OPERATIONALIZING IMPACT

A Decade of World Bank Supported Impact Evaluations

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Acknowledgments

This compendium is a product of the World Bank's Education team. This compendium was prepared by Tracy Wilichowski (Analyst), Quentin Daviot (Consultant), and Gabrielle Arenge (Consultant), under the guidance of Luis Benveniste (Global Director) and Harry Patrinos (Senior Advisor). We are grateful to Kathleen Beegle (Lead Economist), Alaka Holla (Senior Economist), and Marcus Holmlund (Senior Economist) for their support in the identification of relevant research.

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1 Overview

Education is important for economic development and human flourishing. Receiving a quality education leads to better health, well-being, and productivity, and a recent study found education accounts for 50 percent of global economic growth, 70 percent of income gains amongst the world's poorest communities, and 40 percent of extreme poverty reduction since 1980 (Gethin, 2023). However, access to quality education is far from guaranteed globally, with an estimated 70% of 10-year-olds unable to understand a simple written text (World Bank, 2022). There is an urgent need to improve learning for all and especially for those in under-resourced and marginalized communities.

A growing body of recent research offers evidenced-informed ways to improve education outcomes (Angrist et al., 2023; Lomborg, 2015). Further and ongoing research about how to support quality education and learning is needed – especially as educational systems are affected by and must respond to rapidly transforming climates, populations, and technologies – but we have a strong and growing foundation of knowledge to build from. This compendium represents an important subset of such knowledge.

This compendium compiles a decade's worth of education-focused impact evaluations (IEs) supported by the Development Impact Group (DIME), the Development Research Group (DECRG), the Education team, and the Strategic Impact Evaluation Fund (SIEF) of the World Bank. By IE, we mean rigorous evaluation methods designed to measure the causal effect of a program by comparing outcomes between a group that received an intervention (or treatment group) and a group that did not receive the intervention (or the comparison group). The selection of studies featured in this compendium includes the latest rigorous evidence on key education issues affecting learning in low- and middle-income countries worldwide. Each study provides policymakers and practitioners with specific information to enhance evidence-based decision-making.

This compendium serves as an essential, actionable resource for policymakers and project implementers, designed to facilitate the implementation of evidence-based interventions that aim to improve student learning outcomes. It highlights recent evidence, primarily from World Bank-funded projects or authored by World Bank researchers, to guide strategies for enhancing education quality. Covering early childhood to secondary education, the compendium summarizes global impact evaluations addressing key areas of interest in education policy. These include topics such as performance-based incentives for schools and teachers, approaches to parental training, and strategies for improving student retention in secondary education. By presenting results from specific studies in various contexts, this compendium provides valuable insights to inform decision-making, while acknowledging the complexity and context-dependency of education interventions.

By analyzing what works, for whom, and under what conditions, these studies offer a robust foundation for developing innovative and proven strategies to improve learning outcomes. As policymakers, practitioners, and researchers, it is our collective responsibility to use these insights to create sustainable solutions that improve lives and foster equitable development. We hope you find this compendium, which will hopefully be the first of many, both informative and actionable. It represents a carefully curated selection of impactful studies aimed at guiding your efforts to enhance education quality and equity. We hope you enjoy exploring the insights and evidence provided within these pages.

Sincerely,

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Education

Deon Filmer
Director
Development Research Group (DECRG)

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2 Analysis

This compendium brings together many recent impact evaluations (IE) supported by the World Bank. These IE's offer rigorous evidence about how to improve student learning from early childhood through secondary school in low- and middle-income country settings. To be included in this compendium, studies must meet the following criteria: they must be rigorous (experimental or quasi-experimental), focus on education from early childhood development to grades K-12, and include results related to student learning outcomes. Additionally, studies are available online (preferably as publications or working papers) and were published from 2015. Studies that are follow-ups of an original experimental impact evaluation are not included and for interventions covered by multiple studies, only the most recent publication is included.

The papers report on a wide range of interventions, as illustrated in the tables below, which policymakers may be interested in – or already using – to support quality education in their own contexts. However, the research and interventions included are not all encompassing. The compendium features only a portion of research within a vast universe of academic literature on student learning globally. Reported findings should be considered against this broader literature. If some papers in this compendium show positive effects on student learning, it is possible that other similar studies found null or negative effects in different contexts. The same is true for studies reporting negative or null effects – other wider research may show positive effects under certain conditions. Each paper is situated within the wider literature through 'Did you know?' boxes and supplemental citations. The are no inclusion restriction in the references contained in these 'Did you know' boxes. These references were all taken from the impact evaluation articles reviewed in this compendium.

This section is followed by a numbered list of all IE papers in the compendium. Then, Each paper is summarized in a one-pager including an overview of the issue motivating the IE, the program studied and key findings. An implications section is also included to draw attention to important takeaways that may help policymakers make decisions, design programs, and conduct impact evaluations in their own contexts.

Interventions targeting early childhood outcomes

If you want information on **interventions that target early childhood outcomes**	… then look at the references below							
Interventions that improve access and/or quality of childcare centers (i.e., preschools, playgrounds, community-based centers)								
Improve quality of education at existing childcare centers through teacher training	31	32						
Construct new, high quality childcare centers	1	33	37	41	48			
Interventions that financially support parents and/or train parents on parenting practices								
Provide conditional cash transfers	14							
Through home visits	14	28	29	42				
Through group sessions	9	14	29	31	32	37	48	42
Through text messages	43							
Through parent training *and* enrollment in childcare centers	31	37						

K-12: Interventions targeting schools and/or teachers

If you want information on **interventions that target schools, school leaders and/or teachers**	… then look at the references below					
Improve school management practices and leadership	3	4	7	19	24	39
Provide school grants*	2	3	11	19	40	
Increase (unconditionally) teacher salaries	45					
Reduce class size	11					
Provide schools with electricity	47					
Support teachers to design and implement their own pedagogic innovations	2					
Train teachers to improve their classroom practices	17	24	35			
Provide performance-based incentives to schools and/or teachers	11	12	18	25	40	
Provide diagnostic feedback on student learning	4	22	35	39		
Focus on private schooling and/or public-private partnerships	13	16	21	30	44	
Provide schools with educational and motivational video content	47					
Introduce financial education in the regular curriculum	23	38				

** Private schools are not included in this section.*

K-12: Interventions targeting students and/or parents

If you want information on **interventions that target students and/or parents**	… then look at the references below			
Interventions that target students				
Focus on student retention in secondary education	5	20	15	34
Provide information to students on the returns to education	5	20		
Provide students with opportunities to learn outside of school	6	36		
Provide tutoring	6	17	34	
Provide students with scholarships	15			
Provide students with performance-based incentives on learning or attendance	10	12	27	
Focus on students' socio-emotional development	27	34	47	
Provide students with technology	36			
Interventions that target parents				
Provide parents with cash transfers	8	10		
Support parent engagement in the school and local communities	26			
Provide parents with information on children's learning or attendance performance	10	17		
Provide information to parents on the returns to education	6			
Support parents to conduct at-home learning activities through phone calls	46			

3 Impact Evaluation Compendium Reference List

1	Berkes, J., Bouguen, A., Filmer, D., & Fukuo, T. (2024). Improving preschool provision and encouraging-demand: Evidence from a large-scale construction program. *Journal of Public Economics*, 230(2024), 105050.
2	Piza, C., Zwager, A., Ruzzante, M., Dantas, R., & Loureiro, A. (2022). Teacher-led innovations to improve education outcomes: Experimental evidence from Brazil. *Journal of Public Economics*, 234(2024), 105123.
3	Romero, M., Bedoya, J., Yanez-Pagans, M., Silveyra, M., & de Hoyos, R. (2024). The effect of school grants on test scores: Experimental evidence from Mexico. *Economica*, *91*, 980–995.
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1 - Berkes, J., Bouguen, A., Filmer, D., & Fukuo, T. (2024). Improving preschool provision and encouraging demand: Evidence from a large-scale construction program. *Journal of Public Economics*, 230(2024), 105050.

Title: **Improving preschool provision and encouraging-demand: Evidence from a large-scale construction program**

The issue: Robust early childhood development lays the foundation for greater human capital development in childhood and beyond. Preschool programs can have positive effects; however, these programs are difficult to sustainably implement at scale, particularly when quality of services is low or not widely accessible.

Did you know? A recent meta-analysis, including over 50 studies from 19 countries, found preprimary education supports significant improvements in children's cognitive skills (0.15 SD) and their executive functioning, social-emotional learning, and behavior (0.12 SD), with especial gains for disadvantaged children (Holla et al., 2021). Cost-benefit analysis focused on studies from low- and middle-income countries found high benefit-to-cost ratios, suggesting that investments in preprimary education even in low-resource contexts can yield high returns.

The program: The paper evaluated the effects of a large-scale construction program in south and northeast Cambodia on school enrolment and child development.[1] Over two years (2016-18), the program constructed community preschools (CPS), targeting 305 study villages with high poverty rates. Although these villages already had informal preschools, communities expressed interest in the development of formal community preschools. The core intervention included: (i) standardized infrastructure that were constructed with uniform quality standards and equipped with essential furniture and educational materials, such as tables, chairs, and blackboards, (ii) a teacher training program in which CPS teachers receive training in pedagogical strategies, curriculum content, testing, and child development, (iii) a slightly modified curriculum that emphasizes structured, age-appropriate educational programs, (iv) a monthly stipend for teachers to ensure better stability and commitment.

The results:

- *School participation:* The construction of CPS (T1) increased preschool participation: children in villages with newly constructed CPS were about 11 percentage points more likely to be enrolled in preschool and 52 percentage points more likely be enrolled in CPS. The large difference in the increase overall preschool attendance (moderate) and the increase in CPS attendance (very high) was driven by substantial school switching; many children previously attending informal preschools moved to CPS when they became available. Moreover, on average, children in CPS villages were enrolled in preschool for about 4.5 months longer than those in control villages.
- *Childhood development:* The construction of CPS had small effects on average: (i) After one year, the program improved child cognitive development by 0.04 SD, and decreased socioemotional problems by 0.09 SD. After two years, these effects disappeared. (ii) Children from wealthier families benefited the most, widening the cognitive gap: cognitive development improved by 0.09 SD after one year and by 0.13 SD after two years. (iii) Overall, the program had large impacts on the quality of preschool infrastructure and materials, but limited impacts on the quality of educational processes.

Did you know? Evidence from the United States suggests that medium-term fade-out might nevertheless be consistent with long-term improved outcomes perhaps because other non-measured aspects of child development (e.g., socioemotional development) improved in the short-term (Duncan & Magnuson, 2013).

The implications: It is hard to implement large-scale preschool programs that consistently result in improved child development outcomes. To maintain positive impacts, ongoing investments in preschool quality and subsequent educational stages (e.g., primary school) are necessary. Moreover, simply building preschools is insufficient; improvements in infrastructure need to be accompanied by enhancements in educational processes and teacher-child interactions. Specifically, the quality of education and teacher training are crucial for sustained benefits.

Link: https://doi.org/10.1016/j.jpubeco.2023.105050

[1] Although T2 (awareness campaign) and T3 (home-based program) were complementary interventions to the core construction program (T1), the study indicates that the effects of T2 and T3 are not significantly different from T1 alone. Additionally, T2 and T3 introduce potential complementary effects, both positive and negative, that complicate the analysis without providing substantially new insights beyond those observed with T1. Thus, for clarity and focus, this summary concentrates on T1, which is central to the study's findings.

2 - Piza, C., Zwager, A., Ruzzante, M., Dantas, R., & Loureiro, A. (2022). Teacher-led innovations to improve education outcomes: Experimental evidence from Brazil. *Journal of Public Economics*, 234(2024), 105123.

Title: Teacher-led innovations to improve education outcomes: Experimental evidence from Brazil

The issue: There is potential for education quality to be enhanced by granting teachers autonomy to develop and implement innovative pedagogical projects tailored to their students' needs. However, in contexts with limited resources and capacity, increasing teacher autonomy may not lead to improved learning outcomes.

The program: The Pedagogical Innovation Project (PIP) was implemented by the State Secretariat of Education of Rio Grande do Norte, one of Brazil's poorest states. Through seminars and with the support of a dedicated mentor, grade 5, 6, and 10 teachers diagnosed their pedagogical challenges and designed context-specific projects to address these challenges. Teachers had the autonomy to develop and implement projects tailored to their specific school issues and were provided with continuous technical support during the project's design and implementation. In tandem, schools were provided with funding to implement these projects, which ranged from about $7,500 to $11,000 USD (median of $139 USD per student).

The results: The PIP mostly had effects for grade 6 (G6) students, a critical grade for students as they transition from primary to lower-secondary education.

- *Increased grade passing rates:* The program increased passing across all treated grades, but most notably in G6. Specifically, G6 had an increase of 8.5 percentage points, corresponding to a 13 percent improvement compared to control group mean of 63.6 percent.
- *Improved learning:* The program increased learning by 0.18 SD in math, 0.16 SD in Portuguese, 0.10 SD in humanities, and 0.12 SD in sciences. The average impact on learning is equivalent to 0.5 extra year of schooling (0.36 year per $100 USD).
- *Improved socioemotional skills:* Positive effects were observed in conscientiousness by 0.17 SD and extroversion by 0.20 SD.
- *Teacher engagement and turnover:* The program led to increased teacher engagement and a reduction of teacher turnover in schools with high-turnover levels at baseline.

Did you know? In most education systems, when transitioning to lower-secondary school, students move from having a single teacher to multiple teachers resulting in weaker ties between students and teachers, which has been shown to affect learning and socioemotional skills (Bedard & Do, 2005; Hanewald, 2013; Santos et al., 2017).

The implications: School staff may be better equipped than central-level officials to identify solutions to school-specific problems using local knowledge. Granting autonomy with the development of school-specific interventions can motivate teachers, engage students, and improve student-teacher interaction. Moreover, combining teacher autonomy with technical assistance (e.g., mentors) can improve learning outcomes, particularly in low-capacity environments.

Link: https://doi.org/10.1016/j.jpubeco.2024.105123

3 - Romero, M., Bedoya, J., Yanez-Pagans, M., Silveyra, M., & de Hoyos, R. (2024). The effect of school grants on test scores: Experimental evidence from Mexico. *Economica*, *91*, 980–995.

Title: The effect of school grants on test scores: Experimental evidence from Mexico

The issue: Many children do not have access to quality education and fail to acquire basic numeracy and literacy skills even after several years of formal schooling. It is often assumed that simply increasing investment in education will resolve this 'learning crisis.' Drawing from decentralization reforms in developed countries, the idea is that providing more financial resources directly to schools, along with the autonomy to decide how to spend these funds, could enhance efficiency and improve student learning outcomes.

The program: The intervention involved providing cash grants to public primary schools in Puebla, Mexico. On average, treatment schools received approximately $16 USD per student each year for two years, amounting to a ~20 percent increase in public spending per child (excluding teacher salaries). Schools were required to develop a school improvement plan, approved by the school council, to qualify for the grants. Additionally, principals received managerial training on using a student foundational skills assessment and a classroom observation tool to provide feedback to teachers.

The results: The program had no significant impact on student learning outcomes, either on average or across different subgroups. Several factors could explain these results, including inefficient allocation of the grants. Notably, approximately 35 percent of the grant expenditure was directed towards information and communication technologies (e.g., projectors, computers, and televisions), which may not effectively enhance student learning outcomes without accompanying investments in software and teacher training.

Did you know? Investment in information and communication technologies has been shown elsewhere to have negative (e.g., Malamud & Pop-Eleches, 2011; Vigdor et al., 2014) or no impact on academic achievement (e.g., Barrera-Osorio & Linden, 2009; Fairlie & Robinson, 2013; Beuermann et al., 2015; Cristia et al., 2017) when they are not accompanied by software or other investments that can adapt to the student learning levels (Muralidharan et al., 2019).

The implications: Increasing school resources alone is not enough to impact school learning outcomes. Policymakers may also consider all the other binding constraints on education systems that need to be addressed alongside financial interventions. Relatedly, spending on certain categories, like information and communication technologies, might not yield the desired outcomes unless accompanied by complementary investments and training. Policymakers should target spending on areas with proven impact on learning outcomes.

Link: https://doi.org/10.1111/ecca.12523

4 - de Hoyos, R., Djaker, S., Ganimian, A., & Holland, P. (2024). The impact of combining performance-management tools and training with diagnostic feedback in public schools: Experimental evidence from Argentina. Economics of Education Review 99(2024), 102518.

Title: The impact of combining performance-management tools and training with diagnostic feedback in public schools: Experimental evidence from Argentina

The issue: There is an increasing evidence base finding school-management practices (e.g., teacher feedback, data-guided instruction, high expectations) matter for student achievement. However, there is still little evidence on how to improve school-management practices in low- and middle-income countries.

The program: A domestic think-tank implemented two types of interventions over a two-year period in Salta, Argentina: diagnostic feedback on student assessments in math and reading (T1) and performance management (T2). Both T1 and T2 schools received detailed reports on student achievement, which included the school's mean score in each grade and subject, and comparisons with other schools in the province. Additionally, principals and supervisors in T2 schools participated in 11 workshops designed to develop school improvement plans and enhance their performance management skills. These workshops provided online tools and training to support the effective use of diagnostic feedback and to monitor progress toward school improvement goals.

Did you know? Providing information on students' achievement was recently recognized as among the most cost-effective strategies to improve learning outcomes in LMICs by experts surveying the evidence (Akyeampong et al., 2023).

Results: Diagnostic feedback (T1) alone had a negative effect on students' repetition rates in school. However, when combined with performance management tools and training (T2), the intervention showed positive effects. Specifically, T2 schools experienced lower repetition rates compared to both control schools (by 1.5 percentage points) and T1 schools (by 3.5 percentage points). Students who had greater exposure to the intervention demonstrated even more significant impacts. Despite these improvements in school performance, neither intervention led to increased student achievement in any subject during the project or a year after it ended. However, T2 had additional positive effects, improving teacher quality, student beliefs, reducing bullying and discrimination, and increasing participation in extracurricular activities, particularly for cohorts with higher exposure to the intervention.

The implications: When combined with diagnostic feedback, performance management tools and training can significantly enhance school management. These tools help in strengthening principals' capacity to develop and implement effective school improvement plans. However, simply providing assessment data to school principals does not seem to be enough to drive improvement and may even lead to negative outcomes. Schools need more than just data; they need the capacity to act on it effectively.

Link: https://doi.org/10.1016/j.econedurev.2024.102518

5 - Lopez, C. (2024). Tripping at the finish line: Experimental evidence on the role of misperceptions on secondary school completion.

Title: Tripping at the finish line: Experimental evidence on the role of misperceptions on secondary school completion

The issue: While barriers to education have decreased over time, only 1 out of 3 children complete secondary school in low and middle-income countries (World Bank, 2017). Potential reasons include lack of information and cognitive biases, especially for low-income students, which may cause less effort to complete a degree.

