

# Who Supports the Supporters? Tackling Workforce Gaps in Early Childhood Education

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### ABSTRACT

*Effective management of early childhood education (ECE) programs is crucial for ensuring high-quality learning experiences that foster cognitive, social, and emotional development. This paper adopts a narrative literature review approach, synthesizing evidence from peer-reviewed studies, policy reports, and best-practice frameworks to identify effective management strategies for early childhood education programs. This review explores key strategies in managing ECE programs, focusing on financial planning, staffing, curriculum development, parental engagement, health and safety, and technology integration. Financial sustainability requires diversified funding sources, budget transparency, and strategic cost management. Staffing challenges, including teacher retention and professional development, necessitate competitive compensation and ongoing training. A well-balanced curriculum that integrates play-based and inquiry-driven learning fosters holistic child development. Parental involvement and community partnerships enhance learning outcomes, while maintaining health and safety standards ensures a secure and inclusive environment. Thoughtful technology integration supports personalized learning but must be balanced with hands-on experiences. Future research should focus on sustainable workforce policies, innovative funding models, and digital learning advancements to further improve ECE program management.*

**Keywords:** Early childhood education, program management, financial sustainability, curriculum development, parental engagement, technology integration

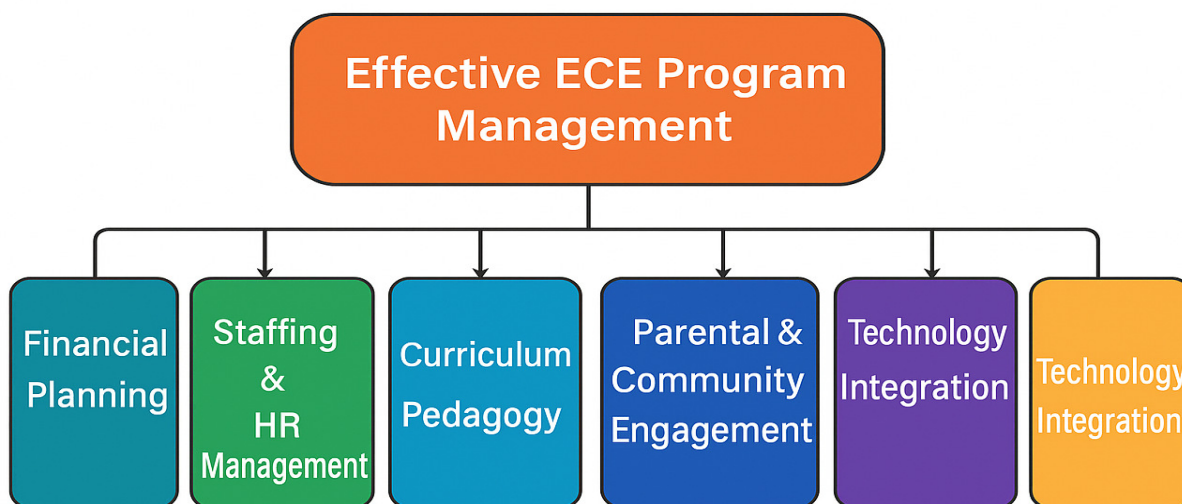
### INTRODUCTION

Effective management of early childhood education (ECE) programs is fundamental to ensuring the delivery of high-quality early learning experiences. Well-managed preschools and early learning centers play a crucial role in fostering cognitive, social, and emotional development

during a child's formative years (Mubiana, 2020). Research has consistently shown that children who attend well-structured early education programs exhibit better academic performance, improved social skills, and higher long-term success rates compared to their peers who lack



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**Figure 1.** Six key pillars of effective Early Childhood Education (ECE) program management

access to such programs (Nores & Barnett, 2010). However, despite the recognized importance of ECE, program administrators face numerous challenges in maintaining operational efficiency, financial sustainability, and stakeholder engagement (Phillips et al., 2016).

