جائزة خليفة التربوية

Khalifa Award for Education

Winner of the 2025 Khalifa International Award for Early Learning: Best Research and Studies

Professor Alexander Eble

Abstract

Established in 2008, the Foundation aims to provide quality early education to all Moroccan children, particularly in rural and underserved areas. Through a comprehensive child-centered educational system, the foundation ensures access to high-quality educational services across the Kingdom, regardless of geographical barriers. Working closely with the Ministry of National Education, Early Childhood and Sports, the foundation aims to deliver free education for children aged 4-6. It operates under a public service delegation model, establishing a network of over 24,073 classrooms with the capacity to accommodate 525,000 children annually. The foundation has developed an innovative, locally-adapted system that aligns with Morocco's cultural, economic, and social contexts.

To support the universalization of early childhood education, the foundation focuses on four main objectives.

- Infrastructure: Providing standardized, well-equipped facilities that meet the needs of young children in urban, rural, and semi-rural areas.
- Educational Tools and Curricula: Developing innovative educational tools and curricula that cater to children's cognitive, social, emotional, and motor development while promoting identity and societal values.
- Educator Training: Offering unified training for early childhood educators, including basic and continuous training to enhance educational practices.
- Family Participation: Engaging families in the educational process to raise awareness about early childhood education and support their children's development.

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Key components of the Moroccan Foundation for Preschool Education's comprehensive approach include:

- **Scientific Research:** A Research Center informs educational practices through partnerships with national and international universities, focusing on child development and educational intervention strategies.
- **Educational Production:** Creating educational activities and tools centered on children's needs to foster comprehensive development and a joyful learning environment
- Training: Comprehensive training programs for educators that combine theoretical knowledge with practical skills, aligned with national educational goals.
- **Educational Supervision:** A support system for educators that enhances professional competencies and ensures high-quality educational practices.
- **Management:** A decentralized governance structure that facilitates effective regional management of early childhood education departments.
- **Evaluation:** A robust evaluation system to monitor the child's development, educator performance, and the overall educational system's effectiveness.
- **Quality Label:** A classification system for non-affiliated Preschool education departments that ensures consistent quality and better services for children.
- **Digitization:** Implementing digital solutions for administrative and educational operations, enhancing the accessibility of resources for staff, children, and families.

Internal evaluations have addressed each of the four main objectives and determined that the Foundation has increased enrollment, particularly in rural areas, and implemented a robust system of infrastructure improvements, training, and supervision to improve quality. Evaluation of more than 300,000 children ages 4 to 6 in 1568 found that 80 percent achieved the necessary competencies across a broad range of early learning outcomes including language and communication, discovery of self and the environment, the arts and common values.

Professor Alexander Eble

The Case for Foundational Literacy and Numeracy in Low-Income Countries

Background

Foundational literacy and numeracy are critical building blocks for individual and societal progress, particularly in very low-income countries. People without the ability to read, write, and perform basic arithmetic are excluded from participating in formal education, accessing job opportunities, and engaging meaningfully in civic life. These skills are not merely educational outcomes, but are tools that empower individuals to break free from cycles of poverty. Research consistently shows that early mastery of these skills is linked to improved life outcomes, including better health, higher income, and greater gender equality, as well as the transmission of these advantages to later generations. In low-income settings, investing in foundational literacy and numeracy can set millions of children on a path toward self-reliance and prosperity.

The societal benefits of widespread foundational skills are equally profound. Economies thrive when their populations are educated and skilled, as literacy and numeracy form the backbone of productivity and innovation. Workers who can perform basic calculations or interpret written instructions contribute more effectively to industries such as agriculture, manufacturing, and services. Furthermore, literacy fosters informed citizenship, enabling people to participate in democratic processes, advocate for their rights, and hold governments accountable. For very low-income countries struggling with weak governance or corruption, an educated populace can catalyze societal transformation and foster stability.

Finally, prioritizing foundational literacy and numeracy is a cost-effective intervention with significant returns. Programs targeting these skills early in life are among the most efficient ways to improve learning outcomes and reduce inequality. A common rule of thumb from decades of research on the returns to education is that every additional year of education can raise a person's income by 10% (Psacharopoulos 1994; Card 2001), and literacy programs yield an even greater return on investment when implemented in underserved communities. In a world where millions of children remain out of school and tens of millions are in school but not learning how to read, write, or perform arithmetic (Sandefur, Pritchett, and Beatty 2016), ensuring access to quality basic education is not just a moral imperative but a pragmatic strategy to accelerate development and alleviate global poverty. By equipping every child with these essential skills, we can unlock human potential among all children, not just the privileged classes, and create a more equitable and prosperous future.