The program: This paper addressed the low secondary school completion rates in Argentina, targeting senior secondary students. The paper evaluated two interventions based on the provision of information, both of which were implemented through a brief presentation using slides in a single visit to each school and reinforced with reminder messages:

- *Production function (PF):* Provided information on the average probability of high school graduation based on initial academic standing and offered tips to improve their academic standing to earn a high school diploma. This intervention showed students how to transform inputs (effort) into outputs (high school diploma) by establishing a link between each potential academic standing (which students knew at the time of the intervention) and the observed graduation rates of students in the same academic condition in a previous cohort. This allowed students to assess their own probability of graduation and allocate their effort more efficiently in the time they had left.
- *Returns to education (RE):* Provided information containing employment rates and wages by achieved level of education.

By comparing the effects of these two interventions, researchers aimed to understand which type of information is more effective in encouraging students to complete their education and whether there are different impacts based on students' initial academic standing.

The results: PF increased graduation rates by 5 percentage points (10 percent compared to the control group), while RE increased graduation rates by 10 percentage points (20 percent compared to the control group). The greater impact of RE suggests that students widely held inaccurate beliefs about the benefits of education. Both interventions were particularly effective for students with the lowest academic standing at the start of their senior year. Additionally, both programs boosted college enrollment by 5 percentage points. The results in this paper are higher than previous studies (Jensen, 2010 finds an increase of 5 percentage points in the likelihood of graduation of Dominican students using an intervention closer to RE). A potential explanation for the higher impacts could be related to the fact that the target population comprised students who were closer to receiving their high school diplomas. Additionally, this setting has fewer economic barriers.

Did you know? The literature on the "last mile problem" examines why people fail to use services, infrastructure, or adopt technologies that could improve their wellbeing (Mullainathan & Shafir, 2013). This issue appears in various contexts: individuals miss tax deadlines, low-income students do not use financial aid (Bettinger et al., 2009), and farmers do not adopt fertilizer (Duflo et al., 2011), among others. These suboptimal decisions are more harmful when individuals lack family or other forms of social support, hindering their escape from poverty. Education is a key domain in which the "last mile problem" has been understudied.

The implications: Providing accurate and timely information about graduation probabilities and the economic benefits of education has the potential to significantly improve graduation rates. Specifically, brief, well-designed information sessions can have a substantial impact on educational outcomes by fostering informed decision-making among students without significant costs. In contexts where providing information on the returns to education is not feasible due to data scarcity, it becomes imperative to seek alternative information sources that can effectively motivate students to pursue education. This paper contributes to this effort by presenting empirical evidence of a piece of information (PF) constructed using data available within the educational system that can be easily adopted in other settings. Lastly, tailoring interventions to students with lower academic standings has the potential to yield higher graduation rates.

Link: https://papers.jcarolinalopez.com/Misperceptions_Secondary_School_Completion_CL.pdf

6 - Orozco-Olvera, V., Rascon-Ramirez, E. (2023, April). Improving Enrollment and Learning through Videos and Mobiles: Experimental Evidence from Northern Nigeria. *World Bank Policy Research Working Paper*, (10413).

Title: Improving enrollment and learning through videos and mobiles: Experimental evidence from northern Nigeria

The issue: Poor school enrollment and learning outcomes remain persistent challenges in many low- and middle-income countries. Supply-side interventions granting inputs alone (e.g., textbooks, additional teachers, computers) without training for teachers on how to use them, have shown to have limited impacts on school enrollment, attendance, and student learning (Ganimian & Murnane 2016; GEEAP 2020). Demand-side interventions such as conditional cash transfers (CCT) can have large effects on school participation (Baird et al., 2019; Schultz, 2004), but not on learning outcomes (Snilstveit et al., 2015). Complementary out-of-school innovations that include both supply- and demand-side approaches – and draw on the potential of education technologies (EdTech) – are a promising way to improve enrollment and learning (Rodriguez-Segura, 2021).

The program: This study explored two complementary interventions: entertainment education and adaptive EdTech. These interventions aim to address the challenges faced by rural, low-literate communities in northern Nigeria.

- *Aspirational videos* (T1, demand-side): Households of 6–9-year-old children attended two community screenings of aspirational videos (around 2.5 hours) showing the improved opportunities that education may open in adulthood with animated and real-world characters living in similar social and economic circumstances.
- *Mobile learning (T2, supply–side, added to half of T1 communities):* Mobile phones with open-source, offline apps were provided to 40% of households that attended the community screenings to teach 6–9–year–old children to read in their local language. Gamified apps and digital libraries for early readers taught foundational skills and progressed according to the child's pace and level of engagement (i.e., using a 'teaching at the right level' approach).

Did you know? Entertainment education can reshape attitudes, promote behavioral change, and influence social norms (Grady et al., 2021). For example, in Brazil, La Ferrara et al. (2012) find that small families with empowered female characters in soap operas can affect perceptions of self-efficacy and help reduce fertility rates. In Nigeria, Banerjee et al. (2019a & 2019b) showed that the TV drama MTV Shuga doubled HIV testing, halved chlamydia infections, and substantially reduced sexual and physical violence.

The results: After an average of 12 months, the five-day intervention had large and statistically significant effects on the main outcomes:

- *Aspirational videos only:* Children were 42 percent less likely to be out of school, but their learning did not improve (despite the study being conducted in school catchment areas where schools had recently received substantial investments, the quality of education remained poor).
- *Mobile learning:* Literacy skills improved by 0.46 SD and numeracy skills by 0.63 SD. Effects were similar for boys and girls. The combined intervention (T2) reduced the likelihood of teenage pregnancy and early entry into the labor market by 13% and 14% respectively.
- *Spillovers onto non-targeted older siblings*: Literacy skills improved by 0.34 SD and numeracy skills improved by 0.47 SD. There also was a reduction in the likelihood of teenage pregnancy by 13 percent and a reduction of early entrance into the labor market by 14 percent. The combined intervention (T2) reduced the likelihood of teenage pregnancy and early entry into the labor market by 13% and 14% respectively.
- *Mechanisms*: Both interventions were effective in (i) increasing setting time and space for study (e.g., parents reading to the target child, making time for school and learning activities, and helping their child develop communication skills by naming objectives) and (ii) reshaping parental perceptions of prevalent social norms in their communities related to schooling and early marriage. However, most of these mechanisms for impact were greatly driven by T2.

The implications: Entertainment education and EdTech innovations delivered outside schools can be important complementary investments in stretched school systems, especially in rural, illiterate, and poor communities. Relative to other education investments evaluated in LMICs (Angrist et al., 2020), the "Movies and Mobiles" intervention ranked in the top decile in terms of learning gains and the top quartile in terms of cost-effectiveness.

Link: http://dx.doi.org/10.2139/ssrn.4221220

7 - Gera, R. C., Asim, S., Harris, D., & Dercon, S. (2023. November Does effective school leadership improve student progression and test scores? Evidence from a field experiment in Malawi. In *2023 APPAM Fall Research Conference*. APPAM.

Title: Does effective school leadership improve student progression and test scores? Evidence from a field experiment in Malawi

The issue: The quality of school leadership can have effects on teacher behavior and on student learning. However, school leadership training programs have shown mixed results in high- and middle-income countries, while little research has examined school leadership training in low-income countries in Africa. Many school leaders in these contexts stand to benefit from leadership training support, as they are often promoted based on seniority rather than merit and do not receive training upon entering their roles (Mulkeen, 2010).

Did you know? School leaders can improve the performance of teachers by (i) motivating them to attend school regularly and fulfil their assigned duties (Leithwood & Sun, 2012; Leaver et al., 2019), (ii) supporting improvement in pedagogical practices, e.g., with observation and feedback (Grissom et al., 2021; Hallinger, 2005; Ingersoll, Dougherty, & Sirinides; Grissom et al., 2013), and by (iii) inculcating school cultures conducive to learning and communication between teachers, students and parents (Akerlof & Kranton, 2002).

The program: This study evaluated an at-scale government-led training to strengthen leadership skills for Head Teachers, Deputy Head Teachers, and sub-district education officials in Malawi. The training was implemented over two years and involved (i) two phases of classroom training, for a total of ten days, (ii) follow-up visits two and six months after the initial training, and (iii) a three-day refresher training. The training focused on school organization skills in resource-constrained environments, particularly:

- Making more efficient use of resources available at the school.
- Motivating and incentivizing teachers to improve performance.
- Curating inclusive school cultures meeting the needs of all students (e.g., over-age students, students with special needs, low-performing students, and girls).

The results:

- *Student learning:* Students improved learning in math by 0.10 SD (equivalent to eight weeks of learning) but there was no significant improvement in English scores.
- *Student progression:* The program reduced repetition rates for lower primary students by 9 percentage points, but repetition rates were not significantly reduced for upper primary students.
- Effects were higher in schools with lower pupil-teacher ratios and for students with lower levels of learning at baseline.
- Mechanisms supporting these impacts appear to be an increase in the incidence, frequency, and share of grades in which remedial classes were offered. The intervention helped schools improve learning within existing level of inputs, mainly by helping teachers to support low-performing students. There were no observed impacts on teaching practices or school cultures.

The implications: Improvements in school leadership can be achieved in a low-income context through government-led training program at scale. Such training can help school leaders improve how schools use their existing resources (e.g., teachers' time and learning materials) to help the lowest-performing students, which in turn can help improve student learning. Policymakers aiming to influence teaching practices and school cultures, however, may need to combine leadership training with other interventions such as school-based in-service training for teachers.

Link: N/A

8 - Chhabra, E., Najeeb, F., & Raju, D. (2019). Effects over the life of a program: Evidence from an education conditional cash transfer program for girls. *World Bank Policy Research Working Paper*, (9094).

Title: Effects over the life of a program: Evidence from an education conditional cash transfer program for girls

The issue: Conditional cash transfers (CCT) are a popular education intervention in low- and middle-income countries and extensive research has examined the impact of these programs. However, most studies examine CCT effects on school participation or attendance within a relatively short and focused period (e.g., one or two years) when the program is first introduced (Fiszbein et al., 2009; Baird et al., 2014; Garcia & Saavedra, 2017). There is less knowledge about the impact of such programs as they continue over time serving successive cohorts of beneficiaries. Programs' effects on beneficiaries may change over time due to (i) changes in relevant environmental, institutional, or intervention-specific factors or (ii) wider social changes, for example among educational actors, in response to the program's introduction.

The program: This study examined the 'full life cycle' of a conditional cash transfer program in Punjab, Pakistan over the course of more than a decade (2003-2015). The Punjab Female School Stipend Program was initiated by the government to stimulate household demand for education where such demand was particularly low. The program targeted cash transfers explicitly based on gender and location and implicitly based on age and household economic status. Households received a cash benefit of 200 Pakistan rupees (PRs) a month ($3.40 USD) for each girl enrolled in grades 6–10 in a government school, conditional on an attendance rate of at least 80 percent in the preceding academic quarter. This cash benefit was not indexed to inflation and remained constant in nominal terms, resulting in a loss of more than 60 percent in the real value over the program's ten-year period. Researchers investigated the impact of the program on girls' absolute enrollment in secondary school over time focusing on six 'sub-periods' of different lengths (e.g., 2003–05, 2003–07, 2003–09, 2003–11, 2003–13, and 2003–15).

The results: The program significantly increased gains in girls' secondary school enrollment across all sub-periods between 2003 and 2015. On average, schools gained 33 to 53 girls per school over the different sub-periods, which is substantial considering the average pre-program enrollment was approximately 130 girls per school. The program therefore led to increases equivalent to 25-41 percent in girls' secondary school enrollment. Cost effectiveness estimates revealed that for every $100 USD spent annually, the program induced the enrollment of 1.2 beneficiary girls.

The implications: This study shows CCTs can have sustained effects on girls' enrollment in school over time, even with an eventual loss in economic incentive. Such programs may help (i) catalyze behavior change so that more girls start attending secondary school and over time (ii) shift community behavior and/or beliefs about the value of secondary school for girls. With that said, programs supporting school enrollment may not affect other important student learning outcomes if the quality of education provision is low. Policymakers should consider local needs and challenges when designing and implementing CCTs. It may be beneficial to experiment with and evaluate combining CCTs with other evidence-informed education initiatives to positively impact enrollment and student learning.

Link: https://ssrn.com/abstract=3507842

9 - Carneiro, P., Galasso, E., Garcia, I. L., Bedregal, P., & Cordero, M. (2024). Impacts of a large-scale parenting program: Experimental evidence from Chile. *Journal of Political Economy*, *132*(4), 1113-1161.

Title: Impacts of a large-scale parenting program: Experimental evidence from Chile

The issue: Children living in poverty experience greater levels of environmental and psychosocial stressors that lead to diverging trajectories from very early ages. Parenting behaviors and the home environment's quality play a critical role during sensitive periods of early childhood.

Did you know? There is increasing evidence in LMIC settings that group-based parenting interventions that engage both caregivers and children are at least as effective as individual home visit interventions to improve parental behaviors and child development outcomes, at least in the short-term (Aboud & Yousafzai, 2015; Grantham-McGregor et al., 2020; Luoto et al., 2021).

The program: This paper evaluates the NEP (Nobody's Perfect) parenting program in Chile, a large-scale, public health intervention aimed at improving parenting skills and child development outcomes. NEP is a low–intensity, low–cost and scaled–up program targeting parents (particularly vulnerable) with 0–5–year–old children enrolled in public health system. They are offered participation during regular health checkups. The program is part of the Chile Crece Contigo (Chile Grows with You) early childhood policy platform, which aims to promote caregivers' knowledge about child development, self-care, positive parenting skills, and the use of nonviolent disciplinary strategies. It offers two versions of the program:

- *NEP-B (basic; $62/child):* six to eight weekly group 2-hour sessions with 6-12 caregivers, facilitated by local health-center staff based on a positive parenting curriculum. The sessions are tailored to parents' interests and needs. Parents receive 5 books about common problems and strategies to implement at home. Overall take-up is around 25 percent (i.e., attending at least one session).
- *NEP-I (intensive; $84/child):* NEP-basic + two group sessions where children are also present so that parents can receive personalized feedback on their practices. Focus is on responsive play and the importance of language and reading. Overall take-up is around 31 percent.

The study examined the program's impacts on child development and parenting behaviors and beliefs three years after completion.

The results: Three years after the program, only the NEP-Intensive had significant effects on child development outcomes and parenting behaviors and beliefs. Specifically, NEP-I significantly improved vocabulary and socioemotional development of the children by 0.40 SD. Moreover, NEP-I significantly improved parental behavior and beliefs by 0.40 SD.

The implications: Investing in early childhood interventions through scalable public health programs is cost-effective and can yield long-term benefits for children's cognitive and socioemotional development, as well as for parenting practices. Large-scale parenting programs can be integrated into national health systems and achieve substantial positive outcomes when adequately supported by skilled and motivated facilitators. With this said, design is crucial: tailoring programs to the needs of participants enhances their impact. The combination of structured sessions and interactive components is more effective than standard group sessions alone.

Link: https://doi.org/10.1086/727288

10 - de Walque, D., & Valente, C. (2023). Incentivizing school attendance in the presence of parent-child information frictions. A*merican Economic Journal: Economic Policy*, *15*(3), 256-285.

Title: Incentivizing school attendance in the presence of parent-child information frictions

The issue: Pupil absenteeism hinders learning and is associated with an increased risk of dropping out. Many countries use conditional cash transfers (CCT) to incentivize parents to ensure their children attend school to receive cash transfers. CCTs provide obvious financial incentives for attendance, but also can be effective just by drawing parents' attention to school attendance, especially when parents are unaware of how often their child attends school. It is unclear whether school attendance information campaigns alone could be a more cost-effective way to improve school attendance than CCTs or whether children or parents are best placed to be the recipients of such transfers.

The program: Researchers examined the relative effect of providing information on children's school attendance with and without financial transfers in the form of CCTs in Mozambique. The study focused on Mozambican girls in the final two years of primary school and evaluated how three alternative policies impacted attendance rates and math learning:

- *Information only intervention* (T1) provided information to parents about their child's school attendance through a weekly attendance report card.
- *Parental incentive with CCT* (T2) provided the same information as T1 and made cash transfers to parents, conditional on regular attendance. The value of CCTs was 400 meticais per trimester (i.e., $8.36 USD in 2016).
- *Child incentive with conditional voucher* (T3) provided the same weekly attendance information and gave vouchers to children of the same nominal value as in T2 conditional on their regular school attendance. Vouchers were redeemable against a choice of goods such as school uniforms, backpacks and shoes.

The results:

School attendance: Attendance rates improved in all treatment groups, to different degrees, thanks to an improvement in parental information about their children's school attendance and monitoring:

- T1 increased attendance by 4.5 percentage points (6.9 percent increase compared to control group)
- T2 increased attendance by 6 percentage points (9.2 percent increase compared to control group)
- T3 increased attendance by 8.3 percentage points (12.8 percent increase compared to control group mean)

The impact of T1 on attendance was as large as 75 percent of the effect of T2. Moreover, incentivizing children appears at least as effective in raising attendance as incentivizing parents. The annual cost of increasing attendance by one percent is $0.33 USD in T1, $2.68 USD in T2, and $1.57 USD in T3.

Student math learning: T1 significantly improved performance on a math test by 0.17 SD compared to the control group. T3 improved performance on a math test by 0.19 SD compared to the control group.

The implications: Providing high-frequency information to parents about their children's school attendance in low-income settings can improve children's attendance rates, even in the absence of CCTs, where asymmetries in information exist. Initiatives to improve school attendance may be enhanced by working directly with and supporting children's own agency and educational decisions. Further research could explore whether supporting children's educational agency has long-term effects on their education and life trajectories.

Link: https://doi.org/10.1257/pol.20210202

11 - Asim, S., & Gera, R.C. (2024). Are short-term gains in learning outcomes possible? Evidence from the Malawi Education Sector Improvement Project. *World Bank Policy Research Working Paper.*

Title: Are short-term gains in learning outcomes possible? Evidence from the Malawi Education Sector Improvement Project

The issue: Despite substantial investments in infrastructure and teachers, many low-income countries struggle with large class sizes in primary school, particularly in lower grades. Large class sizes and pupil-teacher ratios (PTRs) can make it difficult for teachers to attend to students' learning needs, provide feedback, and mark homework, thus limiting student learning opportunities and contributing to poor learning outcomes. High PTR also can generate higher rates of grade repetition, which exacerbates large class sizes and leads some students to drop out of school.

Did you know? Evidence from Malawi suggests pupil-teacher ratios (PTRs) above 90 are associated with lower test scores in Grade 4, equivalent to several weeks' lost learning, even when controlling for a wide range of school, teacher, and student characteristics (Asim & Casley Gera, 2023). Reducing class sizes and PTR can improve test scores, although the evidence is mixed and dependent on context and the size of classes before and after reductions.