Managing an ECE program requires a multifaceted approach that includes effective financial planning, staff recruitment and retention, curriculum implementation, parental engagement, and health and safety regulations (Sellers, 2024). Financial sustainability is a primary concern, as many early learning centers struggle with inconsistent funding, rising operational costs, and affordability constraints for families (Garcia et al., 2020). Additionally, staffing shortages and high turnover rates among educators remain significant challenges, as qualified teachers are essential to delivering high-quality learning experiences (Ackah-Jnr et al., 2022). Furthermore, the role of parental involvement cannot be overlooked, as strong partnerships between schools and families contribute to better learning outcomes and a more cohesive educational environment (Povey et al., 2016).

The growing integration of technology in early learning presents both opportunities and challenges for ECE administrators. While digital tools can enhance learning and streamline administrative processes, concerns about excessive screen time and equitable access to technology must be addressed (Kraut, 2013). Likewise, ensuring a safe and inclusive learning environment is essential, requiring strict adherence to health, hygiene, and safety protocols to support child well-being (Phillips et al., 2016).

This review examines best practices in managing early childhood education programs, with a focus on financial planning, staffing strategies, curriculum implementation, parental engagement, and the integration of technology. By synthesizing research and evidence-based strategies, this paper aims to provide administrators with insights into optimizing preschool operations while maintaining program quality and sustainability. As the demand for early childhood

education continues to grow, the adoption of effective management strategies will be essential in ensuring that every child receives a strong educational foundation during their early years (Mondi et al., 2021).

To provide a visual summary of the core management domains discussed in this study, Figure 1 presents the six key pillars of effective Early Childhood Education (ECE) program management: Financial Planning, Staffing and Human Resource Management, Curriculum and Pedagogy, Parental and Community Engagement, Health, Safety and Environment, and Technology Integration. These domains represent the foundational areas addressed throughout the manuscript and emphasize the multifaceted nature of strategic ECE leadership. The figure serves as a conceptual guide for readers, reinforcing the integrated approach required to manage high-quality programs in diverse educational settings.

Cross-national data show the scale and structure of ECE financing. On average across the OECD, systems spent USD 13,331 per child (2022) in ECE, with USD 11,483 typically coming from government sources, and roughly three-quarters of funds flowing to public institutions figures that help benchmark budgets and clarify the public-private mix (OECD, 2025). Countries also invested the equivalent of 0.59% of GDP on education for ages 3–5, with leaders such as Iceland (1.05%), Norway (0.87%), and Israel (0.85%). Notably, 2015–2022 brought a 23% increase in total public funding at pre-primary level, translating to a 24% rise per child (headcount). These trends underscore why sustainable, multi-year financing is foundational to program quality. In the United States, New York City's universal pre-K expansion produced measurable labor-market gains, raising mothers' labor-force participation by about 5 percentage points ( $\approx 7.5\%$ ); this is evidence that ECE policy can simultaneously advance child-readiness and parental employment (U.S. Census Bureau, 2025).

In Kenya, early implementation studies of the Competency-Based Curriculum highlight that teacher

preparedness and resourcing remain pivotal for translating curricular intent into classroom practice, especially in early years settings (Thukia, 2025). Latin American integrated models reinforce the value of linking early learning with health and social protection: Peru's *Cuna Más* home-visiting program shows positive developmental effects at national scale, while Chile's cross-sector *Chile Crece Contigo* system demonstrates how coordinated services can improve early-life outcomes (Araujo et al., 2021; Milman et al., 2018). Collectively, these cases indicate that sustainable ECE management hinges on sound financing, workforce development, and intersectoral delivery tailored to local needs.

### Financial Planning and Sustainability

Financial planning is essential for ensuring the long-term sustainability of early childhood education (ECE) programs. Without effective financial management, preschools and early learning centers face challenges such as budget shortfalls, inconsistent funding, and affordability concerns, ultimately affecting educational quality (Phillips et al., 2016). Administrators must develop sound financial strategies that balance cost efficiency, revenue generation, and financial transparency to maintain operational stability and equitable access to early learning opportunities (Ngadni & Saminder Singh, 2024).