The challenges of raising learning levels

Despite the clear importance of foundational literacy and numeracy, improving these outcomes in very low-income countries remains a formidable challenge. Structural barriers such as overcrowded classrooms, poorly trained teachers, and insufficient resources often undermine the impact of educational programs (Glewwe and Muralidharan 2016). For instance, even when textbooks or learning aids are provided, their use is frequently hampered by a lack of teacher capacity to integrate them effectively (Glewwe, Kremer, and Moulin 2009). This misalignment between interventions and ground realities underscores the complexity of delivering meaningful improvements in learning outcomes.

Many interventions aimed at enhancing these skills have been studied, but the vast majority yield only small treatment effects. There is a very large body of peer-reviewed research, comprising over one thousand published studies (Kremer and Holla 2009; Ganimian and Murnane 2016; Evans and Yuan 2022). Even among those that find positive treatment effects, the vast majority find modest test score or ability changes, usually in the range of 0.05-0.20 test score standard deviations, or SDs. This suggests that, to date, we know very little about how to generate the type of large gains necessary to close the learning gap between developing and developed countries (Pritchett 2013).

Innovativeness

The promise of larger treatment effects

In the past decade, a series of studies has shown the potential of "bundled" treatments to generate improvements in learning outcomes that are larger than the sum of their parts. These have shown much larger learning improvements than before among students ranging from South Asia, West Africa, and East Africa. They often combine multiple prongs known to be effective in isolation with the goal of reaping benefits from potential synergies between these prongs (Kerwin and Thornton 2021; Gray-Lobe et al. 2022). The largest of these estimates have come from studies that I led in South Asia and West Africa. In India, The Gambia, and Guinea Bissau, I have shown with my team that even in some of the world's lowest-income, least-served places, the right intervention can lead most children to master these crucial literacy and numeracy skills. I am continuing and growing this work, and it is for this which I seek the Khalifa International Award for Early Learning.

Our solution

In a series of three studies, my research team and I have pursued this approach to target the problem of delivering foundational literacy and numeracy skills to young children early in their education. Our work focuses on young children who have not yet entered school living in hardto- reach parts of very low-income countries. These are areas where, in the absence of external intervention, the vast majority of these children are unlikely to ever achieve literacy or numeracy (Pritchett 2013; Boone et al. 2014; Eble and Escueta 2023).

The intervention we study combines three well-known levers for improving learning: i) the use of para teachers, instead of civil servants or volunteers, to deliver after school lessons (Banerjeeet al. 2007; Muralidharan and Sundararaman 2013; Duflo, Dupas, and Kremer 2015); ii) an improved, scripted curriculum, also known as "structured pedagogy," which is targeted at students' current learning levels (Piper, Zuilkowski, and Mugenda 2014; Banerjee et al. 2017; Romero, Sandefur, and Sandholtz 2020); and iii) extensive monitoring of these teachers in a manner, also known as "teacher coaching," whose aim is to provide regular feedback to improve teaching methods and practice (Muralidharan et al. 2017; Kraft, Blazar, and Hogan 2018).

This intervention was originally designed by The Naandi Foundation, an Indian nongovernmental organization. In three large-scale randomized controlled trials comprising over 10,000 children across India, The Gambia, and Guinea Bissau, we have shown conclusively that Professor Alex Eble Application for Khalifa International Award for Early Learning 4 this intervention can raise learning levels far more than previously thought possible. Below, I describe the impact and methodological rigor which generated these findings. I follow this with a description of the importance of the working going forward, and conclude with a summary of the proposal.

Impacts

In this section I describe the impacts of the interventions studied to date, described in chronological order.

India

Our first intervention took place in India. This intervention was designed by The Naandi Foundation, an Indian NGO, which had been implementing it in multiple Indian states for several years prior to the start of the randomized trial used to evaluate it, which began in 2008. The trial reported in Lakshminarayana et al. (2013) took place in 214 villages in rural Telangana (then Andhra Pradesh), India, over a period of two academic years. The study found that the intervention yielded a 0.75 SD increase in reading and mathematics test scores among young children in intervention villages, relative to those in control villages. The work found similar impacts for boys and for girls, and showed that the intervention design was highly effective at raising learning levels even for those learners who were most at risk of falling behind when they later advanced in school. The treatment effect estimate was among the largest ever estimated insuch contexts, and the high levels of efficacy and cost-effectiveness helped me and my team raise money to study the potential of this model to work in two much more needy West African contexts: The Gambia and Guinea Bissau. I describe each in turn.