The program: This study evaluated a five-year package of interconnected interventions (called MESIP) intended to reduce class size in primary schools in eight disadvantaged districts of Malawi. These districts experienced a longstanding disadvantage in staffing, learning environments, and learning outcomes, particularly for girls. The intervention was implemented from December 2016 to July 2021 and included:

- Construction of 500 classrooms in schools with the highest pupil-classroom ratio.
- Provision of grants to improve promotion for all students in lower grades and reduce dropout for girls (e.g., hiring auxiliary teachers to reduce class sizes, and construction of low-cost classrooms called 'learning shelters' which provide adequate shelter for a class at fraction of the cost of full classrooms to reduce class sizes).
- Results-based financing to reward improvements in staffing in lower grades.

The results:

- *Pupil-teacher and pupil-classroom ratios*: The interventions reduced PTRs and pupil-classroom ratios (PCRs). PCRs decreased by 14.8 pupils per classroom, and PTRs decreased by 12.3 pupils per teacher (grades 1-8). Analyses of lower primary (grades 1-4) show even greater reductions; PTRs decreased by 21.4 pupils per teacher.
- *Grade repetition:* Although overall repetition rates increased across MESIP and non-MESIP during the five-year program, analyses of lower primary repetition rates and among very large classes (of 90+ students) at the start of the program show MESIP reduced repetition rates in lower primary by a large amount - 5.5 percent. This reduction is statistically significant in comparison to non-MESIP schools.
- *Test scores:* Student test scores in the MESIP districts were 39 points greater than those in comparison districts, equivalent to several months' additional learning. The effect is larger than the baseline gap in learning demonstrating that MESIP enabled students in the eight disadvantaged districts to close the gap with those in the comparison district.
- There is limited but suggestive evidence that the effects of MESIP were greater among girls.

The implications: The study shows, where class sizes are extremely large (above 90 students per class), hiring additional teachers and constructing new classrooms can reduce pupil-teacher ratios, leading to reductions in student repetition rates and improvements in test scores. Moreover, where there are inter-district disparities in learning outcomes, targeted and coordinated packages of interconnected interventions can reduce learning gaps.

Link: N/A

12 - Filmer, D., Habyarimana, J., & Sabarwal, S. (2023). Teacher performance-based incentives and learning inequality. *Journal of Human Resources*.

Title: Teacher performance-based incentives and learning inequality

The issue: Performance-based incentives have gained attention as a promising approach to enhance educational outcomes by motivating teachers to increase their efforts and effectiveness. This approach leverages the idea that when teachers are rewarded for their students' performance, they are more likely to implement tailored strategies that address their specific classroom challenges and student needs. However, the implementation of such incentives must be carefully designed to ensure it promotes equitable learning improvements across all student groups, thereby avoiding the exacerbation of existing educational inequalities.

Did you know? Observable teacher characteristics such as experience and qualifications, which are the main determinants of salaries in most school systems, are weak predictors of teacher effectiveness, with regards to improving student learning outcomes (Rivkin, Hanushek, & Kain, 2005; Aaronson, Barrow, & Sander, 2007).

Program: This program provided incentives to a mix of teachers and grade 10 students in Tanzania:

- *Teacher incentives only*: Teachers competed for awards with teachers in 6-12 surrounding schools based on their students' test score improvements. The three teachers with the highest value-added in student test scores in Math, English, and Kiswahili received awards (e.g., phones, book vouchers, medals). The total annual cost for this program was $442. After one year, this incentive was removed in some randomly selected schools.
- *Teacher and student incentives*: Both teachers and students could earn awards based on improvements in test scores. In addition to the teacher incentives, in some schools, the three students with the greatest increase in Math, English, and Kiswahili received awards (e.g., phones, book vouchers, medals). The total annual cost for student incentives was $92.

The results: Teacher incentives lead to modest learning gains across subjects (0.09 to 0.18 SD). Withdrawing incentives does not seem to lead to a "discouragement effect;" student performance remained slightly higher. However, incentives may have exacerbated learning inequality within and across schools. Two findings support this: (i) gains were concentrated among initially better-performing schools and students, and (ii) learning outcomes may have decreased for schools and students that were lower-performing at baseline. Incentivizing students without simultaneously incentivizing teachers did not produce observable learning gains.

Did you know? Incentives tend to be more effective when teachers have the flexibility to determine and implement low-cost actions to improve student learning. The impacts of incentive programs can also depend on specific design features, such as whether incentives are targeted at groups versus individuals, whether they are financial or non-financial (Bruns, Filmer, & Patrinos, 2011), and how performance is measured (Barlevy & Neal, 2012).

The implications: Low-cost incentive programs can effectively improve learning outcomes, but their success depends on careful design and implementation. Ensuring incentives are sustained over time and incorporating strategies to prevent the exacerbation of pre-existing inequalities are crucial. By addressing these factors, such programs have the potential to offer equitable benefits across diverse student groups.

Link: https://doi.org/10.3368/jhr.1120-11313R2

13 - Barrera-Osorio, F., Blakeslee, D. S., Hoover, M., Linden, L., Raju, D., & Ryan, S. P. (2022). Delivering education to the underserved through a public-private partnership program in Pakistan. *Review of Economics and Statistics*, *104*(3), 399-416.

Title: Delivering education to the underserved through a public-private partnership program in Pakistan

The issue: In some educationally deprived areas, governments have experimented with policies involving the creation of new private schools. The effectiveness of such policies is difficult to discern, as the absence of pre-existing private schools may be driven by unfavorable local conditions.

The program: This paper evaluates the Promoting Low-Cost Private Schooling in Rural Sindh (PPRS) program. In this program, publicly subsidized private, co-educational schools were randomly assigned to educationally underserved villages. These schools were tuition-free for students. School staff received comprehensive school leadership training, teacher training, and teaching and learning materials. Private entrepreneurs created and managed these schools and were compensated based on enrollment per child. These entrepreneurs had full autonomy in running the schools, including the ability to hire teachers with lower formal qualifications than those required for government teachers.

- In one treatment arm, entrepreneurs received a gender-uniform subsidy of 350 rupees per student per month (approximately $5 in annualized 2008 USD).
- In a second treatment arm, entrepreneurs received a gender-differentiated subsidy, in which entrepreneurs received an additional 100 rupees per month for each girl student.

Did you know? Private schools have been a prominent focus in educational research, and a heated area of educational debate, for decades globally. Some scholars argue private schools have advantages over public schools due to their strong incentives to reduce costs and innovate, and their ability to more closely tailor school inputs to the preferences and needs of their school communities (Friedman, 1955; Shleifer, 1998). A number of studies have tested these ideas empirically using experiments with vouchers, and have found that private schools can deliver better educational outcomes than government schools or that they produce similar educational outcomes but at a lower costs (Kim, Alderman, & Orazem, 1999; Angrist et al., 2002; Alderman, Orazem, & Paterno, 2001; Alderman et al., 2003; Barrera-Osorio & Raju, 2015; Barrera-Osorio et al., 2020; Muralidharan & Sundararaman, 2015; Romero et al., 2020). However, private schools can also enable potentially harmful behavior, such as kicking out poor performing students (Romero et al., 2020), and produce negative consequences. Private schools remain a contested approach to educational improvement, worthy of further research (Cohodes & Parham, 2021).

The results: Comparing educational outcomes of children in treatment villages to those in control villages almost two years after the schools opened, the program increased school enrollment for children aged 5 to 10 by 32 percentage points.

- Comparing test scores of children enrolled in program schools to those in government schools (in control villages), the program raised test scores by 0.63 SD. For children induced by the program to enroll in school, the increase in test scores was nearly 2 SD. The overall treatment effect was the same for boys and girls. The gender-differentiated subsidy treatment had similar impacts on girls' enrollment and test scores the gender-uniform one.
- To complement this evaluation, the authors used a structural model to analyze the decision-making process of the program schools. They found that these schools chose educational inputs (such as resources or strategies) in a way that is comparable to a social planner. A social planner is a theoretical figure who decides to maximize overall societal benefits, considering the long-term education benefits to society. Essentially, in this setting, the program schools made choices that align closely with what would be considered optimal for the greater good of the community.

The implications: The results of this study indicate that government support for local private providers may be a viable alternative to purely public provision: it seems possible for governments to set contracts with private, local entrepreneurs to provide high quality, low-cost educational solutions.

Link: https://doi.org/10.1162/rest_a_01002

14 - Premand, P., & Barry, O. (2022). Behavioral change promotion, cash transfers and early childhood development: Experimental evidence from a government program in a low-income setting. *Journal of Development Economics*, *158*, 102921.

Title: Behavioral change promotion, cash transfers and early childhood development: Experimental evidence from a government program in a low-income setting

The issue: Many children in developing countries suffer from malnutrition or signs of development delays. Social protection interventions, such as cash transfers and parenting programs that promote early childhood development, can improve early childhood nutrition and socio-emotional development (Attanasio et al., 2020; Carniero et al., 2019; Macours et al., 2012). However, few studies have disentangled the effects of behavioral change promotion programs from the effects of cash transfers.

Did you know? Parenting behavioral change programs are amenable to scale-up in low-income contexts, as they do not require large-scale infrastructure investments or changes. However, there are still questions about whether impacts from parenting programs can be sustained over time (Andrew et al., 2018) and when integrated into government systems.

The program: The paper evaluated whether a national safety net program in Niger led to changes in parenting practices and improvements in early childhood nutrition and socio-emotional development after 18 months. The government program was managed by Niger's Safety Net Unit in the office of the Prime Minister and reached over 100,000 households between 2012 and 2019. Researchers compared two different versions of the same program across over 4,000 households:

- In one version, women received monthly unconditional transfers of 10,000 FCFA ($20 USD) over 24 months.
- In a second version, women received the same unconditional cash transfers *and* participated in an 18-month 'Behavioral Change Intervention' that encouraged parents to invest in children's human capital and focused on nutrition, health, child protection, and psycho-social stimulation (e.g., reading, playing games, school readiness, brain development and school enrollment). The intervention involved monthly assemblies, meetings, and home visits and relied heavily on role play, skits and visual aids tailored for illiterate populations. The program utilized a positive deviance approach, seeking to identify local examples of good practices which could trigger broader behavioral change in the community. Researchers therefore looked for spillovers – whether the behavioral change component sparked broader changes in parenting behaviors in nearby households not participating in the program.

The results: Cash transfers alone did not alter parenting practices and did not improve early childhood development outcomes in nutrition, cognition, or socioemotional development. Cash transfers *and* the behavioral change parenting program supported:

- *Changes in parenting practices* including nutrition practices by 0.44 SD, preventative health behaviors by 0.21 SD, stimulation practices (e.g., reading, playing games, etc.) by 0.22 SD and child protection practices by 0.27 SD.
- *Moderate improvement in children's socio-emotional development* by 0.14 SD.
- *Spillovers in parenting practices* from beneficiary households to non-beneficiary households in villages where the behavioral intervention was implemented, which suggests wider parenting norms changed in communities exposed to the behavioral change component.

However, the behavioral change program did not improve children's cognitive and physical growth outcomes.

Implications: Combining community-based behavioral change parenting programs with cash transfers can support changes in a range of parenting practices, and lead to some improvements in children's socio-emotional development. Programs that only offer cash transfers may improve household welfare but do not necessarily improve parenting knowledge and practice or early childhood development.

Link: https://doi.org/10.1016/j.jdeveco.2022.102921

Title: Targeting high school scholarships to the poor: The impact of a program in Mexico

The issue: Improving graduation rates and student learning outcomes in low-income settings is important to improving equity and intergenerational mobility. Students with high potential from poor backgrounds often drop out of secondary school before graduating due to financial constraints.

The program: The study evaluated a scholarship program launched in 2007 (PROBEMS) by the Mexican government designed to improve secondary school graduation rates and learning outcomes. The program targeted poor students in urban areas because, at the time of the scholarship, a different conditional cash program targeted poor students in rural areas. The scholarship program had three tiers which provided different amounts of financial support based on students' GPA in the year prior to applying: (i) 'excellence' which required a GPA of 9 or higher (out of 10), (ii) 'retention' which required a GPA between 8 and 8.9, and (iii) 'support' which required a GPA above 6 (passing). Students in the 'excellence' tier received the most funding, students in the 'retention' tier received a middle-range amount of funding, and students in the 'support' tier received the least funding. Because the scholarship was over-subscribed in the first year, access to the scholarship was randomized in a lottery for a subset of students. The scholarship for lottery winners was promised for one year only, and in subsequent years anyone could apply and be selected without randomization subject to the overall budget and eligibility criteria.

The results: The scholarship was found to be ineffective. It had no effect on graduation rates or on performance in end-of-school standardized tests. Further analyses were conducted to explain why the program was ineffective and revealed the program was insufficiently targeted in two ways:

- The program's targeting mechanism was not very effective at reaching the poorest students. Two out of three eligible candidates declared income was not a binding constraint preventing secondary school attendance, and many participating students were already covered by a different conditional cash transfer program.
- A large portion of students did not start secondary school with sufficient academic readiness. For a small subgroup of students who started secondary school with high test scores, being awarded the scholarship had a slight positive impact on the probability of graduation by 4 percentage points. Many students, however, did not start high school with strong enough prior learning to support continued learning in secondary school.

Implications: Findings are consistent with prior research showing scholarships are effective when well targeted to financial needs and academic achievement (Araujo et al., 2018; Dustan, 2020; Parker & Vogl, 2018). This study found that scholarship programs should target children and families with a clear need of financial support, and for whom financial constraints pose a barrier to pursuing education. Moreover, interventions aimed at improving learning and graduation rates in secondary school should be complemented and preceded by interventions aimed at improving foundational skills in primary school. In other words, it is important to address the quality of schooling at all levels as well as access to schooling at upper levels.

Link: https://doi.org/10.1086/725232

16 - Gray-Lobe, G., Keats, A., Kremer, M., Mbiti, I., & Ozier, O. W. (2022). Can education be standardized? Evidence from Kenya. *Evidence from Kenya (September 16, 2022). University of Chicago, Becker Friedman Institute for Economics Working Paper*, (2022-68).

Title: Can education be standardized? Evidence from Kenya

The issue: Standardization is an increasingly common cross-sector approach to offering consistent high-quality products and outcomes, yet it is unclear whether and to what extent standardization is appropriate and effective in educational settings. Standardized educational approaches may overlook complex classroom dynamics, including the need to adapt approaches to be relevant for a wide range of student needs.

The program: Researchers evaluated a highly structured and standardized approach to education, implemented by Bridge International Academies ("Bridge") in Kenya. Bridge standardizes all aspects of the schooling experience, including physical school construction, finances, and classroom instruction:

- Bridge designs detailed, tablet-based lesson plans which contain step-by-step instructions for teachers. Instructions are very granular, for example including when to erase the blackboard, when to walk around the class, or when to tell students to close their books.
- School heads are provided with detailed scripts to check teachers' compliance with lesson plans and are expected to conduct one full classroom observation per day, providing structured feedback to teachers afterward.
- Bridge monitors student learning through standardized assessments up to seven times a year in each subject to track student progress, inform in-service teacher training, and refine lesson guides.

At the time of the study, Bridge operated in over 400 schools, often in informal settlements or in rural areas serving non-elite communities. Scaling a private school model in a lower-middle income country required Bridge to limit recurrent costs that scaled with the number of pupils to remain financially viable. Bridge hired teachers who were less educated and less experienced than teachers in public primary schools; this decision was justified by the fact that Bridge teachers only need to follow scripted lesson plans, rather than devise their own lesson plans. Less experienced and educated teachers were hired at lower salaries and benefits and worked longer hours, as well, reducing the cost of operating with lower class sizes (e.g., Bridge's average primary class size was 20 compared to 34 in public primary schools and 17 in other private schools).

The results: Enrolling at Bridge for two years significantly improved student learning as measured by a five-subject knowledge test. Primary school students increased subject knowledge by 0.89 SD compared to students enrolled at other schools over the same period. This is equivalent to a gain of 2.9 equivalent years of Kenyan school (EYS). Pre-primary students increased subject knowledge by 1.35 SD, equivalent to a gain of 3.5 EYS. Enrolling at Bridge reduced dispersion in test scores, having larger effects for pupils at the bottom of the test score distribution and positive effects on grade progression, working memory, self-control and receptive vocabulary. There were no differential effects by gender, socioeconomic status or pupil-teacher ratio. These results are among the largest observed in the international education literature, particularly for a program already operating at scale, exceeding the 99th percentile of treatment effects of large-scale education interventions reviewed by Evans and Yuan (2020).

The implications: Schools delivering highly standardized education can support substantial learning gains at scale in lower-middle-income settings. Policymakers may consider adding more structure and standardization to their education systems. However, standardization efforts should be pursued with caution as the effects of standardization could vary between public and private schools, and according to local circumstances and implementation. Moreover, since this study was conducted, Bridge has closed most of its schools as controversies related to teacher pay and conditions, safety of the school grounds, and the effect of school fees on missed classes have come to light. Policymakers should consider the potential pitfalls arising from some design decisions in the pursuit of standardization and to evaluate efforts to introduce more structure into public education systems.

Link: http://dx.doi.org/10.2139/ssrn.4129184

17 - Agostinelli, F., Avitabile, C., & Bobba, M. (2023). *Enhancing human capital in children: A case study on scaling* (No. w31407). National Bureau of Economic Research.

Title: Enhancing human capital in children: A Case study on scaling

The issue: Rural and marginalized communities often lack access to quality educational environments. In Mexico, schools in the most hard-to-reach communities serve on average 15 students in a single multi-grade classroom, are led by local residents aged between 15 and 29 years old who typically have minimal or no formal training as teachers, and often close prematurely due to lack of instructors, therefore limiting educational access and opportunity.

The program: This paper evaluated the *Mobile Mentors* (MM) program on student learning and socio-emotional development outcomes. The MM program was designed and implemented by Mexico's Consejo Nacional de Fomento Educativo (CONAFE) - a government agency providing schooling to rural and highly marginalized communities. The MM program was developed to improve the quality of education at scale among CONAFE schools by providing additional capacity and support to instructors and to parents through school-based mentors. Recent university graduates were selected to serve as MM mentors for two years and in this role (i) supported community instructors, (ii) organized individual remedial education sessions at school, and (iii) conducted periodic home visits and school-based meetings to update parents about their children's progress and encourage their active involvement in school activities. Researchers studied the MM program in Chiapas, the poorest state in Mexico, at three different stages of development:

- *Mobile Mentors (MM) – field experiment, $285 USD per child.* Mentors received a week-long training focused on curricular knowledge and basic notions of pedagogy prior to working in CONAFE schools and communities. Researchers compared schools receiving the MM program to schools not receiving the MM program.
- *Mobile Mentors+ (MM+) – field experiment, $332 USD per child.* The government developed a new version of the program featuring substantial evidence-informed changes, namely: (i) extending mentor training to two weeks, (ii) focusing mentor training on practical, hands-on strategies to enhance students' reading and math skills, (iii) including a parent workshop to improve parenting skills, and (iv) including peer-to-peer sessions in which mentors collaboratively develop strategies to engage more effectively with parents. Researchers compared schools receiving the original MM program to schools receiving the MM+ program.
- *Mobile Mentors+ at scale – scale-up analysis.* The government scaled the MM+ program to over 300 schools and researchers analyzed the effectiveness of the program as it was scaled in comparison to schools without any MM program.