Budgeting plays a critical role in financial planning, enabling administrators to allocate resources efficiently while prioritizing essential expenditures. Personnel costs, including salaries, benefits, and professional development, often account for the largest share of an ECE budget (Gomez et al., 2019). Additional expenses such as facility maintenance, instructional materials, and regulatory compliance further strain financial resources (Vincent, 2016). A well-structured budget supported by cost-benefit analysis allows decision-makers to assess expenditures effectively and implement strategies such as bulk purchasing, shared administrative services, and long-term financial forecasting to optimize spending (Srbinoska et al., 2023). Diversified revenue streams enhance financial sustainability by reducing dependence on a single funding source.

Government subsidies, tuition fees, and public-private partnerships each contribute to financial stability but present unique challenges. Publicly funded programs, such as universal pre-kindergarten and Head Start, support early learning initiatives but are often vulnerable to budgetary constraints and policy changes (Garcia et al., 2020). Tuition-based models provide financial independence but may limit access for lower-income families (Phillips et al., 2016). Many institutions address these challenges by offering sliding-scale tuition, scholarships, and employer-sponsored childcare programs to ensure affordability (L. Smith, 2023). Corporate investments, nonprofit grants, and alternative revenue sources, such as facility rentals and after-school programs, further enhance financial flexibility (Nores & Barnett, 2010).

Financial transparency strengthens stakeholder trust and ensures accountability in ECE program management. Administrators must implement clear financial reporting practices, including expenditure tracking, annual audits, and compliance with funding regulations (Ngadni & Saminder Singh, 2024). The use of financial management software enables institutions to monitor revenue, assess financial health, and streamline reporting processes (Alonge et al., 2024). By adopting strategic financial planning and diversifying revenue sources, ECE programs can enhance financial resilience, maintain program quality, and expand access to early learning opportunities for all children (Ngadni & Saminder Singh, 2024).

### Staffing and Human Resource Management

Staffing and human resource management are fundamental to the success of early childhood education (ECE) programs. The qualifications, experience, and retention of educators directly influence children's learning outcomes and social development. However, many ECE programs face persistent workforce challenges, including high turnover rates, inadequate compensation, and limited professional growth opportunities (Phillips et al., 2016). Addressing these challenges requires strategic hiring, competitive salaries, continuous training, and a supportive work environment.

The 2025 *OECD Education at a Glance* report highlights significant disparities in the early childhood education (ECE) workforce worldwide, emphasizing both progress and persistent challenges in teacher compensation and working conditions. Across OECD countries, pre-primary teachers earned on average 74 percent of the salary received by their counterparts at the primary level, despite performing increasingly complex pedagogical roles and holding comparable qualifications (OECD, 2025). Large national differences persist: teachers in Denmark, Finland, and Sweden earn salaries approaching parity with primary educators, while those in Chile, Hungary, and the Slovak Republic receive less than 60 percent of primary-level pay. The data also show that ECE educators work an average of 1,003 hours per year, roughly 12 percent longer than primary teachers in several systems where additional time is spent on care, preparation, and family communication. Countries investing in career progression frameworks and indexed salary scales such as Estonia, New Zealand, and France report stronger retention rates and higher satisfaction levels, reflecting the value of linking compensation to experience and professional qualifications. Overall, OECD evidence underscores that competitive pay, equitable workload distribution, and structured professional development remain critical for attracting and retaining skilled early childhood educators, thereby sustaining program quality and educational outcomes. Attracting and retaining qualified educators remains a major concern. Low wages and limited career advancement often result in frequent staff turnover, disrupting program stability and instructional quality.



**Figure 2.** Key staffing challenges and strategic solutions in early childhood education (ECE) programs.

(Bryant et al., 2023). Offering competitive compensation, benefits, and career progression opportunities improves teacher retention and job satisfaction (Demir-Yildiz, 2023). Beyond financial incentives, fostering a positive workplace culture, providing administrative support, and reducing teacher workload contribute to long-term workforce stability (Ellis et al., 2024). Professional development is essential for maintaining high teaching standards and improving instructional practices. Ongoing training in child development, classroom management, and inclusive teaching ensures educators stay updated with best practices (Mitchell & Sutherland, 2020). Institutions that prioritize mentorship, workshops, and career advancement programs enhance teacher effectiveness and overall job satisfaction (Sahito & Vaisanen, 2020).

