State of the Evidence

Description of the Evidence

While research from the United States suggests that early childhood education is important for children’s future educational success, the evidence in low- and middle-income countries is promising but still emerging. Early childhood education can be delivered through public preschools and kindergartens, encouraged by supporting parents to engage with their child’s education, or both. While pre-primary education, similar to primary education, has enormous potential to influence children’s success in school and life, there are a limited number of randomized evaluations about how best to design and deliver it. Below are emerging insights on various aspects of pre-primary education where randomized evaluations exist:

- **Strengthening state capacity to deliver:** These interventions have demonstrated impact by increasing instructional time spent on preschool education. For example, a program in India found that adding an extra worker focused on preschool instruction significantly increased instructional time and resulted in 0.29 and 0.46 standard deviation increases in math and language test scores, respectively after 18 months for children who remained in the program (Ganimian et al. 2021). This program was conducted in a context where existing workers were responsible for many tasks (health, nutrition, home visitation, administrative) and were unable to spend sufficient time on pre-school education. Thus, adding an extra teacher augmented the programs’ ability to deliver pre-primary education.

- **Access to quality pre-primary education:** Access to pre-primary education is important, but may not always address the limiting factor for learning. For example, offering scholarships to children to attend kindergarten in India (Jayachandran and Dean 2019) had positive effects on cognitive development (an increase of 0.40 standard deviations on cognitive tests as a result of being offered the scholarship, and an increase of 0.80 standard deviations on cognitive tests as a result of accepting the scholarship and actually attending the kindergarten). Creating preschools in Mozambique (Martinez et al. 2017) increased the cognitive and communication skills of students who attended by 0.33 standard deviations. However, vouchers for preschool in China (Wong et al. 2013) did not have an impact, perhaps due to the low quality of the preschools. In some contexts access to pre-schools may affect education ecosystems negatively, such as in Cambodia (Bouguen et al. 2018) where pre-school construction had no effects on learning due to a disruption in the previous practice of early enrollment in primary school.

- **Teacher training:** Evidence from pre-primary teacher training programs has not shown consistently positive impacts on learning. For example, a preschool program in Malawi (Özler et al. 2018) that combined teacher training and parenting support saw learning gains at 18 months that faded by 36 months, while another version of the program that focused only on teacher training had no impacts on learning after either time period. Teacher professional development in preschool and kindergarten classrooms improved classroom management but did not improve learning outcomes in Chile (Yoshikawa et al. 2015).
Curriculum and Pedagogy: Evidence suggests that preschool pedagogical approaches that are developmentally appropriate, discovery and activity-based, and implemented by trained teachers, show positive impact on learning outcomes. These shifts in pedagogy to improve learning outcomes among very young children have shown promising short-term but not definitive or long-term results. For example, games structured to develop intuitive numerical and spatial abilities in India (Duflo et al. 2017) improved preschoolers’ intuitive numerical and spatial skills (by 0.25 standard deviations), but not formal math skills. A play-based preschool program in Ghana (Attanasio and Krutikova 2018) increased children’s cognition, socio-emotional development, and school readiness, but formal school outcomes have not yet been measured. A problem-based preschool pedagogy in Peru which incorporated games, group or pair exercises, as well as individualized instruction (Gallego et al. 2019) showed positive initial effects (0.11 to 0.23 standard deviation increases in numeracy and spacial skills) that faded out after a year. Finally, an interactive vocabulary program in the US (Oreopoulos et al. 2018) that included music videos, dance videos, and animated books had a small but positive impact on preschool and kindergarten students’ vocabulary 25 weeks into the program (an increase of 0.23 to 0.26 standard deviations, or an increase of slightly more than one word out of a list of 38). These examples demonstrate a trend toward using interactive or play-based pedagogy in successful early childhood education programs.

Parents and caregivers: Engaging parents in pre-primary education has shown positive impacts on learning, although mostly in high-income country contexts. For example, a preschool program in the US (York and Loeb 2018) that texted suggestions to parents of small, easy tasks, provided encouragement, and sent reminders increased parental engagement by 0.15 to 0.29 standard deviations and boosted children’s literacy scores by 0.11 standard deviations. Personalizing the texts in another US (Doss et al. 2018) program led to even larger gains in literacy (children in the personalized text group were 63 percent more likely to read at a higher level than children in the non-personalized text group).