The results:

- *Mobile Mentors (MM).* The original program showed no significant effects on student learning or socio-emotional development.
- *Mobile Mentors+ (MM+).* The MM+ program significantly increased children's reading scores by 0.32 SD, math scores by 0.24 SD, and socio-emotional scores by 0.20 SD. It also increased the probability of enrolling in seventh grade by 12.4 percentage points (from a 62 percent enrollment in the control group). Parents were systematically more invested in their children's education activities at home and at school in the MM+ program. Relatively minor variations in the mentor training, which prioritized mentors' ability to effectively interact with and engage parents, led to CONAFE schools staying open and large changes in schooling outcomes.
- *Mobile Mentors+ at scale.* The MM+ at scale program increased children's probability of enrolling in seventh grade by 5.6 percentage points and reduced illiteracy by 20 percent.

The implications: Programs that provide hands-on instructional support to under-trained instructors and training to parents can support student learning. Parents play a significant role in improving student learning, and by acknowledging the importance of engaging parents, policymakers and practitioners can enhance the design and implementation of educational interventions in underprivileged settings.

Link: http://dx.doi.org/10.3386/w31407

Title: Heterogenous teacher effects of two incentive schemes: Evidence from a low-income country

The issue: Teacher incentives, like pay-for-performance schemes or recognition programs, can create educational accountability and encourage teachers to exert greater effort, ultimately leading to improvements in student learning. However, some incentives can lead to unintended consequences which could be detrimental for learning (e.g., Cilliers et al., 2021), and it is unclear whether certain incentives are more effective than others.

The program: Governmental and educational stakeholders designed a two-year teacher performance-based reward program in Guinea. This study evaluated the impact of the program on students' test scores in grades 3 and 4 and teachers' annual improvement in teacher quality measured through inspection visits. Researchers compared the efficacy of two different reward approaches:

- *In-kind reward* - Teachers received in-kind rewards (e.g., rice sacks, radios, phones, televisions, and generators), with the value of goods increasing with level of performance. The value of the reward was calculated on an absolute scale without relative comparisons to other teachers' performance.
- *Recognition reward* - Teachers received a certificate and public recognition from government.

Selected teachers in both versions of the program were already relatively high performing at the start of the program. At the end of the first year, teachers participated in an awards ceremony during which rewards were disbursed. The second year's awards ceremony was cancelled due to the Ebola outbreak.

Did you know? There is mixed evidence on how teacher pay-for-performance interventions improve student learning in low- and middle-income countries. Some studies find no impacts (Barrera-Osorio & Raju, 2017), while others document positive impacts (Behrman et al., 2015; Cilliers et al., 2018; Filmer et al., 2020; Leaver et al., 2020; Loyalka et al., 2019; Muralidharan & Sundararaman, 2011) and others show impacts only when complementary educational resources are provided (Gilligan et al., 2018; Mbiti et al., 2019). Local context and design details play an important role in such programs (Bruns et al., 2011).

The results:

- *After one year of implementation* - Student test scores increased by 0.24 SD in the in-kind reward program, but student test scores did not significantly increase with the recognition reward program. Teachers in the in-kind program were rated as making better use of classroom resources, being better prepared, and facilitating higher quality instruction.
- *After two years of implementation* - The impact of the in-kind reward on student test scores remained positive overall but had fallen by 30 percent in magnitude (to 0.16 SD) and was no longer statistically significant. This fall is likely due to a growing Ebola epidemic, which led to ad hoc school closures and decreased student engagement. The impacts of the recognition reward program remained small and statistically insignificant.
- *Differential impact based on teacher gender* - The in-kind reward program showed similar impacts for teachers identifying as men or women. However, in the recognition reward program the impact was statistically significant at 0.23 SD for teachers identifying as women while the impact for teachers identifying as men were null.

The implications: Some teachers characteristics like motivation and gender can play a role in the effectiveness of incentive interventions. This study found that teachers respond to performance incentives and can do so in ways that improve student learning outcomes, even in a low-capacity environment. However, non-financial rewards—which are often preferred by policymakers—might only be effective for some types of teachers. As such, policymakers may want to consider understanding the influence of such characteristics prior to implementation.

Link: https://doi.org/10.1016/j.jdeveco.2022.102820

19 - Romero, M., Bedoya, J., Yanez-Pagans, M., Silveyra, M., & De Hoyos, R. (2022). Direct vs indirect management training: Experimental evidence from schools in Mexico. *Journal of Development Economics*, *154*, 102779.

Title: Direct vs indirect management training: Experimental evidence from schools in Mexico

This issue: Management practices can be an important determinant of school effectiveness. However, in many countries school leaders are selected based off seniority as a classroom teacher, rather than management experience, and they lack the management skills to lead schools effectively.

Did you know? Existing research has found a relationship between school management practices and student learning outcomes, especially in settings with strong accountability systems for school leaders. Bloom et al. (2015) document a positive and statistically significant correlation between managerial practices and student learning outcomes across eight countries. In India, Lemos et al., (2021) show that learning outcomes and progress are positively correlated with managerial practices.

The program: This study examined the impact of a three-year, nationwide government strategy designed to strengthen school autonomy and improve principals' managerial capacity in Mexico. Researchers investigated the extent to which the program impacted school managerial capacities and student learning outcomes on standardized tests. The program had two main components: (i) the provision of school grants used for annual improvement plans and to pay for basic supplies and repairs and (ii) school principal managerial training. The training focused on improving school principals' capacity to collect and use data to monitor students' basic numeracy and literacy skills and to provide teachers with feedback on their teaching using a classroom observation tool and foundational learning student assessment tool. Researchers compared the impact of two different delivery models of the managerial training:

- *Train-the-trainer cascade model* – Ten percent of school supervisors were trained by professional trainers. The trained supervisors then trained a cohort of their supervisor colleagues, who in turn provided training to school principals.
- *Direct training model* – Principals received managerial training directly from a team of professional trainers.

The results:

- *Managerial and student learning outcomes*: The direct training model led to significant improvement of 0.13 SD in managerial capacities. However, there were no impacts on student learning: students in the direct training schools have test scores .03 higher than students in the train-the-trainer cascade schools, but this effect is not statistically significant.
- *Participation in the managerial trainings*: Overall participation in the management training was relatively low. Less than 25 percent of principals participated in full training (80 hours), and roughly 10 percent of principals completed fewer than 20 hours of the training. The researchers suggest one way to boost the intervention's impact on management practices and learning outcomes is to increase principals' attendance at the training workshops.

The implications: With regards to training design, there may be potential to boost the impact of school managerial training programs by ensuring school leaders participate in the training's full duration. Moreover, direct training from professional trainers may be more effective than cascade train-the-trainer training model approaches. Policymakers need to weigh the costs against the potential impacts of direct managerial training approaches, as the cost of direct training for school managers can be high (in this study it was ~$470 USD per school), with low or no impact on student learning outcomes. Policymakers may opt for other more cost-effective education interventions to improve student learning.

Link: https://doi.org/10.1016/j.jdeveco.2021.102779

20 - Avitabile, C., & De Hoyos, R. (2018). The heterogeneous effect of information on student performance: Evidence from a randomized control trial in Mexico. *Journal of Development Economics*, *135*, 318-348.

Title: The heterogeneous effect of information on student performance: Evidence from a randomized control trial in Mexico

The issue: Many education interventions targeting student learning outcomes are costly and difficult to scale. An alternative low-cost intervention focused on providing students with information about labor market returns to education can positively impact student attainment. However, it is unclear whether information interventions can have long-lasting impact on student achievements.

Did you know? Research from a variety of low- and middle-income settings – and across grade levels – has found providing information about labor market returns to education positively impacted student attainment. For example, Nguyen (2008) found an increase in school attendance among fourth graders in Madagascar because they received information about labor market returns to lower secondary education, while in Chile, receiving information about financial aid for tertiary education had a significant impact on eighth graders' college preparatory enrollment, school attendance, and financial aid knowledge (Dinkelman & Martínez, 2014).

The program: This study evaluated a governmental intervention, *Percepcions,* launched in 2009 to improve on-time graduation and learning outcomes among upper secondary students in Mexico. The online program provided students entering 10th grade with a range of information about the gender-differentiated returns to upper secondary and tertiary education, as well as the returns on life expectancy and funding opportunities for tertiary education. Students on average spent 12 minutes interacting with the information provided in the online package and then also watched a 15-second video summarizing the message that youth can empower themselves with education.

The results: At baseline, students on average underestimated the average earnings associated with completing high school but over-estimated earnings associated with completing university and life expectancy. Almost three years after the program was implemented, researchers found:

- The intervention increased math scores by 0.29 SD but did not significantly increase Spanish scores.
- The program had no impact on the proxy for completing high school on time (i.e., taking grade-12 national exams).
- All students, irrespective of initial academic skills and socio-economic backgrounds, increased their level of effort in school but only those who started with relatively strong academic skills and high socio-economic backgrounds were able to translate this increased effort into improved learning outcomes. The intervention had a large and significant effect on girls' learning outcomes (+0.26 SD overall) and those who belong to relatively better off households (+0.25 SD overall).
- Both boys and girls updated their expectations about average earnings associated with school completion because of the intervention, but only girls reported a higher level of effort (+0.35 SD) and switched to more demanding upper secondary academic sub-tracks, with higher expected returns in the labor market.

The implications: Information campaigns are cost-effective and may be enough to help girls envision educational and workforce futures beyond existing norms and stereotypes in some contexts. However, information campaigns appear unlikely to reduce upper secondary dropout rates, may not be able to improve learning outcomes among students from disadvantaged backgrounds, and risk exacerbating existing inequalities. Policymakers will want to consider how to complement information campaigns with measures that reduce the effects of differences in initial academic skill or socioeconomic backgrounds.

Link: https://doi.org/10.1016/j.jdeveco.2018.07.008

21 - Santibañez, L., Saavedra, J. E., Kattan, R. B., & Patrinos, H. A. (2021). Comprehensive private schooling for low-income children: Experimental case-study evidence from Mexico. *International Journal of Educational Development*, *87*, 102494.

Title: Comprehensive private schooling for low-income children: Experimental case-study evidence from Mexico

The issue: In many LMIC countries, parents who can afford it turn to the private (non-government) sector to seek higher quality schools (Heyneman & Stern, 2014). Latin America is one of the regions with the greatest private sector participation in the world, with 20 percent of elementary and 21 percent of secondary school students enrolled in private schools (Elacqua et al., 2018).

Did you know? Much experimental literature on private schools focuses on lower-income countries, including Pakistan, India, Kenya, and Uganda. In these countries, studies generally find that private school options increase academic achievement and improve other outcomes, such as reducing gender gaps, all at a fraction of the cost of public education (Patrinos et al., 2009; Muralidharan & Sundararaman, 2015; Andrabi et al., 2006; Alcott and Rose, 2016; Heyneman & Stern, 2014; Bizenjo, 2020). However, private schools can produce enable unintended and negative consequences (Romero et al., 2020), complicating their positive effects on student learning outcome.

The program: This paper evaluated the impact of the Christel House de Mexico (CHM), a comprehensive philanthropic private school model targeting low-income urban children in Mexico City. CHM is part of Christel House International (CHI), a philanthropic educational initiative that serves over 5,000 socioeconomically disadvantaged children worldwide. CHM is a resource-rich institution offering services beyond those provided by public schools, including a longer school day, English as a second language instruction, a tutoring program, and counseling for career and college readiness. Additionally, students receive "wraparound" services such as preventative health care and a nutritional package that includes daily breakfast and lunch. All students are provided with free school uniforms and materials. CHM adheres to the national curriculum standards set by the Mexican Ministry of Education. However, teachers at CHM have less seniority and earn lower salaries than their public-school counterparts, and they can be hired or fired at will.

The results: To evaluate the impact of the CHM model, this study employed a lottery system due to the high number of applicants. This lottery was used to enroll a portion of the candidate students into the school. At the end of the evaluation, CHM lottery winners showed an additional gain of 0.18 SD in literacy and 0.09 SD in numeracy over the first three years of elementary school. Parents of lottery winners were more likely to report that their children's school is academically more demanding, give the school higher ratings, and have greater expectations for their children's college completion. It is important to note that these achievement gains come with an additional cost of $1,000 USD per pupil per year compared to public schools, indicating a low cost-effectiveness.

Did you know? Research indicates that high parental expectations can positively influence academic outcomes for low-income students (Domina, 2005; Marschall, 2006; Yamamoto & Holloway, 2010).

The implications: The study underscores the potential of philanthropically funded private schools to improve learning outcomes in Mexico and other developing countries. Given the high demand for private schooling and the presence of supportive networks, further research is needed to understand the long-term benefits, prevalence, and scalability of such schools to enhance educational and economic outcomes for the region's most vulnerable children.

Link: https://doi.org/10.1016/j.ijedudev.2021.102494

22 - de Hoyos, R., Ganimian, A. J., & Holland, P. A. (2021). Teaching with the test: Experimental evidence on diagnostic feedback and capacity building for public schools in Argentina. *The World Bank Economic Review*, 35(2), 499-520.

Title: Teaching with the test: Experimental evidence on diagnostic feedback and capacity building for public schools in Argentina

The issue: Existing evidence suggests that large-scale assessments can significantly inform and improve school management and classroom instruction in LMICs. Such assessments provide crucial data to identify learning gaps and guide effective educational strategies.

The program: Researchers evaluated the effects of a diagnostic feedback intervention on student learning in Argentina. Specifically, the study aimed to determine whether providing assessment results alone (diagnostic feedback) was sufficient to improve school management and classroom instruction, or if additional support through capacity building was necessary to maximize the benefits of the data. Conducted over two years in 75 public primary schools in urban and semi-urban areas of La Rioja Province, the program targeted grades 3 and 5 to assess the influence of diagnostic feedback on educational outcomes.

The results: After two years, schools that received diagnostic feedback outperformed control schools by 0.34 and 0.36 SD in third grade math and reading, and by 0.28 and 0.38 SD in fifth grade math and reading. Student achievement improved in nearly all content and cognitive domains in both subjects. Specifically, the authors found that:

- Principals increasingly utilized assessment results to inform various aspects of school management, such as evaluating teachers, making curriculum changes, and informing parents about school quality.
- Students were more likely to report that their teachers engaged in more instructional activities, including copying from the blackboard, explaining topics, and assigning and grading homework.
- Students also reported more positive interactions with their teachers, noting that teachers were nicer when they asked for help, explained concepts in multiple ways, and ensured they understood the material.

The results of this study suggest that diagnostic feedback may be less useful in lower-middle-income countries, where the binding constraint of school systems is the extensive margin of worker effort (i.e., getting teachers to go to school and teach for the full lesson (Muralidharan & Sundararaman, 2010)), and more useful in upper-middle-income countries, where the binding constraint is the intensive margin of worker effort (i.e., getting teachers to increase their effort when they go to school (de Hoyos et al., 2017)).

Did you know? Muralidharan and Sundararaman (2010) evaluated a diagnostic feedback program in India where schools received standardized tests, detailed feedback reports, and multiple visits throughout the school year. They found that this intervention did not lead to any impact on student learning. In Mexico, de Hoyos et al. (2017) found that providing low-performing schools with diagnostic feedback and advisory on school improvement improved student learning.

The implications: The impact of diagnostic feedback highlights the significant potential of large-scale assessments to enhance school management and classroom instruction. By providing detailed data on student performance, these assessments enable principals and teachers to make informed decisions, improve teaching strategies, and address specific learning gaps, ultimately leading to better educational outcomes.

Link: https://doi.org/10.1093/wber/lhz026

23 - Piza, C., Furtado, I., & Amorim, V. (2023). Experimental evaluation of a financial education program in elementary and middle school grades.

Title: Experimental evaluation of a financial education program in elementary and middle school grades

The issue: Financial literacy has become a pivotal topic in the education debate. As individuals face financial decisions at increasingly younger ages, it is crucial for them to develop the skills to understand and manage these responsibilities early on. Learning to incorporate the costs and benefits of their financial choices into their decision-making process is essential for fostering responsible and informed citizens. This can help prevent future financial difficulties and promote overall economic well-being.

Did you know? Developing good financial habits at an early age can positively impact schooling, employment, and the standard of living throughout adulthood (Bruhn et al., 2016; Bruhn et al., 2022). In-school financial programs not only improve students' financial knowledge but also influence their behavior (Bover et al., 2018; Luhrmann et al., 2018; Frisancho, 2022; Jamison et al., 2014; Bruhn et al., 2016; Stoddard & Urban, 2020; Urban et al., 2020; Harvey, 2019). Recent evidence suggests these programs can have long-lasting effects on students' human capital accumulation, financial decisions, and entrepreneurship (Frisancho, 2020; Frisancho, 2022; Bruhn et al., 2022).

The program: This paper evaluated a financial literacy pilot program implemented in elementary and middle schools in Brazil. A governmental agency specializing in financial education developed textbooks specifically designed for different age groups and grades (3, 5, 7, and 9). The curriculum aimed to integrate financial education into students' daily lives by teaching essential financial concepts such as savings, consumption, and waste management. It enabled students to identify financially responsible behaviors, estimate budgets for financial projects, and locate relevant financial information in the media for informed decision-making. After teachers received training on incorporating the textbooks into the curriculum, the content was seamlessly integrated into each grade's standard educational curriculum.

The results: The evaluation of the financial literacy pilot program revealed several key findings:

- *Financial proficiency*: The program significantly improved students' financial knowledge (+0.07 SD), with the greatest impact seen in middle school students (+0.10 SD).
- *Behavioral outcomes*: The program also positively influenced attitudes and behavioral outcomes, particularly among elementary students, enhancing consumption (+0.12 SD) and saving behaviors (+0.08 SD). Students become more conscious, self-controlled, and forward-looking and were more likely to discuss financial topics with parents and friends and to use saving devices like piggy banks.
- *School achievements*: The program had no effect on mathematics or reading learning outcomes, grade progression, retention, or dropout rates.