Maintaining appropriate teacher-to-student ratios is crucial for individualized instruction and quality interactions. Smaller class sizes facilitate better supervision and foster stronger teacher-child relationships, contributing to improved early learning outcomes (Barnett et al., 2010). However, financial constraints and staffing shortages often make it difficult for programs to meet recommended ratios, requiring careful resource management (Phillips et al., 2016).

Diversity in the ECE workforce enhances inclusivity and representation in early learning environments. Employing educators from different cultural and linguistic backgrounds strengthens connections with diverse student populations and supports culturally responsive teaching (Gay, 2018). Schools that implement equitable hiring practices and cultural competency training create a

more inclusive and enriching learning experience for all children (D. Smith et al., 2017). A strong workforce is essential for sustaining high-quality early learning programs. Addressing staffing challenges through improved compensation, ongoing training, and inclusive hiring strengthens program stability and enhances the learning environment for young children. To further illustrate the key workforce challenges and proposed solutions in early childhood education programs, Figure 2 summarizes the major issues affecting staffing stability and offers strategic approaches to address them. Strengthening the workforce is vital for sustaining high-quality learning environments in ECE settings.

### Curriculum and Pedagogical Approaches

The curriculum and pedagogical approaches in early childhood education (ECE) play a pivotal role in shaping children's cognitive, social, and emotional development. High-quality early learning experiences provide a foundation for lifelong learning and academic success. Effective curriculum design considers the developmental needs of young learners, balancing structured instruction with play-based and experiential learning methods (Nores & Barnett, 2010). However, ECE programs often face challenges in selecting and implementing developmentally appropriate curricula, integrating evidence-based teaching strategies, and assessing learning outcomes. Addressing these challenges requires a research-informed approach that aligns pedagogy with best practices in early education. Culturally responsive pedagogy strengthens

play-based and inquiry-driven learning by ensuring that classroom experiences reflect children's cultural and linguistic realities. Recent research shows that when educators intentionally incorporate students' home languages, community traditions, and culturally familiar materials, children demonstrate greater engagement, collaboration, and conceptual understanding (Veliz et al., 2025). Embedding these elements within exploratory play helps create inclusive learning environments where every child's identity is acknowledged and valued.

Developmentally appropriate curricula in ECE emphasize holistic child development, incorporating social, emotional, and cognitive learning components. Play-based learning is widely recognized as an essential pedagogical strategy, as it fosters creativity, problem-solving skills, and social interaction among young children (Ginsburg et al., 2007). Inquiry-based learning approaches, including project-based and exploratory activities, further enhance critical thinking and active engagement in the classroom (Kennedy et al., 2015). However, balancing child-led and teacher-guided instruction remains a challenge, requiring educators to adapt teaching methods based on individual learning needs and classroom dynamics (Pyle et al., 2022).

A well-structured ECE curriculum integrates multiple domains of learning, including early literacy, numeracy, social-emotional learning, and motor development. Assessment in ECE focuses on tracking developmental progress rather than formal testing. Observational assessments, portfolio documentation, and teacher-child interactions provide valuable insights into children's learning trajectories and areas for improvement. However, concerns over standardized assessments in early education persist, as young children develop at varying rates, making it essential to use flexible and developmentally appropriate evaluation tools (Rahn et al., 2024). An effective ECE curriculum is dynamic, inclusive, and responsive to the diverse learning needs of young children. Integrating play-based instruction, inquiry-driven learning, and social-emotional development fosters a well-rounded educational experience. Future research should explore innovative pedagogical models, culturally responsive curricula, and technology-enhanced teaching strategies to further improve early learning outcomes.

### **Parental Engagement and Community Involvement**

Parental engagement and community involvement are essential components of high-quality early childhood education (ECE) programs. Strong partnerships between educators, families, and local communities enhance children's learning experiences, promote school readiness, and support overall development. Research consistently highlights the benefits of parental involvement in ECE, including improved academic performance, stronger social-emotional skills, and increased motivation for learning (Wildmon et al., 2024). However, fostering meaningful parental and community engagement requires

intentional strategies that address diverse family structures, socioeconomic backgrounds, and cultural considerations. Effective parental engagement extends beyond participation in school activities to include active collaboration in children's learning at home and in the classroom.