The Gambia

In The Gambia, my team and I worked to design an intervention that built on the success of the one we studied in India, adapting its main components to the needs and realities of the Gambian context. The intervention was designed by Gambian curriculum experts with the help of the Indian experts who designed the curricular materials for the intervention in India. It was designed to start with children who were five or six years old and had not yet started formal schooling, and over the course of a few years bring them to mastery of the foundational literacy and numeracy skills they needed to later succeed in formal schooling and beyond.

The intervention formalized the intuition of the bundled intervention studied in India, further reinforcing the strength of each of the three prongs: structured pedagogy (aka scripted lessons), teacher coaching, and the use of para teachers. The structured pedagogy was achieved by providing each teacher with very detailed lesson plans to ensure they knew exactly what to be teaching in each short interval of time, and to ensure that they had the materials necessary to do so effectively. As in India, the para-teachers operated in addition to the regular classroom teachers, ensuring focused support for struggling learners. Finally, the teacher coaching helped the para teachers become better instructors, focusing on how to improve their skill, rather than simply monitoring whether they were present in class. The program also involved community engagement to promote accountability.

The intervention was a tremendous success. At the end of the randomized study evaluating it (which is described in greater detail below), children in villages randomly assigned to receive the intervention scored **3.2 standard deviations** better than children in villages randomly assigned to not receive it. This result was the largest learning gain ever observed in the literature, and shocked the world by showing that such learning gains, previously thought out of reach in these neglected areas, were indeed possible.

Furthermore, this gain was equitable: we observed a large change across the distribution of scores. For example, a child at the 10th percentile of the distribution of scores for intervention children would be at approximately the 80th percentile of the control group score distribution. In other words, the intervention left no children behind.

Finally, it is important to emphasize that these learning gains are meaningful in absolute, as well as relative, terms. For comparison, rural Gambian children who received the intervention performed, on average, as well or better in all comparable English reading subtasks than childrenin a nationally representative assessment of these skills among third grade students in the Philippines, a country with a per-capita GDP several times greater than that of The Gambia. Their scores also compare favorably to scores of similarly-aged children from other developing countries, such as Uganda, Egypt, Morocco, and Iraq.

Guinea Bissau

The final intervention we studied took place in Guinea Bissau. Here we worked in extremely poor and small communities, places even more disadvantaged than what we saw in The Gambia or India. The intervention was originally intended to use para teachers delivering after-school lessons, as in India and The Gambia. As we progressed, however, my team and I learned that levels of public service delivery were extremely low – in that context, there is essentially no reliable state implementation of education. Because of this, and the extremely low levels of Professor Alex Eble Application for Khalifa International Award for Early Learning human capital in Guinea Bissau, implementing the “para teacher” component – hiring literate and numerate individuals locally and training them to serve as after-school teachers – was impossible. This intervention therefore instead replaced the early grades of government primary schools with privately operated schools which use the other two core insights from the Gambia and India studies: scripted lessons and teacher coaching. It also added an additional year of preschool education to focus on the development of skills in the Portuguese language, the national language and the language of instruction, since so few people in the settlements in which we worked spoke it.

This intervention turned out to be the most effective yet. At the end of the study, children in villages assigned to receive the intervention scored **5.3 standard deviations** better than those in the controls. Put differently, at endline **zero percent** of children in control villages were literate; in the intervention villages, **over 60 percent** of children were.

Methodological Rigor

All three interventions were studied using cluster-randomized controlled trials, the gold standard of evidence in the social sciences (Angrist and Pischke 2010; Eble, Boone, and Elbourne 2017). In India, there were 214 villages in the study and over 4,000 children. In The Gambia, there were 169 villages and over 4,500 children enrolled in the study. In Guinea Bissau, there were 49 villages and over 2,000 children. All studies followed best practice in study design from medical statistics as well as economics (Campbell et al. 2012; Glennerster and Takavarasha 2013). As a result of this very high level of methodological rigor, the results that the three studies yielded are extremely credible. Furthermore, to complement the test score analysis, quantitative and qualitative data on attendance, community participation, and perceptions of the program were collected in each case. My team and I also evaluated cost-effectiveness to determine the feasibility of scaling the intervention in similar low-resource contexts.

