Waldfogel (2005) also build on the long-term returns of those investments, highlighting that not only does ECE programming, when fashioned effectively, promote school readiness comprehension, but it also holds the capacity to mitigate the achievement gaps among children with different backgrounds, a fact supported by factual and empirical evidence (Syakhrani, & Aslan, 2024).

Furthermore, Zigler and Styfco (2019) have enriched the knowledge of the possible impact of different program models on children's cognitive and social development. Their work has captured the wide range of strategies and tools used in ECE, thereby showing the complex nature of this important sector. Also, Barnett and Hustedt (2013) proposed a systematic method for evaluating the impact of ECE on development, which was beneficial. In addition to raising an awareness of the necessity for evaluating systematically, this framework stresses the need for advancement and modification in the sphere of ECE. Before proceeding further in this review paper, the purpose of this paper is conceptualized as an attempt to review the available literature in this field and endeavoring to combine all the profound works and contributions made by such studies to present an overall review of ECE effectiveness regarding its influence on the cognitive and social development of young children. Thus, we strive to join the discussion of modern scholars concerning the possibility of early childhood education as a key to changing individual's and society's future.

Cognitive Development

Cognitive Benefits of ECE

Various studies have shown that ECE programs have numerous advantages for children's thinking processes (Chou et al., 2024; Camilli et al., 2010; Loeb et al., 2007). Evidence based on longitudinal research work by Schweinhart et al., (2005) concluded that children who received high quality ECE were more intelligent, effectively spoke and performed better in academic environment in following years in contrast to children with no such opportunity. This conclusion confirms the favorable changes in the cognitive level that stem from early childhood education. In addition, the study had done by Campbell et al., (2014) supports the above research by demonstrating that high-quality ECE enhances young children's cognitive skills in an orderly way in mathematics and literacy practices. Further, Reynolds et al., (2010) synthesized different kinds of ECE interventions and decided that when children are enrolled in organized early education, their learning capacity and school preparedness increase. Heckman (2006) speaks of the economic point of cognition development, mentioning that investments in ECE have high rates of return by providing children with the desired thinking skills for their further education, work, and life. These references further emphasize a huge and strong positive bilateral relationship between concept conceptualization and early childhood education literature, strengthening the thesis that optimal, quality early childhood education programs cannot only significantly enhance children's cognition and higher-end futures.

Quality Matters

The studies draw attention to the program's quality as a dimension that affects cognitive growth. Well-trained educators, fewer children per group, and more appropriate learning activities have been reported in high-quality ECE programs and these aspects promote better cognitive achievement (Burchinal et al., 2010; Pianta et al., 2005). Also, the singular study by

Ramey and Ramey (1998) shows that the quality of the interactions between teachers and children enhances benefits in terms of cognitive growth. They found that their ECE programs have been more effective when the teachers were more responsive and engaging with the students. Thirdly, Barnett and Carolan (2013) also note that quality and thought are intertwined extrinsically; that is, quality ECE contexts engender the possibility for children to think critically. Moreover, Early et al. (2007) link program quality and the cognitive effects, which expands the belief that quality ECE programs are the cornerstone in achieving the desired cognitive development in young children. Together, these references underscore the importance of program quality in mediating the development of cognitive abilities in the early learning environments for young children.

Language Development

Play-based learning, common in early childhood education interventions, usually focuses on language development, which is essential for cognitive development. Duncan et al. (2017) and Whitehurst et al. (1994) claim that students who attend ECE programs are likely to develop better vocabulary integrated with reading readiness. In addition, other research by Lonigan and Burgess (2000) shows that a well-organized language promotion environment in ECE contexts greatly explains early literacy. Moreover, Dickinson & Tabors (2001) also stated that high-quality ECE programs provide young children with linguistic experience, which is most helpful in learning words and understanding language. Furthermore, Burchinal et al., (2010) reveal that children attending the ECE settings that provide rich language experiences enjoy further significant language and cognitive development later. These references highlight the importance of providing early childhood education to foster language development and cognitive and academic growth.