Effective parental engagement strengthens early learning outcomes by fostering consistent communication and collaboration between families and educators. Recent research shows that preschool programs implementing structured family engagement strategies, such as regular home-school meetings, culturally inclusive events, and family resource supports, report higher attendance and greater child participation in learning activities (Pilarz et al., 2024). These findings emphasize that strong family-school partnerships not only promote children's cognitive and social development but also enhance program stability and equity within diverse early childhood settings.

Community involvement further enriches early education programs by leveraging local resources, support systems, and expertise. Partnerships with libraries, museums, and local businesses provide children with experiential learning opportunities that extend beyond the classroom. Nonprofit organizations and social services also play a vital role in supporting families by offering childcare assistance, health screenings, and nutrition programs that contribute to children's well-being and school success (Fan et al., 2022). Schools that actively engage community stakeholders create inclusive and supportive environments that benefit both children and their families. Cultural responsiveness is essential in engaging diverse families in ECE. Strong parental and community engagement enhances children's educational experiences and fosters a sense of belonging. Future research should explore innovative approaches, such as technology-driven parent engagement tools and cross-sector collaborations, to strengthen family-school-community partnerships in ECE.

### **Health, Safety, and Learning Environment**

A well-structured health, safety, and learning environment is fundamental to the success of early childhood education (ECE) programs. Young children require safe, nurturing, and stimulating spaces that support their cognitive, emotional, and physical development. Ensuring a high-quality learning environment involves maintaining strict health and safety protocols, designing inclusive and engaging classrooms, and fostering social-emotional well-being. Health and hygiene policies are critical in preventing the spread of illnesses in ECE programs. Young children have developing immune systems and are particularly vulnerable to infections, making proper sanitation, handwashing routines, and vaccination policies essential. Additionally, access to nutritious meals and physical activity programs contributes to children's overall health, enhancing their readiness to learn and reducing risks of childhood obesity (on Sports Medicine et al., 2006).

Safety measures in ECE settings must prioritize child protection and emergency preparedness. A high-quality learning environment goes beyond physical safety to include social-emotional well-being. Classroom design should encourage exploration, creativity, and interaction through well-organized learning stations, natural lighting, and accessible resources. Emotional safety, fostered by positive teacher-child relationships, supports self-regulation and social skills, reducing behavioral challenges in young learners. Additionally, inclusive environments that accommodate diverse learning needs ensure equitable access to education for all children, regardless of ability or background (Sharma, 2024). Establishing a safe and engaging learning environment requires a comprehensive approach that integrates health policies, safety measures, and emotional support systems. Future research should explore the impact of emerging health technologies, trauma-informed practices, and sustainable facility designs in enhancing early learning environments.

In the post-pandemic period, early childhood education (ECE) programs have adopted broader definitions of health and safety that encompass both physical protection and emotional well-being. Beyond hygiene practices such as regular handwashing, improved ventilation, and environmental sanitation, programs increasingly emphasize the psychological welfare of children and educators. Evidence from recent research shows that educators experienced elevated stress and emotional exhaustion during the COVID-19 pandemic, which influenced classroom climate and children's sense of safety (Berger et al., 2022). In response, many centers implemented trauma-informed and wellness-focused practices, including predictable routines, mindfulness activities, and strengthened caregiver-child relationships, to rebuild secure and supportive learning environments. These measures highlight the importance of integrating health protection with mental well-being to sustain resilience across ECE systems. Therefore, embedding post-pandemic health and trauma-informed strategies within ECE management requires continuous professional development, institutional support for staff wellness, and alignment with public health guidelines. Program leaders should establish policies that prioritize educator well-being alongside infection control and ensure that social-emotional recovery remains a core component of quality improvement efforts.

### **Technology Integration in Early Learning**

The integration of technology in early childhood education (ECE) has transformed teaching and learning experiences, offering innovative tools to enhance cognitive, social, and motor skill development. Digital resources such as interactive learning applications, educational videos, and touchscreen devices provide young learners with engaging, personalized learning opportunities. Research suggests that well-implemented

technology can support language acquisition, early literacy, and numeracy skills while fostering creativity and problem-solving abilities (Zosh et al., 2018). However, the effectiveness of technology in ECE depends on developmentally appropriate implementation, teacher training, and balanced screen time to avoid potential negative effects.