Equity Considerations
Providing equal access to pre-primary education is important to ensure that children from one group don’t fall behind another group before even reaching primary school. Research suggests that early childhood is a critical period for long-term cognitive and psychosocial development, and gaps in future learning outcomes may begin during pre-primary education ages. As such, quality and equitable pre-primary education may be an important step toward breaking the intergenerational transmission of poverty if designed and delivered effectively.

Operationalization
Generalizability
Drawing on J-PAL’s Generalizability Framework, below are questions that will help you determine if a pre-primary education program might increase learning outcomes in your context. The below questions are not meant to be an exhaustive list of questions you will need to answer to determine if this type of program is appropriate for your context. They can, however, provide a starting point for applying the global evidence on this type of program to your specific context.

Local Conditions
- What early childhood education programs currently exist in your area?
  - How many people participate in them? Is there an estimated coverage gap?
  - What is the fee structure—are these programs too expensive for some people to participate in?
  - Have there been any evaluations to determine if any existing programs have positive effects on children?
- What assumptions might be in place in your context about play-based learning and the importance of play and interaction in early childhood?
- Is school readiness a problem in your context? Do children enter primary school ready to develop literacy and numeracy skills, or are there major barriers to this skill development?
- Is there available data that records school readiness gaps between lower and higher income children?

Generalized Lessons on Behavior
- Play-based or interactive pre-primary education with equitable access for all may help children develop the skills needed to thrive both during primary education and later in life. Although the exact pedagogies, teacher training methodologies, and links between pre-primary education and later success have not been fully tested at scale and over the long-term, pre-primary education is almost certainly important for students’ later success.

Notes on Context
The quality of the pre-primary education will affect the impact it will have on the child, meaning that access is not the only issue at play, and suggesting that teacher training and pedagogy are also important factors determining if a pre-primary education program will have positive effects in a context. The quality of primary education may also affect whether or not any gains in learning from pre-primary education persist over time. However, in some contexts pre-primary education may be important for reasons in addition to learning, such as allowing parents the opportunity to work and/or providing a safe space for children to develop and play.
Local Implementation

- Who will run pre-primary education centers in your context? Do centers already exist that can be expanded or supported? Do new centers need to be created? Will the centers be run by NGOs, governments, or a combination of both? Will they be tied to primary education centers, or separate entities?

- Are there already teachers trained for pre-primary education, or will new teachers need to be identified, hired, and trained? This aspect of pre-primary education is currently not well studied.

- Is there currently a culture in your context of sending students to preschool? In some contexts, preschool is more common than in others.

- Will rural areas be less able to access pre-primary education centers, therefore disadvantaging these communities? How can you ensure access to the program for harder-to-reach populations?

- What languages are most commonly spoken in your context? How will this affect development of pre-primary education materials?

Successful Examples

- Play-Based Preschool in Ghana (Attanasio and Krutikova 2018)

- Informal math games to improve school readiness in India (Duflo et al. 2017)

Further Action Options

Approaches with high and consistent effectiveness are recommended for direct action through pilots to demonstrate local proof of concept and generate momentum in-country; scale-up is recommended especially if an existing country effort is operational and ready for scale. These takeaways are meant to only be a guide rather than a definitive recommendation. In some cases, even effective and well-studied interventions might benefit from further research, for example, to test scale pathways or to optimize programs for cost-effectiveness.

Based on the evidence for this category, potential next steps might include:

- Connecting with implementers to learn more about how to adapt and pilot evidence-based programs in this category;

- Connecting with researchers to identify relevant open questions on implementation and scale that may benefit from further research;

- Other activities to think through the policy implications of this evidence in your context.

If you are interested in exploring these or other options, please contact the J-PAL Education team at JPAL_Education@povertyactionlab.org to set up an initial exploratory meeting. The team will be happy to brainstorm potential next steps.