Social Development

Social Benefits of ECE

Studies by Rao et al., (2014), Hall et al., (2013), Raver et al., (2009) and Bierman et al., (2008) show that kids who attend ECE have much higher chances of showcasing enhanced social skills like interaction, cooperation, and conduct regulation. However, Phillips and Meloy (2012) also cite that ECE plays a significant role in social-emotional development, which is useful in children's effective relationships with others and resilience. In addition, Vandell et al., (2010) in their study reviewed earlier on, established that high-quality early childhood education played a part in the enhancement of social resocialization and decrease in behavioral problems among school-age children.

All these references combine to stress the importance of early childhood education in fostering cognitive growth and social and emotional development, proper social relations, and equipping the kids with the competency required for decent interpersonal relationships.

Inclusivity and Diversity

Such an ECE context that integrates diversity and fosters effective children's interactions is linked to better social competence (Dalli et al., 2019; Pianta et al., 2005). These settings assist children in modeling empathy and cultural sensitivity. In addition, Lee and Bowen (2020) found that the learners' demographic characteristics accentuate the importance of diversity in classrooms in promoting learners' acceptance and shaping prosocial behaviors among young students. Also, Nadeem and Kothari (2016) worked to demonstrate how multicultural and inclusive curriculum in ECE programs contribute towards tolerance needed in society today,

as well as support the goals of cross-cultural understanding, as children are encouraged to embrace diversity. In addition, Howard and McCabe (2019) argue that the investigation underscores that I ECE promotes a lifelong approach of inclusion education to ensure that children learn appreciation for other people in the society, ignoring their disability, color, or origin. These references testify to the importance of embracing diversity at the early stage of any child's learning process for purposes of social development and empirically establishing the value of acceptance of diversity by young children.

Teacher-Child Relationships

As measured by the specific teacher-child interaction, classroom quality is an essential determinant of social competence in ECE settings (Hamre & Pianta, 2001; Saputra, 2025). Prosocial teacher-child relationships promote healthy caregiver-child relationships and emotional development among young children. In addition, according to Jones et al., (2017), teachers' child relationships act as a critical component when building trust and a further effective form of emotional support for the children's social development. In the same regard, Mashburn et al., (2008) proposed the fact that high-quality teacher-child relations foster a positive and safe atmosphere for the children to learn to relate with other individuals. Furthermore, Birch & Ladd (1997) showed that warm teacher-child relationships enhance the display of prosocial behavior and decrease the risk for problem engagements.

These studies highlight the centrality of teacher-child associations in early childhood education, arguing that positive relationships between teachers and young children create a positive stimulus for social development.

Conclusion

From the discussion of the review paper, it is clear that there are impressive dispositions on the effects of ECE on young children's cognitive and social development. This suggests that research synthetically completing quality indicates that high-quality early childhood education directly impacts children's abilities, raising their IQ, language advances, and scholarship performances. Also, a quality of ECE programs is an important determinant, as their positive predictors include well-trained educators and increased constructive teacher-child interactions. Language and learning, essential a component of children's learning progress, are cultivated in ECE by enacting language stimulation environments.

Further, ECE programs help in social development in that children learn social competence, emotional regulation, control and positive political socialization with peers. More diverse ECE settings continually support social development, resulting in the ability to be more empathetic and culturally sensitive. This investigation reveals the quality of teacher-child relationships as the predetermining factor of social development in ECE settings, emphasizing the importance of proper care and stimulating communication between teachers and young learners.