One of the main concerns regarding technology use in early learning is excessive screen time. Blended learning models that combine digital tools with physical play, group activities, and real-world exploration provide a more holistic educational experience (Zosh et al., 2018). Effective technology integration in ECE requires teacher training and curriculum alignment. Educators must be equipped with digital literacy skills to select appropriate applications, guide students through interactive lessons, and foster critical thinking. Schools that implement clear technology policies and involve parents in digital literacy education create a more cohesive learning environment for children. Technology, when used intentionally and in moderation, enhances early learning by offering personalized and interactive educational experiences. Future research should explore emerging digital learning trends, such as artificial intelligence-based tutoring systems and virtual reality applications, to assess their potential impact on early childhood education.

Recent advances in artificial intelligence (AI) and virtual reality (VR) are reshaping early childhood education by supporting individualized learning and inclusive practice. As highlighted by a recent study, AI-driven tools can streamline educators' administrative tasks, generate real-time progress reports, and provide adaptive support for children's unique developmental needs (Julie E. LeMoine, 2024).

For example, AI-based speech recognition and natural language processing tools are increasingly used to assist children with speech delays, while AI-enhanced augmentative and alternative communication (AAC) devices help non-verbal children express their needs through predictive text and image-based communication boards. Similarly, gamified AI learning apps adjust content and sensory input to sustain engagement among children with autism or ADHD, supporting executive functioning and attention. VR and augmented reality (AR) technologies are also emerging as therapeutic and educational tools: AI-integrated virtual environments allow neurodivergent children to practice real-life situations, such as visiting a store or interacting with peers, in safe and controlled settings. These applications demonstrate how AI and VR can be harnessed to enhance inclusion, communication, and social-emotional learning in early childhood contexts when implemented ethically and with educator guidance.

### **Conclusion**

Effective management of early childhood education (ECE) programs requires a multifaceted approach that integrates

financial planning, staffing, curriculum development, parental engagement, health and safety measures, and technology integration. A well-supported and highly trained workforce enhances program stability, while maintaining appropriate teacher-child ratios and providing professional development opportunities contribute to better learning outcomes. Curriculum and pedagogical approaches must be developmentally appropriate, incorporating play-based and inquiry-driven learning models that foster cognitive and social development. To improve ECE program management, stronger policy support is necessary. Government initiatives that increase funding for preschool education, provide incentives for teacher retention, and expand access to quality programs will contribute to long-term success. Continuous research is needed to assess the effectiveness of emerging pedagogical strategies, workforce policies, and technology applications in early learning. Future directions should focus on sustainable financing models, professional development innovations, and the integration of artificial intelligence and virtual learning tools in early education. In addition, sustained policy advocacy and research-based implementation are necessary to ensure that developments in early childhood education remain equitable, ethical, and consistent with child development principles. Policymakers and education leaders should strengthen the link between research and practice, translating evidence into clear actions that improve teaching, funding, and workforce conditions. Policies must go beyond expanding access to include accountability systems and equity standards that support children from varied social and economic backgrounds. A close connection between research, policy, and practice can guide investments in teacher training, data use, and instructional methods, allowing resources to be directed where they have the most impact. Policy efforts should also encourage coordination among education, health, and social sectors to support children's overall growth and well-being. As early learning systems incorporate new technologies, family engagement strategies, and trauma-informed approaches, governance structures must adapt to uphold ethical standards and protect children's rights. Evidence-based policymaking builds accountability, supports continuous improvement, and helps maintain public confidence in early education systems.

By applying research to program design and advocating for consistent policy reform, ECE administrators, educators, and partners can strengthen system performance and secure fair access to quality early learning opportunities for all children.

### Consent for publication

All authors read and approved the final version of the manuscript for publication and agree to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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### Conflict of interest statement

The authors report no conflicts of interest

### Authors' contributions

All authors contributed to every section of the manuscript. Contributions from the authors were equally distributed.

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