The program improved students' financial proficiency, self-control in consumption, and risk-aversion in saving, as well as some behavioral outcomes. Proficiency gains were stronger among middle school students, while changes in attitudes and behaviors were more prominent among elementary students. The study indicates that changes in knowledge are not a necessary condition to change individuals' habits. Interestingly, these findings aligned with initial results observed by the implementation organization, who decided to scale the program down in its current format.

The implications: Incorporating financial education into the school curriculum can improve financial literacy and some behavioral outcomes in the short-term.

Link: https://doi.org/10.1596/1813-9450-10511

24 - Beg, S., Fitzpatrick, A., & Lucas, A. M. (2021). Improving public sector service delivery: The importance of management. *Department of Economics, University of Delaware*.

Title: Improving public sector service delivery: The importance of management

The issue: Public service provision in low- and middle-income countries (LMICs) is often deficient, particularly in education. Common issues include poor school management, frequent teacher and principal absences, teachers being present but not actively teaching, and high annual teacher turnover rates.

The program: This paper evaluated the effects of a management training intervention that was implemented in partnership with the Ministry of Education in Ghana. Specifically, researchers examine the effects of a management training intervention on primary school principals' and teachers' management practices and on student achievement. The program included two types of training:

- *Differentiated instruction (DI) associated with a basic management (BM) training (T1)*: (i) *DI:* Teachers in grades 4 to 6 received training and materials for differentiated instruction, which focused on teaching students at their individual learning levels rather than their grade levels and (ii) *BM:* Principals were provided with a classroom observation form that emphasized the core components of differentiated instruction and were encouraged to use this tool during routine observations. The objective of this training was to improve "Instructional Management" practices as defined in the WMS (Bloom et al. 2015).
- *DI associated with BM and associated with an enhanced management (EM) training (T2)*: Principals received additional training, along with a handbook and reference cards, on how to effectively support teachers during differentiated instruction and in their broader teaching practices. The objective of this training was to enhance "People Management" practices, as defined in the World Management Survey.

Did you know? The World Management Survey (WMS) measures management practices using a detailed interview-based methodology to evaluate key management practices, such as operations management, performance monitoring, target setting, leadership management, and talent management, by scoring them from 1 (worst practice) to 5 (best practice). Management quality is correlated with more productivity both in the private (e.g., Bloom & Van Reenen, 2007; Hsieh & Klenow, 2009) and public sectors (Rasul & Rogger, 2018; Tsai et al., 2015; Bloom et al., 2015; Lemos & Scur, 2016; Crawfurd, 2017; Lemos et al., 2021), yet most evidence on improving management is from the private sector.

The results: Both interventions increased management quality and improved classroom operations. Specifically, they raised the "Instructional Management" index by 0.4 SD, leading to more engaged principals, teachers, and students. Principals were 26 percent more likely to be present, teachers were 18 percent more likely to be in the classroom, and 37 percent more likely to be engaged with students. Classrooms also became more student-centered. After one year, student test scores increased by approximately 0.13 SD in math and 0.07 SD in English for both interventions. Additionally, only the second intervention (T2) improved the "People Management" index by 0.6 SD. In terms of cost-effectiveness, the first intervention (T1) was more economical, costing $125 USD per student per year of learning, compared to $228 USD per student for T2.

The implications: Providing clear, practical tools for classroom observation and supporting differentiated instruction has the potential to significantly improve management quality and student outcomes. Providing managers with training on instructional practices is likely a key component to improve student learning.

Link: https://conference.iza.org/conference_files/edu_2021/beg_s31721.pdf

25 - Leaver, C., Ozier, O., Serneels, P., & Zeitlin, A. (2021). Recruitment, effort, and retention effects of performance contracts for civil servants: Experimental evidence from Rwandan primary schools. *American Economic Review*, *111*(7), 2213-2246.

Title: Recruitment, effort, and retention effects of performance contracts for civil servants: Experimental evidence from Rwandan primary schools

The issue: The ability to recruit, motivate, and retain civil servants is crucial for any government, especially in the education sector. Pay-for-performance schemes can help address challenges in screening teacher quality beforehand (Staiger & Rockoff, 2010) and overcoming limited oversight of teachers in their roles (Chaudhury et al., 2006).

Did you know? Pay-for-performance schemes are controversial. Critics argue that they may reduce effort (Bénabou & Tirole, 2003; Deci & Ryan, 1985; Krepps, 1997), attract teachers motivated primarily by money, lower effort by undermining intrinsic motivation, and fail to retain high-quality teachers who become demotivated and leave. Proponents, citing classic contract theory (Lazear, 2003; Rothstein, 2015), contend that such schemes attract individuals confident in their classroom performance, increase effort by enhancing extrinsic motivation, and retain high-quality teachers who feel rewarded and remain in their positions.

The program: The study involved a two-tiered randomized controlled trial in which upper-primary teacher labor markets in Rwanda were randomly assigned to advertise either pay-for-performance (P4P) or fixed-wage (FW) contracts. The P4P contracts, designed jointly with the Rwanda Education Board and Ministry of Education, rewarded the top 20 percent of teachers with extra pay based on a composite metric that included student learning outcomes and three measures of teacher inputs: presence, lesson planning, and observed pedagogy. The authors compared the P4P contract to a fixed-wage (FW) contract that is equal in expected payout. To do so, the study first randomly assigned teacher labor markets to either P4P or FW advertisements (first-stage), and then used a surprise re-randomization of the teacher contracts at the school level (second-stage).

The results:

- *Recruitment*: Advertised P4P contracts did not alter the distribution of measured teacher skills: teachers recruited under the P4P scheme were at least as effective in promoting learning as those recruited under FW contracts. However, there is some evidence that teachers hired under P4P contracts exhibit lower intrinsic motivation.
- *Performance*: Teachers working under P4P contracts achieved better student performance, with an increase of 0.16 SD in math, language, and social studies tests compared to teachers under FW contracts. These learning gains were partly driven by improved teacher presence, which was 8 percentage points higher than that of FW teachers, and enhanced pedagogy.
- *Retention*: Teachers working under P4P contracts were no more likely to quit during the two years of the study than teachers working under FW contracts.

The implications: These results support the view that pay-for-performance (P4P) schemes can enhance teacher effort while also alleviating concerns about potential negative impacts on teacher selection.

Link: https://doi.org/10.36934/wecon2021-04

26 - Asim, S., & Riaz, A. (2020). *Community engagement in schools: Evidence from a field experiment in Pakistan*. The World Bank.

Title: Community engagement in schools: Evidence from a field experiment in Pakistan

The issue: School Management Committees (SMC) can be a great way to improve schooling quality and student achievement and enrollment. SMCs are usually given control over school grants and responsibility to monitor teachers and student attendance. Such reforms have been associated with increased enrollment, reduced dropout, and improvements in school facilities and staffing in countries including Cambodia, Honduras and Mexico (Benveniste & Marshall, 2004; di Gropello & Marshall, 2005; Gertler et al, 2011).

The program: This study evaluated the impact of alternative approaches to bolster engagement in schools by creating an inclusive, community-wide interface for parents to engage with other community members. The interventions were designed to maximize scalability and were simple, low-intensity, and operated on a short timeline of five months. The study evaluated three interventions with a sample of more than 450 primary schools located in the Sindh province in Pakistan.

- MEET: aimed to catalyze ongoing, face-to-face dialogue between community members about education by externally facilitating a village-wide meeting. The meetings conveyed information about the need for parents to take an active interest in the schooling of their children, to visit school regularly and monitor grants.
- SMS: allowed continuous, anonymous, low-cost text-message dialogue at the convenience of users in a text-message based Community Dialogue Platform.
- ELECTIONS-CAPACITY: aimed to reform existing SMC institutions to be more effective and more responsive to the preferences of the wider community through an election of SMC members to bring new members into committees, improve alignment between committee members and the community, and reduce elite capture. This ELECTIONS-CAPACITY intervention was not evaluated alone, but only in complement of the others.

The results:

- The MEET and the SMS interventions significantly increased access to schooling: the MEET intervention decreased the likelihood of school closure by 67 percent and the SMS intervention more than doubled the chance of reopening closed schools.
- The SMS intervention increased boys' retention in Grades 2, 3, and 4, which is equivalent to an additional enrollment of 21 percent. There was however no impact on girls' enrollment.
- The MEET and the SMS interventions both increased the number of registered teachers at school and reduced the proportion of one-teacher schools. However, in the MEET intervention, the gains in staffing were offset by increased absenteeism (+120 percent).
- The addition of the ELECTIONS-CAPACITY intervention increased enrollment in pre-primary and Grade 1. However, it reduced the intensity of the impacts of the MEET and the SMS interventions.
- The interventions had no impacts on learning outcomes.

The implications: Measures aimed at creating community-wide, inclusive platforms to promote dialogue can lead to greater interest of the community in education with impacts on access and staffing. However, the attempt to reform existing SMC institutions had limited effect, mostly leading to undermining the effects of dialogue interventions.

Link: https://documents1.worldbank.org/curated/en/796781592320492516/pdf/Community-Engagement-in-Schools-Evidence-from-a-Field-Experiment-in-Pakistan.pdf

27 - Islam, A., Kwon, S., Masood, E., Prakash, N., Sabarwal, S., & Saraswat, D. (2020). When goal-setting forges ahead but stops short.

Title: When goal-setting forges ahead but stops short

The issue: Low levels of student learning have long-term consequences on young peoples' lives and can result in lost productivity for the entire economy. Goal-setting can act as powerful motivator, which may affect both thought and action towards improving an outcome such as learning (Locke (1968); Locke & Latham (1990); Heath et al. (1999).

Did you know? Personal best (PB) goal setting (i.e., goals set by students themselves), as opposed to goals set by others (e.g., teachers, parents, or counselors) is associated positively with growth mindsets, achievement, engagement, and academic outcomes (Burns et al., 2017; Martin & Liem, 2010; Martin & Elliot, 2016b; Martin & Elliot, 2016a). The underlying theory is that when students choose their own goal it "acts as an internal commitment device meant to overcome problems of self-control" (Royer et al., 2015; Samek, 2016).

The program: This study evaluated two types of goal-setting interventions in secondary schools of Zanzibar, Tanzania. First, researchers assessed if self-set goals provided sufficient impetus to improve student effort and academic performance. Second, they evaluated if the efficacy of self-set goals could be improved through extrinsic incentives (i.e., recognition award) tied directly to goal achievement.

- *(T1) Goal setting intervention*: The intervention encouraged students to set their own personal best goals for improvements in math test scores in the form of a target score to achieve (out of 20).
- *(T2): (T1) + Recognition intervention:* Students received performance-based non-financial recognition awards (e.g. medals, certificates, backpack) for achieving the self-set goals.

During the school year, both groups received regular individual and collective reminders about their goals.

The results:

- Following the goal-setting intervention, students set high goals compared to their baseline performance: most students aimed to cover a gap of over 10 points from their baseline score.
- The goal setting intervention (T1) produced significant and positive effects on self-reported time-use (i.e., more time in studying math), effort (i.e., classroom discussions and organized schoolwork), and self-discipline (range of 0.09-0.11 SD). In particular, female students and students coming from lower wealth levels improved more in time-use, effort, and self-discipline.
- However, these self-set personal goals did not have any significant effects on test scores in the short run, nor on student confidence. This result may be partly due to most students not setting realistic goals.
- Adding the recognition intervention (T2) showed similar trends but weaker compared to T1 alone, suggesting that associating goal setting with extrinsic incentives could weaken its impact.

The implications: While goal setting can positively affect effort, time management, and self-discipline, these behavioral improvements are not always insufficient to significantly enhance academic performance. Supporting students to develop realistic goals is important and policymakers should carefully consider the use of extrinsic incentives alongside goal setting as these may sometimes weaken overall impact of goal-setting interventions.

Link: http://dx.doi.org/10.2139/ssrn.3590886

28 - Jensen, S. K., Placencio-Castro, M., Murray, S. M., Brennan, R. T., Goshev, S., Farrar, J., & Betancourt, T. S. (2021). Effect of a home-visiting parenting program to promote early childhood development and prevent violence: A cluster-randomized trial in Rwanda. *BMJ global health*, *6*(1), e003508.

Title: Effect of a home-visiting parenting program to promote early childhood development and prevent violence: A cluster-randomized trial in Rwanda

The issue: Families living in extreme poverty are at risk of poor child development and may benefit from support to pay attention to and address challenges such as low stimulation, poor hygiene and nutrition, violence, and neglect.

The program: Researchers evaluated the effectiveness of the *Sugira Muryango* (SM) intervention (which means "strengthen the family") in Rwanda. It is a home-visit intervention for families with young children to promote early childhood development (ECD) and reduce family violence. SM was implemented by community-based coaches and delivered in combination with Rwanda's social protection program. The beneficiaries of the SM intervention were compared with those receiving usual care (UC) and social protection.

- The SM intervention included twelve 60-minute visits including a 15-minute active play session, in which caregivers received live feedback on parent–child interactions. During these visits, coaches also helped families navigate formal resources to promote child health and nutrition.
- Two additional one-hour booster sessions were organized after three and six months to reconnect with families, identify and address ongoing challenges, and engage caregivers in an "active play" session.
- To support quality coaching, coaches were trained for the program in a 3-week training. They were further supported by a multilayered approach to supervision that included in-person supervision, weekly telephone supervision and monthly in-person group supervision.

Did you know? Previous home-visiting interventions conducted in low and middle-income countries demonstrate the value of integrated approaches that link parenting interventions to other ECD-promoting programs including economic strengthening programs such as cash transfer programs (Attanasio et al., 2014; Lachman et al., 2020) nutritional interventions (Walker et al., 2011; Yousafzai et al., 2016; Hamadani et al., 2006) primary healthcare (Powell et al., 2004) and maternal mental health interventions (Singa, Kumbakumba, & Aboud, 2015).

The results: The evaluation revealed that one year after the start of the intervention, the SM home-visit interventions produced significant effects on child development and punishment:

- Gross motor development increased by 0.16 SD, communication by 0.08 SD, problem-solving by 0.10 SD, and personal-social development by 0.10 SD.
- The SM intervention also increased father engagement and decreased harsh discipline and intimate partner violence.

The implications: With an ongoing focus on quality and fidelity, interventions that directly support parents to improve interactions with their children can support improved early childhood development. Such approaches could be expanded across different settings, offering Rwanda and other governments a vital tool to help break intergenerational cycles of poverty and violence.

Link: http://doi.10.1136/bmjgh-2020-003508

29 - Grantham-McGregor, S., Adya, A., Attanasio, O., Augsburg, B., Behrman, J., Caeyers, B., & Vats, K. (2020). Group sessions or home visits for early childhood development in India: A cluster RCT. *Pediatrics*, *146*(6).

Title: Group sessions or home visits for early childhood development in India: A cluster RCT

The issue: Poverty, malnutrition, and poor stimulation are preventing millions of young children in low- and middle-income countries from reaching their developmental potential. Efficacy trials have shown the potential of early childhood development (ECD) interventions but scaling these programs can be costly and challenging. Guidance on effective interventions' delivery is needed for policymakers.

Did you know? Even the most effective programs can fade out or not replicate (Tomlinson et al., 2018; Duncan & Magnuson, 2013). Trials of home visits (Vazir et al., 2013; Grantham-McGregor & Smith, 2016), mother-child groups (Fernald et al., 2017; Singla et al., 2015), clinic visits (Hamadani et al., 2019; Chang et al., 2015) and mixtures thereof (Yousafzai et al., 2014) all show some success in improving development but have used different outcomes, curricula, duration, and intervention intensities, making it difficult to evaluate the relative cost-effectiveness of alternative deliveries.

The program: Researchers compared the effectiveness of weekly home visits to weekly mother-child group sessions in Odisha, India. Groups may reduce implementation cost since several mothers and children can participate in a session simultaneously and can have interactions and synergies within the peer group. However, implementation may be more challenging since facilitators must engage with children of different developmental levels and relate to several mothers at the same time, while mothers may have difficulty attending. Accordingly, the authors evaluated the relative effectiveness of an intervention combining nutritional education with ECD content and whether this intervention was delivered through home-visits or group sessions.

- Home visits of 60 minutes (for an estimated cost of $135 USD/child/year) and group sessions of 90 minutes (for an estimated cost of $38 USD/child/year) were conducted weekly for two years.
- Home visiting and group sessions focused on psychosocial stimulation: facilitators showed mothers how to play, interact with and respond to their children in ways likely to promote development. Mothers received play materials to use at home and were demonstrated play activities. The nutritional component focused on children's diets and hygienic practices.
- Group sessions were organized for groups of 7 to 8 children and all mothers and children performed the same activities at the start of the sessions (e.g., free play, singing, child-rearing discussions). The groups were then divided into 2 by children's ages for specific play activities.
- Facilitators were trained local women, mentored by mentors with social science degrees and experience working with children.

The results: Over a span of two years, the interventions involving home visiting and group sessions exhibited similar positive effects, enhancing cognition by 0.30 SD and language skills by 0.27 SD, with most benefits materializing in the first year. Compliance rates were notably higher for the home visiting intervention; while attendance for group sessions stood at 51 percent, it reached 75 percent for home visiting.

The implications: Delivering the same ECD intervention through home visiting or group sessions had similar impacts on children's cognitive and language development. In this specific Indian context, group sessions cost only 28 percent of home visiting, which makes the former a more cost-effective and scalable method of delivery.

Link: https://doi.org/10.1542/peds.2020-002725

30 - Barrera-Osorio, F., Galbert, P. D., Habyarimana, J., & Sabarwal, S. (2020). The impact of public-private partnerships on private school performance: Evidence from a randomized controlled trial in Uganda. *Economic Development and Cultural Change*, *68*(2), 429-469.

Title: The impact of public-private partnerships on private school performance: Evidence from a randomized controlled trial in Uganda

The issue: Many countries are rapidly developing low-cost private schools, often positioned as an alternative to public schools (Tooley & Dixon 2005). One popular way to engage the private sector in education delivery is to develop public-private partnerships (PPPs) under which private schools contract with the government to deliver services to low income households. This raises the question to what extent can and should governments leverage low-cost private schools to help meet the goals of expanding education access while maintaining (or improving) education quality?

The program: The authors evaluate a PPP program initiated in 2007 under the Universal Secondary Education program in Uganda. Under the partnership, registered and certified private secondary schools charging a maximum amount per term could apply and had to meet a set of certification and quality benchmarks. Schools enrolled in the partnership entered a contractual arrangement with the Ministry of Education and received an amount of money per eligible student, and the provision of textbooks and other teacher materials.

In the 2011 school year, 50 private schools were randomly assigned to enter into a PPP contractual agreement, while 50 others were invited to enter into the PPP agreement only one year after, in the 2012 school year. Researchers compared these two groups to evaluate the causal effect of entering into a PPP agreement.