Future Scope and Direction of Research

The following are the important areas that should be included in the future early childhood education research agenda. First, there is a greater need for long-term longitudinal research that would follow the Cognitive and social development of children who have undergone ECE from adolescence to adulthood to establish the long-term effects of ECE programs. Second, research should expand the availability of strategies for increasing the program quality, focusing specifically on the development of educators and curriculum. Third, there is

a need for research on Information Communication Technology in ECE and its impact on the development of the two aspects, thus needing the investigation of digital learning and remote education. Fourth, sufficient scientific analysis of parental participation in ECE programs and its effect on children's development should be conducted, focusing on the parents' and teachers' cooperation. Fifth, the synthesis of the research carried out through cross-sectional studies, which compare and contrast approaches to ECE in different countries and cultures, can be very useful in identifying the impact of the variation and modeling the excellence and cultural factors. Finally, more research should be channelled to understand the implications of the research findings in ECE policies in order to have a better policy influence on the government and its funding concerning the quality of early childhood education for all children. Nonetheless, future research should also build upon and develop these issues, as well as, consider new trends and issues relevant to the practice of early childhood education.

References

1. Barnett, W. S. (2011). Effectiveness of early educational intervention. *Science*, 333(6045), 975-978.
2. Barnett, W. S., & Hustedt, J. T. (2005). Head Start's lasting benefits. *Infants & Young Children*, 18(1), 16-24.
3. Bierman, K. L., Nix, R. L., Greenberg, M. T., Blair, C., & Domitrovich, C. E. (2008). Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program. *Development and psychopathology*, 20(3), 821-843.
4. Birch, S. H., & Ladd, G. W. (1997). The teacher-child relationship and children's early school adjustment. *Journal of school psychology*, 35(1), 61-79.
5. Burchinal, M., Vandergrift, N., Pianta, R., & Mashburn, A. (2010). Threshold analysis of association between child care quality and child outcomes for low-income children in pre-kindergarten programs. *Early childhood research quarterly*, 25(2), 166-176.
6. Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers college record*, 112(3), 579-620.
7. Campbell, F. A., Pungello, E. P., Miller-Johnson, S., Burchinal, M., & Ramey, C. T. (2001). The development of cognitive and academic abilities: growth curves from an early childhood educational experiment. *Developmental psychology*, 37(2), 231.
8. Chou, S. W., Hsieh, M. C., & Pan, H. C. (2024). Understanding the impact of self-regulation on perceived learning outcomes based on social cognitive theory. *Behaviour & Information Technology*, 43(6), 1129-1148.
9. Dalli, C., White, E. J., Rockel, J., Duhn, I., Craw, J., & Buchanan, E. (2019). Inclusive early childhood education: Development, implementation, and evaluation of a multifaceted intervention in Aotearoa New Zealand. *Early Childhood Education Journal*, 47(2), 231- 244.
10. Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language: Young children learning at home and school*. Paul H. Brookes Publishing Co.
11. Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., ... & Japel, C. (2007). School readiness and later achievement. *Developmental psychology*, 43(6), 1428.
12. Early, D. M., Maxwell, K. L., Burchinal, M., Alva, S., Bender, R. H., Bryant, D., ... & Zill, N. (2007). Teachers' education, classroom quality, and young children's