An important dimension of these studies' methodological rigor was the way in which learning was measured. In India, tests were designed by a third-party NGO, Educational Initiatives, which generated the endline tests for other major studies in the region at that time (e.g., Muralidharan and Sundararaman 2011). In The Gambia and Guinea Bissau, the pre-specified primary outcome of the trial was the arithmetic mean of the child's score on Early Grade Reading and Mathematics Assessment-style tests (also known as EGRA and EGMA tests: Platas et al. 2014; Dubeck and Gove 2015) administered at the end of the trial. These tests are the international gold standard for measuring learning among low-income and low-learning populations because of their sensitivity in measuring ability levels among children and adults who have not yet achieved literacy (i.e., avoiding "floor" effects), and have been used in dozens of such countries. The use of these tests also allowed me to compare learning levels in the study areas to those from the many other countries which have used EGRA and EGMA tests in the prior decade. Finally, attrition in each study from enrollment to the endline test in each study was less than 20%, further ensuring a high level of reliability and underscoring the rigor of the findings.

Importance

Our work shows that even in the neediest settings, children can learn far more than we previously thought possible (McEwan 2015). These studies also demonstrate a clear way to reach the learning gains that many have called for in particularly disadvantaged areas (Pritchett 2013; Glewwe and Muralidharan 2016). This echoes other work on the efficacy of “bundled” interventions combining multiple separate interventions to target a particularly difficult-to-move outcome, such as extreme income poverty. While substantially more expensive than typical interventions, these often show large impacts on otherwise intractable problems (Banerjee et al.
2015; Brudevold-Newman et al. 2017; Bandiera et al. 2020). Despite their cost, because of their very large impacts, the interventions are highly cost-effective, and show a path forward for areas which most of the world had previously given up on.

My work has the potential to transform the livelihoods of the world’s most vulnerable children.

Education is a crucial lever for generating more prosperous lives, families, and societies. The areas I target in my work are among the most vulnerable in the world – rural areas in very lowincome countries, far from the reach of most social services. The people in these areas, as a result, are likely to be among the neediest in terms of education, health, and wealth. Through a series of randomized interventions, my work has shown that their life trajectories can be transformed through an ambitious intervention which helps the majority of them master literacy and numeracy, and in so doing granting them access to many of the most enriching parts of society that these abilities unlock, such as health, employment, and access to many social arenas.

Going forward, I am pushing out on this work in three important ways: one, through mainstreaming these interventions into government services; two, through following the original study participants in their lives to show the world the potential of early learning interventions to transform lives, families, and societies, even among the most vulnerable; and three, through expanding this work to start in the most common settings found in the early education landscape in developing countries. I discuss each in turn.

First, I am leading an ambitious effort to bring the tools of our intervention into government practice in The Gambia, mainstreaming and scaling our work to reach orders of magnitude more Professor Alex Eble Application for Khalifa International Award for Early Learning 8
children than reached previously. This work is in partnership with Effective Intervention (or “EI”, the NGO in the Gambia who led implementation of the intervention there), and the Gambian Ministry of Basic and Secondary Education (MoBSE). With EI and MoBSE, we are running a three-year pilot of this program in 61 government schools, with an additional 61 schools that we will follow and use as a comparison group. If we find it to be successful in raising learning levels when implemented in this manner, the aim is to scale it further to most government schools in The Gambia, and then work to bring it to other nations in the region.

The goal of this work is to show when and how these insights can be brought into the mainstream of government delivery of services. If we can find a way for government to deliver such gains, the work stands to benefit huge swaths of the world’s population. In these efforts I am pushing out on that frontier, and aim to show the world its first evidence of how and when this is possible.

Second, I am working on a long-term effort to measure and showcase the life-cycle gains of the highly effective early education that the interventions in The Gambia and Guinea Bissau brought. In this work, the aim is to follow the young children who benefitted from the interventions through the rest of their lives, capturing how their education, health, fertility, and wealth, as well as the development and education of their own children, differ from those in the control group
who did not receive the intervention.
The longer-term goal of this second goal is to make a “Perry Preschool Project” for the developing world. The Perry Preschool Project was a small randomized evaluation of an early education program in the United States which has spawned hundreds of studies.

The positive impacts measured later in the affected children's lives justified a major expansion of early education across many countries in the developed world (Belfield et al. 2006; Heckman et al. 2010). My hope is to use our experiments in The Gambia and Guinea Bissau to generate a similar evidence base for the power of early education to transform lives in much needier areas.

This goal has three major levers for transformative change. First, I expect this to dramatically change the amount the world invests in the development of children in such settings. By showing how much benefit effective early education can yield later in life, it can help raise interest and resources for these efforts in a wide range of contexts. Second, I expect it to change the manner in which it does so, by showing how this model of educational intervention works and in what contexts.