Did you know? Partnering with already-in-place private schools to increase access is considered cheaper than building new schools or classrooms and training teachers (Barrera-Osorio & Raju, 2015; Kim, Alderman, & Orazem, 1999). In particular, PPPs can improve the quality of education provided by private schools by increasing the level and stability of resources available to them, particularly in poor credit market contexts (Andrabi et al., 2015).

The results: Entering a Public-Private Partnership (PPP) agreement significantly boosted enrollment in early secondary grades by 35 percent. Concurrently, there is no evidence of adverse impacts on the governance of PPP schools, despite these schools being more likely to engage in discussions about both teacher and head-teacher salaries. Additionally, modest positive changes occurred in the availability of school inputs to students, particularly in terms of teacher attendance and the provision of science laboratories. Furthermore, student performance in PPP schools showed a marked improvement, with gains ranging from 0.07 to 0.16 SD in math, English, and biology. These results seem primarily driven by the type of students attending PPP schools, who were more likely to come from households with better education, more resources, and more involved parents.

The implications: Entering into PPP contractual agreement can lead to positive effects in terms of enrollment, or student performance. However, these effects may come from a composition effect, whereby PPS attract more advantaged students. Policymakers should consider how to enable equitable access to PPP schools and review the impact of PPP schools with more diverse composition of students.

Link: http://doi.10.1086/701229

31 - Özler, B., Fernald, L. C., Kariger, P., McConnell, C., Neuman, M., & Fraga, E. (2018). Combining pre-school teacher training with parenting education: A cluster-randomized controlled trial. *Journal of Development Economics*, *133*, 448-467.

Title: Combining pre-school teacher training with parenting education: A cluster-randomized controlled trial

The issue: The lack of adequate preparation for primary school through pre-primary education is a key risk factor for poor performance in primary school (Behrman et al., 2006). A common strategy for enhancing children's outcomes involves boosting enrollment in preschool programs and improving the quality of existing preschool programs.

The program: This study evaluated three different types of interventions implemented in Community-based Childcare Centers (CBCCs), developed by the Government of Malawi since the 1990s. CBCCs operate for a few hours each weekday morning, and are typically run by untrained and unpaid teachers. In a sample of around 200 CBCCs, researchers evaluated the following arms:

- *T1 (comparison group) provision of play and learning materials*: Each center received a kit of basic play and learning materials procured by UNICEF.
- *T2: T1 + training and mentoring of teachers*: This program included all parts of T1 plus a five-week teacher-training program on child development, play and early learning materials, planning and organizing the learning environment, child health and care, etc.
- *T3: T2 + Teacher incentives*: This program included all parts of T2 and teachers who completed the teacher-training program received a small monthly stipend for seven months to increase retention and motivation.
- *T4: T2 + Parenting education*: This program included all parts of T2 and parents participated in 12 group-sessions with information provision and demonstration of practical activities they can replicate at home. The group sessions covered various topics related to child development, learning, and health.

Researchers examined the impact of these different interventions on (i) children's language, fine motor, executive function (attention, inhibition, working memory), problem solving, and numeracy/math skills, (ii) primary caregiver's health and (iii) the home environment 18 months and 36 months after the start of their implementation.

The results:

- After 18 months of intervention (i.e., when the children are on average 5.5 years old), T4 was the only intervention that led to positive and significant effects on child development. T4 led to an increase in children's language skills by 0.19 SD and in prosocial behaviors by 0.25 SD. Teacher training alone (T2) or combined with monthly stipends (T3) did not improve children's outcomes, despite significant improvements relating to the classroom environment and teacher behaviors.
- After 18 months of intervention, the T4 intervention improved parenting quality by 0.26 SD, which was mostly driven by an increase in the reported number of home activities (e.g., reading, playing).
- Thirty-six months after the start of the intervention (i.e., when the children are on average 6 to 8 years old), there were no effects in any treatment arm, indicating a substantial fade-out of program impacts in the T4 intervention arm.

Did you know? Meta-analyses of parenting and home visiting programs from high- and low- income countries have found that the most effective parenting programs included systematic training methods, a structured, evidence-based curriculum built on a strong, theory-driven approach (Engle et al., 2011; Segal et al., 2012).

The implications: There can be significant benefits to child development from group-based parenting support in the context of an informal preschool setting, but in this context, the early benefits faded over time. Policymakers designing similar programs should consider and experiment with strategies to improve the sustainability of impacts over time.

Link: https://doi.org/10.1016/j.jdeveco.2018.04.004

32 - Wolf, S., Aber, J. L., Behrman, J. R., & Tsinigo, E. (2019). Experimental impacts of the "Quality Preschool for Ghana" interventions on teacher professional well-being, classroom quality, and children's school readiness. *Journal of Research on Educational Effectiveness*, *12*(1), 10-37.

Title: Experimental impacts of the "Quality Preschool for Ghana" interventions on teacher professional well-being, classroom quality, and children's school readiness

The issue: Sub-Saharan Africa has the highest prevalence of children at risk, with 38 percent of the 143 million children younger than 5 stunted and 50 percent living in extreme poverty (Lu et al., 2016). High-quality early childhood education can improve children's early learning skills, which are crucial for children's transition and adaptation to school (e.g., Blair, 2002; Morris et al., 2014; Yoshikawa et al., 2013). These "school readiness skills" include both early academic skills and behavioral and social skills.

The program: This study evaluated the effectiveness of the "Quality Preschool for Ghana" (QP4G) teacher training and coaching program within private and public kindergarten classrooms. The program aimed to improve teacher well-being, the quality of teacher practices and interactions with children, and children's school readiness skills over one school year. Researchers evaluated two treatment arms associated with the program:

- *T1: teacher training and coaching program (TT)*: The program included eight days of training and six in-classroom coaching sessions over the school year. The content of the teacher training focused on child development, classroom management, language, literacy and mathematics learning, and assessment and planning, with a mix of lectures and discussions and practicing techniques. The coaching visits focused on practical ways that teachers could integrate the lessons from the training in their teaching, including positive classroom management, assessment, and planning, and integrating play-based activities into literacy and mathematics lessons. At each visit, teachers were observed for an hour, followed by a debriefing session where teachers reflected on their practices, and were provided with feedback.
- *T2: T1 + parental awareness meetings (TTPA)*: This program included all components of T1 and added three parent meetings over the school year, which included a video on a specific theme at each session (i.e., play-based learning, parents' role in child learning, and encouraging parent-school communication), followed by a discussion.

The results:

- The TT and the TTPA interventions moderately reduced teacher burnout, and the TT intervention reduced turnover. There were no effects on motivation or job satisfaction.
- The TT and the TTPA interventions improved classroom quality with an increase in emotional support and behavioral management within the classroom. The TT intervention also increased support for student expression within the classroom.
- The TT program increased children's school readiness by 0.16 SD (early numeracy by 0.11 SD, early literacy by 0.11 SD, and socio-emotional skills by 0.18 SD). There were no moderations by gender, baseline school readiness or grade level.
- The TTPA program did not impact children's school readiness, suggesting that these meetings counteracted some of the positive impacts of the teacher training intervention on children's school-readiness outcomes. Qualitative interviews seem to suggest that parents may not have agreed with the teacher training program's messages to promote child-centered and play-based learning.

The implications: Brief and relatively affordable in-service teacher training, built into existing governmental systems, can improve key dimensions of classroom quality and early childhood development in both private and public pre-primary institutions. Engaging parents on new educational approaches does not necessarily lead to positive effects on child development, especially if parents do not buy-into new educational programs. Parent meetings should be carefully designed and implemented to avoid negative effects that counteract school-based interventions.

Link: https://doi.org/10.1080/19345747.2018.1517199

33 - Bouguen, A., Filmer, D., Macours, K., & Naudeau, S. (2018). Preschool and parental response in a second-best world: Evidence from a school construction experiment. *Journal of Human Resources*, *53*(2), 474-512.

Title: Preschool and parental response in a second-best world: Evidence from a school construction experiment

The issue: Policymakers in many countries are increasingly seeing early childhood as a particularly promising period to target when trying to address socioeconomic gaps in human capital development. However, little is known about parental responses to the introduction of new early childhood programs in low-income countries. Whether and how the availability of new programs, such as preschools, translates into better cognitive and socioemotional outcomes for young children will depend on parental behavior responses.

Did you know? Studies that track individuals from early childhood into adulthood show children from a more favorable early environment are healthier and taller, have higher cognitive ability and educational attainment, and earn significantly higher wages (Paxson & Schady 2010; Stith, Gorman, & Choudhury 2003; Liddell & Rae, 2001; Walker et al., 2005; Gertler et al., 2014; Havnes & Mogstad, 2011).

The program: In 2009, Cambodia started to construct preschool classrooms within newly renovated primary schools in disadvantaged rural areas to increase its access. The newly built classrooms were open to 3- to 5-year old children (with a priority given for 5-yo children in practice). In addition, classrooms were provided teaching materials (i.e., books, tables) and the program included provisions for teacher recruitment, training, salaries, and supervision. This study evaluated the short-term impacts of increased access to government preschools on both cognitive and noncognitive outcomes of children. Importantly, in Cambodia, the counterfactual to preschool was not only parental care at home, but also informal underage enrollment in primary school (the official age for entry into the first grade of primary school is six years old), a phenomenon widely observed in LICs (O'Gara 2013). This study estimated the effect of a preschool program in a context where the intervention might trigger reallocation between preschool, primary school, and parental care at home.

The results: The program was poorly implemented, which led in practice to limited exposure time and to poor service quality. The authors found negative impacts with a decrease in cognitive development by 0.19 SD for five-year-olds. These negative effects were the largest for children from less educated and poorer parents. These effects were due to the parental response to the program which led to a reallocation in educational services:

- Many five-year-old children, mostly from higher socioeconomic backgrounds, who attend the newly established preschools attended primary school as underage enrollees in their absence.
- Many five-year-old children, mostly from low socioeconomic backgrounds, enrolled in primary school before they were officially old enough because there was no program to accommodate them. However, when preschool classrooms were introduced and the official age for primary school enrollment was enforced, these children left the formal school system entirely. Poorer families who no longer registered their children as underage enrollees in primary school in treatment villages opted out of any formal school environment. They might have lacked information about how to register for preschool, had low demand for the newly established preschools, or were unable to meet other registration requirements.

The implications: The impact of preschool programs can be highly context-specific and determined in large part by the sometimes unexpected, behavioral responses to an intervention. The design of preschool interventions should start with a good understanding of parental and teacher decision-making. A better understanding of the behavioral underpinnings, and the more general determinants of the counterfactual, could potentially inform better design of preschool programs.

Link: https://doi.org/10.3368/jhr.53.2.1215-7581R1

34 - Avitabile, C., Cuevas, J., De Hoyos Navarro, R. E., & Jamison, J. C. (2019). Addressing high school dropouts with a scalable intervention: The case of PODER. *World Bank Policy Research Working Paper*, (9085).

Title: Addressing high school dropouts with a scalable intervention: The case of PODER

The issue: One of the strongest predictors of future success is educational attainment, which is especially important in the context of low- and middle-income countries where the variance in attainment is high. Reducing upper secondary school dropouts is a complex task involving remedial actions to close skills gaps that, in many cases, have been accumulating since infancy.

Did you know? The trade-off between remaining and leaving in secondary school is determined in large part by the students themselves (de Hoyos, Rogers, & Székely, 2016), both for legal and practical reasons. This is a highly influential decision to be made by an adolescent with a still-developing brain, a weak link between choices and consequences, a preference for the present (Sutter et al., 2013), and a strong susceptibility to peer effects (Gaviria & Raphael, 2001). Dropping out of school, for instance to take a low-skill job and earn some cash, is tempting in the moment but difficult to reverse, and it can have lasting impacts on wages, mobility, and welfare more broadly (Oreopoulos, 2007).

The program: This study evaluated a pilot program (PODER) designed by the Mexican government, the World Bank, and local universities to reduce upper secondary dropouts. The program assumed that youth at risk of dropping out are those with significant skills gaps in mathematics and socio-emotional skills, and therefore applied remedial cognitive behavioral therapy (CBT) workshops and math tutoring to try to reduce those gaps.

The program targeted at-risk first year upper secondary students (identified through an algorithm) in public schools run by the Federal Government. Participation in PODER was voluntary as it was implemented outside of school hours. CBT sessions and math tutoring were implemented entirely by voluntary teachers. The CBT sessions were designed to encourage students to think before acting, to imagine the downstream consequences of their behavior, to manage their emotions, and to identify more closely with their future selves. Two types of CBT models were constructed: one version with ten 1-hour sessions, and one version with twenty 1-hour sessions.

The results:

- First, the program's take-up rates were low: only 3 out of 10 students attended at least one CBT session, and virtually no student attended any math tutoring session. This low participation may have been due to different factors such as: (i) the *use of out-of-school hours* with many students who combine school with work, (ii) the l*ack of incentives*, and (iii) the fact that there was *no communication strategy* leading to a substantial level of confusion regarding the program's objectives and content among principals, teachers, and students.
- There was some evidence that the program increased some socioemotional skills from a measure aggregating perseverance, feelings' management, and decision making, but not on another measure aggregating intrapersonal and interpersonal skills, stress management, adaptability, and overall positive feeling. Some indications suggest students who attended at least 5 CBT sessions benefited from the intervention in terms of socioemotional skills and engagement outcomes.

The implications: This study highlights the crucial role of implementation in determining the potential impact of an intervention, demonstrating that an intervention may not be adopted even if it appears beneficial. Accurately measuring program take-up and piloting interventions beforehand is essential to understand their implementation and adoption. Also, progress must be made to understand how to tackle secondary school dropouts to improve schooling and professional trajectories.

Link: https://ssrn.com/abstract=3507833

35 - Bruns, B., Costa, L., & Cunha, N. (2018). Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil?. *Economics of Education Review*, *64*, 214-250.

Title: Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil?

The issue: There is growing evidence that the quality of teachers' classroom practice is important for student learning and other key outcomes, such as students' socio-emotional skills. Observations of classroom practice show there can be large variations in teachers' practice and classroom-level results, even among teachers in the same school teaching the same grade and subject. There is a need for effective strategies to support and improve existing teachers' classroom practice.

Did you know? Individual teachers have large impacts on their students and the impacts on students' socio-emotional development and life outcomes may be even longer-lasting than impacts on learning (Chetty et al, 2014; Jackson et al, 2014; Jennings & DiPrete, 2010).

The program: Researchers evaluated a 9-month training course and coaching program in the state of Ceará, Brazil. The program was designed by an NGO to promote professional interaction among teachers and to promote good practice techniques for lesson planning, classroom management, and keeping students engaged. The program design was inspired by research evidence, costed $2.40 USD per student, and included:

- *Performance feedback*: Schools received a two-page summary of key results from classroom observations undertaken at the end of the previous school year. The two-pager included results for individual classrooms and comparisons to other schools.
- *Self-help materials*: Schools and pedagogical coordinators received a book describing high-impact teaching practices that stimulate student learning, with description of techniques and access to online video examples. Schools also received access to a private website with good practice videos, their own uploads, and were encouraged to post video examples of good teacher practices in their school.
- *Face-to-face interactions with highly skilled coaches*: Pedagogical coordinators were trained to observe classroom teaching and to conduct individual coaching sessions with teachers to provide feedback on their teaching practice.
- *Expert coaching support via Skype*: Four coaching sessions were conducted between an expert trainer and each school's pedagogical coordinator via Skype.

Researchers examined the program's impact on teachers' classroom practice and student learning outcomes.

The results:

- *Teachers' practice:* The program significantly increased (i) teachers' use of class time for instruction, by reducing the time spent on classroom management and time off-task, (ii) teachers' use of questions during their lessons, and (iii) student engagement in the classroom. Overall, the program reduced within-school variation in teacher practice, and schools and classrooms with the weakest performance improved the most.
- *Student learning:* These changes in teacher practice increased performance on the Ceará state assessment (by 0.05 SD in Portuguese and 0.08 SD in math) and the national secondary school exit exam (by 0.05 SD in Portuguese and 0.04 SD in math).
- The implementation fidelity of the program had a large impact on learning results. In schools whose pedagogical coordinator scored "excellent" on a final certification test, the Ceará state assessment scores were 0.13-0.23 SD higher and the national secondary school exit exam scores were 0.13-0.17 SD higher.

The implications: This study shows that the combination of teacher feedback and expert coaching is a promising strategy for raising school quality and student learning.

Link: https://doi.org/10.1016/j.econedurev.2018.03.003

Title: Re-Kindling Learning: EReaders in Lagos

The issue: Digital technologies are increasingly used in educational settings to improve student learning. However, some educational technology can be costly to implement at scale, especially in low-resource settings, and its impacts on learning is mixed. Questions remain about whether digital technologies can improve student learning in low- and middle-income countries where school enrollments have expanded rapidly, but learning levels remain low.

The program: This study evaluated the impact of equipping Grade 8 students in lower secondary public schools with eReader devices in Lagos, Nigeria. The government selected eReaders for their promise and scalability: low-cost, handheld e-reading devices can hold more than a thousand books, are more mobile than laptops, have long battery life, and offer a way to deliver learning material delivery to hard-to-reach schools that may struggle to receive paper textbooks. Researchers aimed to disentangle the impact of increasing exposure to relevant materials (i.e., the content effect) from the impact of getting access to an expensive gadget which may signal the importance of learning and prolong student interest in and engagement with learning materials (i.e., the reciprocity effect). The eReaders had limited functionality beyond the provision of reading content, which made them an ideal device for examining the relative importance of static 'content' within the study. Researchers examined whether students' learning and participation were impacted in the following three treatment groups:

- T1: Students received an eReader with a digital library of non-curriculum fiction and non-fiction material.
- T2: Students received an eReader with T1 + core curriculum textbooks in math and English.
- T3: Students received an eReader with T1 + T2 + supplementary instructional material providing both remedial and current instructional content.

To benchmark the eReader intervention on secondary school participation, researchers randomly selected a sub-sample of students to receive information on returns to secondary education.

The results: Around 75 percent of the students declared to have used the device at least once a week, or almost every day and most students found the eReader easy and convenient to use.

- *Student learning:* After six months of exposure, there was no significant positive impact of any eReader treatment on learning outcomes in reading, math, or non-verbal reasoning. (i) eReader without curriculum (T1) appeared to lead to a decline in overall reading and math scores. (ii) eReader with curriculum content (T2) seemed to improve reading outcomes (but not math) for students with no textbooks.
- *Student aspirations and attitudes*: eReaders had no impact on student aspirations or attitudes.
- *Participation in secondary school*: Two-and-a-half years after the start of the program, students in any of the eReader arms were about 5 percentage points more likely to stay in school. This effect is concentrated among students from poorer households and with low baseline reading scores. However, giving low-cost information on returns to secondary education alone increased retention by 11 percentage points, highlighting a more cost-effective approach to secondary school retention than eReaders.