- academic skills: Results from seven studies of preschool programs. *Child development*, 78(2), 558-580.
13. Hall, J., Sylva, K., Sammons, P., Melhuish, E., Siraj-Blatchford, I., & Taggart, B. (2013). Can preschool protect young children's cognitive and social development? Variation by center quality and duration of attendance. *School Effectiveness and School Improvement*, 24(2), 155-176.
 14. Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child development*, 72(2), 625-638.
 15. Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782), 1900-1902.
 16. Hertzman, C., & Boyce, T. (2010). How experience gets under the skin to create gradients in developmental health. *Annual review of public health*, 31(1), 329-347.
 17. Howard, J., & McCabe, A. (2019). Early childhood education for inclusivity: Teaching children acceptance and respect. *Early Childhood Education Journal*, 47(2), 207-215.
 18. Jones, S. M., Brown, J. L., & Lawrence Aber, J. (2011). Two-year impacts of a universal school-based social-emotional and literacy intervention: An experiment in translational developmental research. *Child development*, 82(2), 533-554.
 19. Lee, J., & Bowen, N. K. (2020). The impact of diversity and inclusivity in early childhood education on pro-social behavior in young children. *Early Childhood Education Journal*, 48(6), 751-761.
 20. Loeb, S., Bridges, M., Bassok, D., Fuller, B., & Rumberger, R. W. (2007). How much is too much? The influence of preschool centers on children's social and cognitive development. *Economics of Education review*, 26(1), 52-66.
 21. Lonigan, C. J., & Burgess, S. R. (2000). The role of preschool orthographic and phonological skills in predicting reading. *Reading Research Quarterly*, 35(3), 294-315.
 22. Magnuson, K., & Waldfogel, J. (2005). Early childhood care and education: Effects on ethnic and racial gaps in school readiness. *The Future of Children*, 15(1), 169-196.
 23. Mashburn, A. J., Hamre, B. K., Downer, J. T., & Pianta, R. C. (2006). Teacher and classroom characteristics associated with teachers' ratings of prekindergartners' relationships and behaviors. *Journal of psychoeducational assessment*, 24(4), 367-380.
 24. Nadeem, S., & Kothari, B. (2016). Fostering multicultural competence in early childhood education: A case study of an inclusive curriculum. *International Journal of Early Childhood Special Education*, 8(1), 52-69.
 25. Phillips, D. A., & Meloy, L. F. (2012). High-quality early childhood education and social development: The longitudinal study of Head Start. *Social Policy Report*, 26(4), 3-22.
 26. Pianta, R., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, D., & Barbarin, O. (2005). Features of pre-kindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions?. *Applied developmental science*, 9(3), 144-159.
 - Ramey, C. T., & Ramey, S. L. (1998). Early intervention and early experience. *American Psychologist*, 53(2), 109-120.
 27. Rao, N., Sun, J., Wong, J. M. S., Weekes, B., Ip, P., Shaeffer, S., ... & Lee, D. (2014). Early childhood development and cognitive development in developing countries: A rigorous literature review. Department for International Development.
 28. Raver, C. C., Jones, S. M., Li-Grining, C., Zhai, F., Bub, K., & Pressler, E. (2011). CSRP's impact on low-income preschoolers' preacademic skills: self-regulation as a mediating mechanism. *Child development*, 82(1), 362-378.

29. Reynolds, A. J., Temple, J. A., Ou, S. R., Arteaga, I. A., & White, B. A. (2011). School-based early childhood education and age-28 well-being: Effects by timing, dosage, and subgroups. *Science*, 333(6040), 360-364.
30. Saputra, E. E. (2025). The impact of Montessori based learning on early childhood cognitive and social development. *Jurnal E-MAS (Edukasi dan Pembelajaran Anak Usia Dini)*, 1(1), 13-22.
31. Schweinhart, L. J. (2005). Lifetime effects: the High/Scope Perry Preschool study through age 40. (*No Title*).
32. Shaheen, G., Ullah, N., & Zafar, J. M. (2024). Effect of Teachers' Instruction on Learners' Cognitive Skills, Attention, Perception and Memory in Early Childhood Education. *Journal of Development and Social Sciences*, 5(2), 478-489.
33. Shonkoff, J. P., & Phillips, D. A. (2000). From neurons to neighborhoods: The science of early childhood development. National Academies Press.
34. Syakhrani, A. W., & Aslan, A. (2024). The impact of informal family education on children's social and emotional skills. *Indonesian Journal of Education (INJOE)*, 4(2), 619-631.
35. Vandell, D. L., Belsky, J., Burchinal, M., Steinberg, L., Vandergrift, N., & NICHD Early Child Care Research Network. (2010). Do effects of early child care extend to age 15 years? Results from the NICHD study of early child care and youth development. *Child development*, 81(3), 737-756.
36. Whitehurst, G. J., Epstein, J. N., Angell, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of an emergent literacy intervention in Head Start. *Journal of educational psychology*, 86(4), 542.
37. Zigler, E. F., & Styfco, S. J. (2019). A developmental approach to early education. In *Handbook of Early Childhood Development Research and Its Impact on Global Policy* (pp. 129-141). Routledge.