Third, I expect it to fill an important research gap that will help us far better understand precisely those processes of early learning the Khalifa Award targets: specifically, it will Professor Alex Eble Application for Khalifa International Award for Early Learning 9 document how highly effective educational efforts delivered early in life affect the early education of the children of the affected individuals, giving us a key insight into the intergenerational effects of effective early education. Third, I am launching a new effort to bring these lessons into less formal settings. A key feature of the success of the projects in India, Gambia, and Guinea Bissau was that the lessons were done in settings either attached to or replacing traditional early schooling settings. Since much of early education is delivered in homes or community centers, a key need is to identify how to effectively deliver such efforts in these settings as well. In the next 18 months, a key professional goal of mine is to identify a partner with whom to design an intervention targeted at this type of delivery, and then to design, raise funds for, and begin a pilot of its efficacy. Here, the goal is to generate an evidence base of how to deliver this kind of transformative learning in the most common scenarios in which children are taught in these settings, maximizing the leverage of what we have learned so far.

Summary

In my professional career I have made major advancements in what we know about delivering early education to the world's neediest areas. Through a series of large-scale randomized controlled trials in India, The Gambia, and Guinea Bissau, conducted in partnership with local NGOs and touching the lives of over 10,000 children, I have dramatically advanced what we know about how to teach foundational literacy and numeracy to children in some of the world's most impoverished regions.

This work has shown that we can achieve massive foundational literacy and numeracy gains in these areas, bringing children in even some of the most low-income and low-literacy parts of the world to be on par with the average child in a lower middle-income country. My findings shattered the previous consensus that these skills and the life path they allowed were almost certainly out of reach for almost all children in such settings. In my ongoing work, I am expanding this agenda in three ways to maximize its leverage on improving child welfare. First, I am working in partnership with national governments, as opposed to NGOs, to mainstream the lessons learned so far into country-level early education practice. Second, I am working to follow the beneficiaries of the original studies into adulthood and parenthood, with the goal of having a new "Perry Preschool Program" for the developing world. This will carefully and rigorously measure just how much economic, social, and intergenerational good can be brought about by effective early education and, in so doing, leverage future investment in these important areas. Third, I will advance this work by experimenting with how to move its delivery to the more common but less formal early education settings which are so prevalent in the areas I study. This Professor Alex Eble Application for Khalifa International Award for Early Learning 10 work, and these new projects, are directly in line with the priorities of the Khalifa Foundation. I believe my work and research agenda a clear match with the goals of this fellowship, and one, I hope, that the Foundation will be glad to have recognized as this work progresses.

How the Khalifa International Award for Early Learning will accelerate and elevate this work

The Khalifa International Award for Early Learning will accelerate and elevate this work in two key ways. First, the recognition and notoriety of this esteemed award will raise the global profile of the findings of my work, giving it the attention it deserves. This, in turn, will amplify the profile of the new, ongoing work, enabling supporting partners to more easily find and support the work as it grows in scope and ambition.

In addition, the Award's generous stipend will allow me the freedom to spend resources on the project as I best see fit. For example, it will give me the intellectual freedom to focus my energies on the work – as opposed to teaching and administrative responsibilities – by allowing me to buy out of some of my coursework. It will also give me the resources necessary to hire and retain the best help on the ground in these countries as the work progresses and advances to higher levels.

In turn, I humbly suggest that my work both matches the priorities of the Khalifa Award and will advance its important goals. More specifically, my work is precisely aligned with the Award's stated goals of i) development of new policies or practices, ii) providing new insights into early learning and early education, and iii) having clear impact on the practice of early education and learning. To date, my work has made great strides towards each of these stated goals. I am eager to continue on this important path, and it would be a tremendous honor and accelerant to have the support and endorsement of the Khalifa International Award for Early Learning as I do so.

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Appendix with links to publications and other materials online

Publications:

• India paper (ungated):

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0065775

• Gambia paper:

https://www.sciencedirect.com/science/article/abs/pii/S0304387820301140

o Ungated version here

• Guinea Bissau paper:

https://www.sciencedirect.com/science/article/pii/S0047272721000219

o Ungated version here

Other online resources:

• Explainer on VoxEu: Achieving child literacy and numeracy in the world's poorest areas: Evidence from rural Guinea Bissau | CEPR

• Twitter thread explaining the work: https://x.com/alexeble/status/1412783810597564421

• Coverage of it at Columbia: https://www.tc.columbia.edu/articles/2022/january/learninginterventions-for-gambian-children/