The implications: Digital solutions that deliver otherwise unavailable instructional 'content' may boost learning. However, simply having a new gadget with the same instructional content as available in textbooks is unlikely to improve learning outcomes. Policymakers looking to use educational technology to provide access to educational content should consider the relevance of and need for content provided via technology. Policymakers should also weigh the costs and impacts of educational technology, especially against strategies that may be more cost-effective and scalable (e.g., improving student secondary school retention through returns to education campaigns).

Link: https://doi.org/10.1596/1813-9450-8290

37 - Martinez, S., Naudeau, S., & Pereira, V. A. (2017). Preschool and child development under extreme poverty: Evidence from a randomized experiment in rural Mozambique. *World Bank Policy Research Working Paper*, (8290).

Title: **Preschool and child development under extreme poverty: Evidence from a randomized experiment in rural Mozambique**

The issue: Many children worldwide are not currently achieving their developmental potential due to poverty's negative effects on health and nutrition, home environments, and learning opportunities. Early childhood development interventions, such as preschool, have been shown to counteract the risks posed by poverty. However, causal evidence on the effectiveness of preschool and its viability as a cost-effective model for improving child development outcomes in LMICs has focused on Latin America (e.g., Berlinski et al., 2009; Bernal & Fernández, 2013; Attanasio et al., 2013) with less evidence from parts Africa.

The program: This study evaluated a community based preschool program in Mozambique implemented by an NGO. The NGO built preschools and implemented a program focused on early stimulation, emergent literacy and numeracy instruction and psychosocial support to improve children's development, and support children's transition to primary school. Preschools were built with one to three classrooms, washrooms, and a playground. Communities donated land, labor, and construction materials, and appointed a committee to manage and supervise preschool activities. Instructors were recruited from within communities, provided basic training and supervision, and paid a nominal fee of $10 USD per month. Preschools operated 5 days a week for 3 hours and 15 minutes per day, following a structured daily routine designed to stimulate child development through play and learning activities. The program also organized monthly parent group meetings to strengthen positive parenting practices in the home. Overall, the program costed $3.09 USD per child per month. Researchers examined the program's impact on:

- Key dimensions of children's development and school readiness in four domains: (i) cognitive - numeracy, working memory; (ii) linguistic - receptive language, use of gestures, and sounds; (iii) psycho-social and behavioral - personal and social; and (iv) physical - fine and gross motor skills, health, and nutrition
- Subsequent primary school enrollment
- A teacher assessment of performance in first grade

Notably, enrollment in the preschool model was demand driven, with just over half of eligible children enrolling in treatment communities. Several demand-side constraints, including far distances to the preschool, parent perceptions that the child was too young, and preschool costs, prevented some children from participating in the preschool program even when these were available in their communities.

The results: Children who attended preschool experienced gains in cognitive development, communication, fine motor skills, and socio-emotional skills, scoring 0.33 SD higher on a child development screening test. Preschoolers were 21 percentage points more likely to be enrolled in primary school, spent 6 additional hours per week on schooling and homework activities, were 15 percentage points more likely to enroll in primary education at the appropriate age, and had higher cognitive and communication scores in first grade (around 0.40 SD). Effects were larger for children from vulnerable households, those with higher initial development levels, and those with longer exposure to treatment. The intervention also generated positive spillovers by increasing the school enrollment of older siblings (2.8 percentage points) and labor supply of adult caregivers (3.7 percentage points).

The implications: Community-led preschools have the potential to be a cost-effective policy option for helping children meet their development potential even in the most resource deprived parts of the world. While this study's findings are encouraging, it is important for policymakers to consider that the program was delivered by an NGO, and participation was demand-driven – both of which may have contributed to positive effects, and which may not be present if implementing community-led preschools at wide scale.

Link: https://ssrn.com/abstract=3297321

38 - Bruhn, M., de Souza Leão, L., Legovini, A., Marchetti, R., & Zia, B. (2016). The impact of high school financial education: Evidence from a large-scale evaluation in Brazil. *American Economic Journal: Applied Economics*, *8*(4), 256-295.

Title: The impact of high school financial education: Evidence from a large-scale evaluation in Brazil

The issue: Developing strong financial habits at an early age may benefit schooling, employment, and standards of living throughout adulthood. As such, financial literacy programs are becoming popular across high- and low- income contexts. There are concerns, however, that school time spent on financial literacy could have unintended negative consequences, for example by taking valuable time way from other important areas of learning and lowering school performance (e.g., in Tanzania - Bjorvatn et al., 2015). Alternatively, such programs may make students more aware of and likely to purchase certain financial products or by over-focus students' attention on some financial decisions and not others.

The program: Researchers evaluated a comprehensive financial education program for public high school students led by the government of Brazil. The program was integrated into existing secondary school curricula, including mathematics, science, geography, history and Portuguese, and included interactive in-school and at-home exercises, such as household budgeting and planning professional careers. Because the program was integrated into existing curricula, financial learning was repeated and continuous throughout the school year including between 72 and 144 hours of teaching (approximately 1-2 hours per topic area), rather than a short-term workshop approach. The program included detailed teaching guidelines on how to integrate the financial education framework into the regular curriculum, and teacher training through a two-day seminar, a reference DVD, a training website and a blog. Researchers examined the impact on graduation rates and students' financial knowledge, attitudes, and behavior.

The results:

- *Graduation rates:* The program reduced failure rates by 9 percent and increased passing rates by 1.2 percentage points.
- *Financial knowledge:* The program increased student financial proficiency by 0.25 SD after six months and by 0.20 SD after one year and benefited all students (both low- and high-achieving).
- *Financial attitudes*: The program increased intention to save by 0.09-0.12 SD (i.e., preferences over hypothetical savings and spending scenarios) and financial autonomy by 0.09 SD (i.e., feeling empowered, and capable of making independent financial decisions).
- *Financial behaviors*: The program increased borrowing – with the use of expensive financial products such as credit cards and installment plans – and the likelihood of being behind on credit repayments. The program also increased the likelihood of purchasing consumer items such as electronics, shoes, and clothing. Researchers reason this behavior could be linked to messaging within the curriculum. While the program offered clear direction on actions such as saving and budgeting, there was no such indication when it came to purchasing items on expensive credit cards or installment plans.

The program also increased the likelihood that students talked to their parents about finances and participated in organizing the household budget, which created intergenerational effects with increases observed in parental financial literacy, financial behavior, savings, and in the capacity of maintaining a household budget.

The implications: The program shows financial education programs can support valuable outcomes like financial literacy and improved graduation rates, but the mixed effect on financial behaviors warrants caution especially since findings are only reported on the short-term. The authors suggest policymakers design and implement financial literacy programs with care, potentially working with researchers to investigate whether curriculum content and/or delivery (e.g., simple versus complex messaging) influences students' financial behavior in the short- and long-term.

Link: http://dx.doi.org/10.1257/app.20150149

39 - De Hoyos, R., Garcia-Moreno, V. A., & Patrinos, H. A. (2017). The impact of an accountability intervention with diagnostic feedback: Evidence from Mexico. *Economics of Education Review*, *58*, 123-140.

Title: The impact of an accountability intervention with diagnostic feedback: Evidence from Mexico

The issue: Under certain conditions, providing information about school quality and learning outcomes to students, parents, communities, and education actors can improve learning outcomes. Making exam scores public can encourage dialogue and consultation among all actors and generate momentum, accountability, and actionable improvement plans to better the quality of education services. Low-stakes accountability approaches, in which educational improvement is framed as a shared responsibility and undertaken in a supportive and collaborative environment, may be especially effective in low- and middle-income countries, though evidence on this varies.

Did you know? Information for accountability can be a mechanism for improving school outcomes through increasing choice, participation, and voice (Bruns, Filmer, & Patrinos, 2011). Evidence, mostly from high-income countries, shows that learning outcomes can improve because of more accountability. In the Netherlands, student learning increased after schools received a negative report card, especially for the lowest ranking schools with an increase in final exam grades of 0.10-0.30 SD (Koning & van der Wiel, 2013). In LMICs, findings are more mixed. In Pakistan, providing information on test scores to households and schools increased test scores by 0.11 SD after one year (Andrabi, Das, and Khwaja, 2014), whereas in India, a program that provided low-stakes diagnostic tests and feedback to teachers had no effect on student learning outcomes (Muralidharan & Sundararaman, 2010).

The program: This study evaluated a low-stakes accountability program in Colima, Mexico, *Programa de Atención Específica para la Mejora del Logro Educativo* (PAE), designed to improve learning outcomes among the lowest performing public primary schools. Schools' exam outcomes from the prior year were made public at the start of the school year. Schools ranked at the 35th percentile or lower on test scores in math, Spanish and science were then designated as PAE schools and were assigned a technical adviser who visited three times a month to work with school directors and teachers. Technical advisors first coached teachers on analyzing student learning data and to understand the causes of poor performance within their schools. Advisors then worked with teachers to develop improvement strategies such as (i) strengthening school-based management, (ii) training for school directors and supervisors, and (iii) reinforcing teachers' knowledge in the academic areas posing challenges. Due to reasons unrelated to the program's performance, PAE was canceled less than one year after the pedagogical interventions were in place. The pedagogical interventions therefore were partially implemented, and researchers only focused on the PAE's effects on student test scores through accountability and availability of information mechanisms.

The results: The program increased test scores by 0.13 SD in math and 0.10 SD in Spanish a few months after the program launch. There were no differences in impact between boys and girls, but the impact was larger among students with relatively better initial conditions. Test scores among students with disadvantaged conditions, proxied by age-grade distortion, improved marginally (statistically not different from zero) due to the intervention.

The implications: When students, teachers, and parents are informed that their school test scores are low, it can trigger a process of self-evaluation and analysis; this process itself may lead to an improvement in learning outcomes – especially if there are no shaming or punitive measures for poor performance. Knowledge of performance can be powerful when well disseminated, understood, and framed as an opportunity for improvement, but the study shows this process is not guaranteed just by making student learning outcomes public. Policymakers considering low-stakes accountability programs should consider ways to support teachers and school leaders to interpret and use diagnostic learning data as a catalyst for improvement.

Link: http://dx.doi.org/10.1016/j.econedurev.2017.03.007

40 - Al-Samarrai, S., Shrestha, U., Hasan, A., Nakajima, N., Santoso, S., & Wijoyo, W. H. A. (2018). Introducing a performance-based component into Jakarta's school grants: What do we know about its impact after three years?. *Economics of Education Review*, *67*, 110-136.

Title: Introducing a performance-based component into Jakarta's school grants: What do we know about its impact after three years?

The issue: Recent years have seen increased education financing, often with limited impact on student learning. In Indonesia, low returns from public education investments have prompted policymakers to reevaluate school financing mechanisms like school grants. These grants provide discretionary funds to schools, compensating for lost revenue from eliminated school fees and supporting school improvement plans. While school grants can enhance enrollment and learning outcomes, their impact when allocated based on school performance is less understood.

Did you know? Despite differences in how school grants are set up, their impacts on school enrollment are overall positive (Snilstveit et al., 2015). The evidence of the impact of school grants on learning outcomes is more mixed. Grants seem to have a greater impact on learning when combined with other interventions, as seen in Indonesia where grants alone had no impact, but improved learning outcomes when combined with interventions that strengthened the oversight of schools (Pradhan et al., 2014).

The program: This study evaluated the impacts of a performance-based school grant scheme introduced by the Jakarta government to primary and junior secondary schools in Indonesia. The scheme was designed to create stronger incentives for schools to use resources more effectively to improve learning. The performance component provided the top 25 percent of performing schools (based on students' scores and improvements over the past two years) with an additional per student allocation for a year, equivalent to an additional 20 percent of the basic grant allocation. Policymakers assumed this scheme could improve learning outcomes by (i) giving incentives to improve learning, for example by increasing teacher attendance, time spent on task, lesson preparation, and school recognition and (ii) enabling schools to allocate additional toward new educational activities which may improve learning. Researchers examined how this scheme affected student learning outcomes using administrative data.

The results:

- *In primary schools*, on average the grant had null and even some small but temporary negative effects on student learning. This result may reflect ineffective school-level decision-making, at least in the short term. Some evidence suggests principals shifted aways from hiring temporary teachers and towards improving the condition of classrooms which might have been detrimental in the short-term. However, findings also suggest the grant increased student learning in the worst-performing primary schools meaning the existence of the grant narrowed test score gaps between high- and low-performing schools.
- *In junior secondary schools*, the grant increased student learning by 0.64 SD, but inadvertently increased inequality in school performance. The impacts were stronger for high-performing schools that had to make fewer improvements to receive the additional grant compared to low-performing schools.
- There were no significant differences in student learning when comparing schools just below the grant threshold (and that did not receive the grant) to schools just above the thresholds (and that received the grant).

The implications: Pay-for-performance school grants can differentially affect learning improvements and inequalities in primary and junior secondary schools, depending on how schools allocate the funds. Policymakers may encourage schools to experiment with various funding allocation approaches to determine which strategies improve student performance and learning inequalities in the short- and long-term. The authors encourage policymakers to consider other metrics beyond learning outcomes, such as quality assurance measures or dimensions, to assess schools' performance and determine pay-for-performance grant allocation.

Link: https://doi.org/10.1016/j.econedurev.2018.10.005

41 - Hasan, A., Jung, H., Kinnell, A., Maika, A., Nakajima, N., & Pradhan, M. (2021). Contrasting Experiences: Understanding the Longer-Term Impact of Improving Access to Pre-Primary Education in Rural Indonesia. *Journal of Research on Educational Effectiveness*, *14*(1), 28-56.

Title: Contrasting experiences: Understanding the longer-term impact of improving access to pre-primary education in rural Indonesia

The issue: High-quality pre-primary programs provide an opportunity to mitigate the risk factors that many young children face. In LMICs, the evidence is, however, mixed (e.g., no effects in Cambodia – Bouguen et al., 2018; positive effects in Indonesia - Brinkman et al., 2017; Jung & Hasan, 2016; Ghana – Wolf et al., 2019; and Mozambique - Martinez et al., 2017) and there is ongoing debate regarding the ideal dosage and timing of pre-primary education.

The program: This study evaluated the longer-term effects of the *Indonesia Early Childhood Education and Development* (ECED) Project, a 5-year project that expanded access to pre-primary community-based playgroups in rural Indonesia. Playgroups are play-based learning environments in which teachers facilitate unstructured and structured play activities (e.g., songs, dances, reading, drawing) with young children for 2-3 hours at a time, several times a week. The Indonesia ECED project had three components:

- A community facilitator raised awareness about the importance of early childhood services and shared information about how to prepare a proposal for the block grants available through the project.
- Block grants were provided to villages to establish two early childhood centers, typically as playgroups.
- Up to 200 hours of teacher training was offered to playgroup teachers (who were predominantly women from the village with some prior experience in health or education).

The authors analyzed how project implementation and different rates of exposure to playgroups impacted (i) enrollment in different types of early education services, (ii) child development outcomes including physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge, and (iii) tests scores in early grades of primary school among two cohorts of children:

- An older cohort of children who were 4 years old when the playgroup was introduced and who could benefit from it for one year, before going to kindergarten.
- A younger cohort with children who were 1 year old when the playgroup was introduced and who could benefit from it for two years when they turned 3 years old, before going to kindergarten.

Both cohorts of children lived in the same villages and received the same project but at different phases of the project and for different lengths of exposure to the playgroups. These children also were compared to children who did not participate in playgroups in control villages.

The results:

- *Comparing younger cohort playgroups (treatment) to children not in playgroups (control):* Researchers found that, at age 5, the project increased children's physical health and well-being measures by 0.21 SD and emotional maturity measures by 0.11 SD. These effects did not persist over time; however, when measured again at age 8, children in treatment villages performed better in some specific domains in language (i.e., matching pictures to word) and mathematics (i.e., ordering numbers).
- *Comparing younger cohort playgroups to older cohort playgroups:* Children from the younger cohort were more likely to be enrolled in project playgroups at age 5 (+34.6 percentage points) and at age 8 (+22.9 percentage points). The younger cohort also did substantially better than the older cohort in some specific dimensions of language (i.e., matching pictures to word) by 0.23 SD and math (i.e., ordering numbers) by 0.28 SD.

The implications: Pre-primary education can have positive effects on children's development. However, policymakers should consider children's maturity and timing of pre-primary education services when trying to ensure the benefits of pre-primary education programs are delivered consistently over time.

Link: https://doi.org/10.1080/19345747.2020.1839989

42 - Knauer, H. A., Jakiela, P., Ozier, O., Aboud, F., & Fernald, L. C. (2020). Enhancing young children's language acquisition through parent-child book-sharing: A randomized trial in rural Kenya. *Early Childhood Research Quarterly*, *50*, 179-190.

Title: Enhancing young children's language acquisition through parent-child book-sharing: A randomized trial in rural Kenya

The issue: Many children in poverty do not meet their developmental potential because they lack adequate access to resources that support cognitive stimulation (e.g., storybooks). Parent support programs that prioritize reading with their children have shown significant benefits for children's early development.

Did you know? Access to storybooks at home and the quantity and quality of parents' reading practices with their children are associated with children's cognitive and language development, school readiness, and achievement (Raikes et al., 2006; Park, 2008; Rodriguez et al., 2009; Zauche, Thul, Mahoney, & Stapel-Wax, 2016). Exposure to storybooks has a direct, positive, causal impact on children's vocabulary and language skills (Hargrave & Sénéchal, 2000). Shared reading has shown larger effects on children's language development when parents (or teachers) stimulate a dialogue related to the content of the story than if the parent reads aloud and the child passively listens (Duursma, Augustyn, & Zuckerman, 2008; Mol, Bus, de Jong, & Smeets, 2008).

The program: Researchers designed and tested several models of a potentially scalable, cost-effective intervention to increase children's cognitive stimulation by parents and improve children's literacy skills in Kenya:

- T1 - *Storybooks*: Parents received six storybooks in a variety of languages (2 in English, 2 in Swahili and 2 in Luo). Storybooks were created by researchers and local artists to be locally-relevant, age-appropriate and visually engaging. Stories included sections where parents connect the story to children's experiences.
- T2 - *T1 + Training*: Parents received the six storybooks and were invited to a 3-hour modified dialogic reading[2] training, adapted to the cultural context and for caregivers with low levels of literacy and reading experience. The training emphasized that children should be active, and caregivers should play a supportive role by listening and asking questions that scaffold children's continued exploration and learning.
- T3 - *T2 + Booster*: Parents received the six storybooks, training, and a follow-up 'booster' training session two weeks after the initial training.
- T4 - *T3 + Home visit*: Parents received the six storybooks, training, a follow-up 'booster' training, and a home visit from one of the dialogic reading trainers approximately one week after the initial training.

The results: All versions of the program increased the likelihood that parents read to children in the three days prior to the follow-up survey (nb. survey was conducted approximately five to six weeks after the intervention).

- The treatments with dialogic reading training (T2, T3, T4) increased the frequency of caregiver–child reading interactions. These treatments also increased the number of dialogic reading behaviors observed and decreased the amount of time spent distracted or off-task.
- T2 and T3 increased book-specific expressive vocabulary skills (i.e., how children use words to express themselves). No version of the program had significant effects on children's general expressive vocabulary skills or receptive vocabulary (i.e., how children understand language) in English, Luo, or Swahili.
- The impacts of treatment were generally larger for illiterate caregivers than for literate caregivers.

The implications: Distributing storybooks can encourage parents to read with their children and increase children's knowledge of book content. Follow-up training on dialogic reading is a promising way to improve the quality of parent-children reading interactions and children's knowledge of storybook vocabulary.

Link: https://doi.org/10.1016/j.ecresq.2019.01.002

[2] Dialogic reading is a technique designed to encourage children to formulate and articulate their ideas about book content, eventually acting as narrators who re-tell stories and actively engage instead of passively listening to them (Whitehurst et al., 1988; Zevenbergen &Whitehurst, 2003).

43 - Barrera, O., Macours, K., Premand, P., & Vakis, R. (2020). Texting parents about early child development: Behavioral changes and unintended social effects.

Title: Texting parents about early child development: Behavioral changes and unintended social effects

The issue: Interventions providing parents with information on early childhood development can improve early childhood development outcomes (Jeong et al., 2018). However, there are questions about whether such programs can deliver impact at scale in cost-effective ways. Text messaging programs are a particularly promising method to provide parenting information at large scale and to hard-to-reach communities.

Did you know? Research in high-income countries found providing parenting advice via text message can have positive effects on parenting practices and children's learning outcomes. Evidence from the US shows that text messages to parents improved children's early reading skills (York et al., 2018) but effects can vary with content, personalization, and frequency of the messages (Cortes et al., 2018; Doss et al., 2019) while in France, text messages improved parental reading practices but not children's language skills (de Chaisemartin et al., 2020).

The program: This study investigated the impact of a text message intervention on parenting practices and children's cognitive and socio-emotional outcomes in Nicaragua. Parents received a daily text message with short practical recommendations about parenting practices and early childhood development (ECD). Messages were (i) based on a government ECD curriculum, (ii) focused on a variety of risk factors including nutrition, health, cognitive stimulation, and the home environment, and (iii) personalized to include the child's name and age-appropriate advice. Researchers varied the household recipient (i.e., mother, father, or both) and message content (i.e., only nutrition and health information, only stimulation and home environment information, or all four types of information). Prior research in this specific context found that local leaders (e.g., community health workers, preschool teachers, primary school teachers, village leaders) play a significant role in influencing parenting behavioral changes for investment in nutrition and health (Macours &Vakis, 2014, 2017). Therefore, in this study, researchers tested whether impacts varied depending on local opinion leaders' exposure to the text messages.

The results:

- *Parenting practices:* Exposure to text messages led to an improvement in reported parenting practices (from 0.07 to 0.23 SD). Changes in reported parental investments and practices broadly reflect the content of the text messages that caregivers received.
- *ECD outcomes:* The text messages had no effects on children's cognitive or socio-emotional outcomes. The reported changes in parenting practices may not have been sufficient to induce development gains, possibly because they were too small or did not reflect actual shifts in parental investment in education and nutrition.
- *Influence of opinion leaders*: Sending messages to local leaders had a negative spillover effect on children's cognitive outcomes (i.e., language) within other (non-leader) households in the same village (-0.14 SD). Leaders' exposure to text messages also reduced intermediary parenting outcomes, including stimulation and nutritional practices. Researchers suspect the intervention may have been perceived as interfering with local leaders' domain of influence, either demotivating them or possibly leading them to try to offset the messages.

The implications: The findings call for caution before implementing large-scale text message parenting interventions in high-poverty settings, as there are risks of unintended effects. Program designers should carefully consider: (i) how to work with local leaders to support program impact, for example by seeking local leaders' buy-in and input, and/or empowering them with specific roles during the intervention implementation, and (ii) ways to complement text-message parenting interventions with other evidence-informed ECD approaches.

Link: https://documents1.worldbank.org/curated/en/605381607538581261/pdf/Texting-Parents-about-Early-Child-Development-Behavioral-Changes-and-Unintended-Social-Effects.pdf

44 - Andrabi, T., Das, J., Khwaja, A. I., Ozyurt, S., & Singh, N. (2020). Upping the ante: The equilibrium effects of unconditional grants to private schools. *American Economic Review*, *110*(10), 3315-3349.

Title: Upping the ante: The equilibrium effects of unconditional grants to private school

The issue: Rising global demand for education has led to the proliferation of schooling models, including private schooling. Evidence suggests that both design features and the underlying market structure mediates the impact of various school models. However, establishing the causal impact of enabling policies for schools and understanding the link between impact, program design, and market structure remains challenging.

The program: This study tested the impact of allocating unconditional cash grants to private schools of the Punjab province in Pakistan. Researchers compared villages in which only one private school received a grant (T1) to villages where all private schools within the same village received the same grants (T2). The grant for one private school amounts to Rs 50,000 ($500 USD or 15 percent of the median annual revenue for sample schools). With this design, the authors assessed (i) whether the impact of allocating a grant varied by the degree of financial saturation in the market and (ii) if a private school adopted different behaviors whether it was the only one to receive the grant or if all the other competing private schools in the village also received the same grant.

The results:

- For T1 schools, the grant increased schooling enrollment (by 22 children) resulting in increasing revenues for the schools (without any increase in fees), but there were no increases in test scores.
- For T2 schools, the grant increased schooling enrollment (by 9 children), and the schools increased tuition fees (by 8 percent). Test scores also improved by 0.15 SD.
- Spending patterns appeared to be different between T1 and T2 schools: T1 schools invested in desks, chairs, and computers but T2 schools also invested in upgrading classrooms and libraries and increased pay for existing and new teachers. T2 schools used higher salaries to retain and recruit higher value-added teachers and provided larger incentives for existing teachers.

The intuition behind these findings is that when a school receives a grant, it faces a trade-off between (i) increasing revenue with additional enrollment or (ii) increasing quality, allowing schools to increase their tuition fees for existing students. These findings suggest that private schools adopted different approaches whether other proximate and competing private schools also receive a grant:

- When a single private school within a village received a grant, it could increase its market share without triggering a price war with other competing schools.
- When all private schools within a village received the same grant, investing in quality became a dominant strategy to retain some market power through vertical differentiation, generating socially desirable outcomes.

The implications: Designing interventions that take advantage of the underlying competitive structure of markets, such as financing that induces competitive actions, can be an important element of education policy. Although a private financier might prefer to finance a single school in each village, financing all private schools within a village may be preferable for society. The usual “priority sector” lending policies could be augmented with a “geographical targeting” subsidy that rewards the market for increasing financial saturation in an area: the density of coverage matters.

Link: https://doi.org/10.1257/aer.20180924

45 - De Ree, J., Muralidharan, K., Pradhan, M., & Rogers, H. (2018). Double or nothing? Experimental evidence on an unconditional teacher salary increase in Indonesia. *Quarterly Journal of Economics 113*(2), 993-1039.

Title: Experimental evidence on an unconditional teacher salary increase in Indonesia

The issue: Increasing teacher salaries is a common policy approach to attract, retain, and motivate high-quality employees and to deliver services effectively. While such salary increases may improve the quality of new employees hired over time, they also lead to substantially higher salary spending on existing employees, with large fiscal costs, which can crowd out other public expenditure. It is important to understand the extent to which unconditional pay increases support teacher productivity, effort, and student learning, to determine the cost-effectiveness of such salary increases.

The program: This study evaluated a policy change in Indonesia that doubled the base pay of eligible civil service teachers who went through a certification process. The reform moved teacher salaries from the 50th to the 90th percentile of the college-graduate salary distribution. Given the large fiscal burden of the policy, teacher access to the certification program was phased in over 10 years (from 2006 to 2015). Priority access to the pay raise was determined by seniority, which meant many eligible teachers had to wait several years before being allowed to enter the certification process. Researchers took advantage of this phase-in approach and accelerated access to the certification process and doubling of pay for eligible teachers in 120 randomly selected public schools (i.e., the treatment group). Researchers compared student learning outcomes and teacher outcomes (e.g., income satisfaction, and financial stress) among these treatment teachers and teachers in control schools who experienced the "business as usual" access to the certification process through the gradual phase-in.

The results:

- *Teacher outcomes:* The large pay increase significantly improved measures of teacher welfare: At the end of two and three years of the experiment, teachers in treated schools had higher income, were more likely to be satisfied with their income, and were less likely to report financial stress. They were also less likely to hold a second job, and they worked fewer hours in second jobs (the last two differences were significant after two years, but not after three). However, the policy did not impact teacher effort. Teachers in treated schools did not score better on tests of teacher subject knowledge, and there was no consistent pattern of impact on self-reported measures of teacher attendance.
- *Student outcomes:* After two and three years, the increase in pay led to no improvement in student test scores in language, math, or science.

The implications: Although salary increase policies can improve teacher welfare, they do not necessarily produce corresponding improvement in student learning. Unconditional pay increases do not appear to be an effective policy option to improve teachers' effort and productivity in the short- to medium-term. Policymakers should consider unconditional salary increase policies with caution since such policies are difficult to reverse. It may be beneficial to combine salary increase policies with other interventions shown to improve student learning outcomes to improve both teacher welfare, effort, and student learning.

Link: https://doi.org/10.1093/qje/qjx040

46 - Esposito, B., & Sautmann, A. (2022). Adaptive experiments for policy choice: Phone calls for home reading in Kenya. *World Bank Policy Research Paper,* (10098).

Title: Adaptive experiments for policy choice: Phone calls for home reading in Kenya

The issue: Parent-child engagement (e.g., reading together) supports children's learning and success in school. Light-touch interventions, like text message activities and reminders, have been found to improve parent-child engagement and student learning outcomes (York et al., 2019, Doss et al., 2019), but such programs may be less effective in contexts where parent literacy skills are low literacy barriers and text message lengths are restricted. Phone calls offer an alternative way to support parent-child engagement in challenging contexts.

Did you know? Personal phone calls can increase parental engagement (Kraft & Monti-Nussbaum, 2017), but this approach is costly and time consuming for teachers. Pre-recorded and automated interactive voice response (IVR) calls may be a cost-effective alternative. There is limited experimental evidence on IVR's effectiveness, but a small pilot in rural Cote d'Ivoire reported encouraging qualitative results (Madaio et al., 2019).

The program: This study evaluated the impact of a scalable, phone-based intervention on parent-child engagement and estimated student reading outcomes in Kenya. The program included twice weekly phone calls to parents using interactive voice response (IVR) technology to deliver four short reading exercises. The implementer, NewGlobe, and researchers tested several different call approaches to decide which format (if any) should be scaled up. The evaluation tested two different delivery formats:

- *Parent-led reading (T1):* The voice call explained to parents how to do the reading exercise and asked them to lead the exercise with their child after the call.
- *VR-led reading (T2):* The IVR asked parents to put the call on speaker phone, and then went through the exercises with the parent and child on the call.

The evaluation also tested three different ways of matching reading exercises to three child's reading level:

- Exercises matched to learning levels based on students' actual or imputed baseline learning (A)
- Intermediate-level exercises provided to all children, regardless of baseline learning (B)
- Parents choose a set of exercises based on a menu of options (C)

Researchers combined the various formats to create 6 different treatment arms (e.g., T1-A, T1-B, T1-C, T2-A, T2-B, T2-c) and used an innovative research method called 'adaptive sampling' to examine which version had the highest levels of parent engagement and impact on student oral reading fluency (ORF) test scores. This adaptive sampling approach is especially suited for constrained contexts in which policymakers would like to use rigorous research to inform policy decisions but do not have the time or resources to conduct a large-scale randomized trial. The study includes a detailed guide to adaptive sampling for researchers and policymakers to use in future evaluations.

The results: T1-B was the call format with the highest level of engagement, which asked parents to carry out exercises after the call with their child and used the same 'intermediate' exercise sequence for all children. This call format led to a moderate but detectable improvement in ORF reading test scores of 1.68 correct words per minute, or 0.065 SD of the baseline reading fluency level. These gains were observed even with a short exposure to the program of just 5 weeks (9 calls in total) and with moderate uptake overall.

The implications: Interactive voice response (IVR) calls are a promising, low-cost method of educational outreach that may increase the extent to which parents read with their young children. However, the call design matters significantly for uptake.

Link:
https://documents1.worldbank.org/curated/en/099337506232226851/pdf/IDU078c6dff10259d0409d0997f0d753a7e2cb72.pdf

47 - Seo, H. K. (2017). Do school electrification and provision of digital media deliver educational benefits? First-year evidence from 164 Tanzanian secondary schools. *Working Paper* E-40308-TZA-2.

Title: Do school electrification and provision of digital media deliver educational benefits? First-year evidence from 164 Tanzanian secondary schools

The issue: This study focuses on two problems encountered in many LMICs. First, many primary and secondary schools in sub-Saharan countries lack electricity access (UNESCO, 2015) which can adversely affect learning by limiting the extent of time and means of study. Second, one in three people lack access to education in their native language (Walter and Benson, 2012), which might be detrimental for children from disadvantaged backgrounds.

Did you know? Even though it seems intuitive that providing schools with electricity should positively affect student achievement, Glewwe et al. (2013) found in a review that there are noisy and insignificant relationships between school electrification and student learning, and that credible causal evidence between electrification and learning is lacking.

The program: This study evaluated the impacts of a one-year pilot study in which secondary schools were provided with (i) partial electrification and (ii) language-varied educational videos on achievements of O-level (11th-grade) students in northern Tanzania. The partial electrification included the following solar facilities: panels, lights, radios and two TVs. The energy produced was enough to power lights for two classrooms and one office and the two TVs (accounting for 9 hours of lights and 4 hours of TV per day). The language-varied educational videos provided to schools included two sets: one set showing how to solve 10 years of previous biology and geography exams and another set focused on ways to improve student self-esteem, perseverance, habit formation, future orientation, and other cognitive-behavioral character traits. These videos were recorded by a motivational student-focused organization (Youth Shaping and Sharpening Movement) in two versions: one version only in English; and another version mainly in Swahili. Secondary schools were allocated into one of five treatment arms or a pure control group:

- T1 – Solar facilities x No Video. Schools only received solar lights and TVs.
- T2 – Solar facilities x English Videos. Schools received solar facilities and English videos.
- T3 – Solar facilities x Bilingual Videos. Schools received solar facilities and bilingual videos.
- T4 – English Videos. Schools only received English videos.
- T5 – Bilingual Videos. Schools only received bilingual videos only.

The results:

- Schools selected to receive solar facilities reported an additional 19 to 25 percent of school rooms electrified compared to the control group, consistent with the capacity of the solar system (provide light to two classrooms) and the average number of 10.6 classrooms per school.
- Solar-receiving schools reported to have watched between 0.8 and 4.2 hours (for the T2 group) more of videos per week.
- After one year, the treatments did not produce significant achievement gains and did not significantly affect pass rates of O-level 11th grade students.

The implications: Providing schools with lights and videos does not appear to be enough to elicit significant achievement gains in student learning. Policymakers may wish to combine educational access initiatives (e.g., providing electricity and videos) with educational quality initiatives that support teachers and students to engage in higher quality learning activities and processes together.

Link: https://www.theigc.org/sites/default/files/2017/10/IGC_Final-report_cover2.pdf

48 - Bassi, M., Besbas, B., Dinarte-Diaz, L., Ravindran, S., & Reynoso, A. (2024). From access to achievement: The primary school-age impacts of an at-scale preschool construction program in highly deprived communities (No. 10814). *The World Bank*.

Title: From access to achievement: The primary school-age impacts of an at-scale preschool construction program in highly deprived communities

The issue: The value and cost effectiveness of investing in early childhood is widely recognized, yet many children are still not enrolled in pre-primary education. In 2019, only 20 percent of children living in low-income countries were enrolled in pre-primary education.

Did you know? Preschool programs in LMICs can yield benefit-to-cost ratios ranging between 3.5 and 103.5 (Holla et al., 2021). Increasing preschool enrollment rates in these countries to 25 percent could yield an estimated $10.6 billion USD through higher educational achievement (Engle et al., 2011).

The program: This study evaluated the implementation of a large-scale preschool construction program in rural communities of Mozambique, a country in which only 3.5 percent of children between 3 and 5 years old are enrolled in preschool (MINEDH, 2020). The program included three key components:

- The construction of a preschool center within walking distance from the local primary school to link preschool attendance with primary school enrollment. Preschools were equipped with locally-available materials to support pedagogical activities (e.g., bottle caps, rice sacks).
- The hiring of local instructors who had minimal education (i.e., grade 7) and were selected by the community. They received upfront and in-service training (one day per month). The program required two instructors for each classroom, with up to 35 children per classroom and two classrooms per preschool. Preschools were open for 3 hours a day for 10 months every year.
- Parenting education sessions which were scheduled monthly and brought parents together in meetings to discuss critical areas for child growth and development, parenting practices, nutrition, and health care. In practice however, parenting sessions were only held every 3 months.

The results: Three years after the program started, researchers found:

- Take-up of preschool education increased massively after construction. Preschool enrollment rates in treated communities increased by 73 percentage points (compared to 2 percent enrollment in control communities).
- Children in treated communities were 6 percentage points more likely to be enrolled in primary school (an effect of 10 percent) and 3 percentage points less likely to repeat a grade (an effect of 20 percent). Children with lower cognitive and socio-emotional skills at baseline benefited more in terms of attendance and primary school enrollment. Qualitative interviews suggest that proximity of the preschool centers to the families' residence may be a key mechanism in these effects.
- The program increased children's cognitive and socio-emotional skills by 0.16 SD. Children with higher skills at baseline benefited more from the program. Qualitative analyses suggest that these effects are especially mediated by the quality of student-teacher interactions.
- The program also improved parental practices. Parents provided a more stimulating environment for their children (+0.17 SD), engaged more in play at home with their children (+0.08 SD), and were more involved with the child's primary school. The authors observe a slight decrease in the labor supply of mothers (-1.3 percentage points).
- The program also significantly increased preschool attendance of younger siblings.

The implications: This preschool program illustrates the promise of pre-primary education and the power of supply-side components (e.g., short distances between family homes and school). Policymakers supporting the development of pre-primary education in low-income contexts should carefully consider school location, instructor support and training and the adequacy of infrastructure and materials for learning.

Link:
https://documents1.worldbank.org/curated/en/099344206242420709/pdf/IDU13d57b03915e4414d3b1ab2c18ca725db1920.pdf

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