5

There is no learning without prepared, motivated learners

Strong foundations underpin all learning and skills development. Learning depends on students who are prepared, present, and motivated—but getting students there will often require policy change within and beyond education systems.

Schools cannot produce learning without prepared, present, motivated learners. Around the world, many children receive too little investment in nutrition and stimulation during their early years, and many lack access to quality early learning opportunities that can prepare them for first grade. The one in four children worldwide who are stunted cannot achieve their potential in school.[1] Nor can the 263 million young people who do not make it to school at all. Among those who do attend, motivation to learn often suffers when the quality of education is low. A poor-quality basic education also means that learners who should be gaining advanced skills from tertiary education or technical training lack the preparation to do so.[2] Thus, just as the fundamental investments needed for primary education must be made before a child enters school, the same is true for skills training. In many cases, the failure to invest effectively can be understood through models of human behavior, which also point the way to solutions (table 5.1). A synthesis of the evidence in these areas reveals three key principles for improving learning:

- To set children on high-development trajectories, foster cognitive and socioemotional development through early child nutrition, care, stimulation, and learning opportunities.
- To get children into school—an essential first step to learning—lower school costs and then use other tools to boost motivation for learning.
- To address the fact that so many youth leave basic education lacking skills, recognize that remediation often needs to be the first step in further education and training.

Investing in their early years prepares children for school

Children's early years offer a rare window for societies to make investments in their children with extremely high returns (figure 5.1). Efforts to improve children's lives can significantly increase individual and societal productivity while reducing inequality.[3] Children cannot thrive with stunted bodies and brains, and early gaps in learning and skills trap them in lower developmental trajectories from which it becomes increasingly difficult to escape (spotlight 2). Though children's bodies are resilient, and catch-up after early childhood may be possible when inputs improve, it is extremely difficult to reverse the effects of exposure to risk factors in the first few years of a child's life. Doing so entails costly, high-quality interventions that typically need to happen at a sufficiently young age to be effective.

Recognizing the dangers that poverty poses to children's development and learning

Children need quality environmental inputs to grow in a healthy, timely fashion. Essential physical inputs

Table 5.1 Models of human behavior can guide actions to improve learner preparation: Some examples

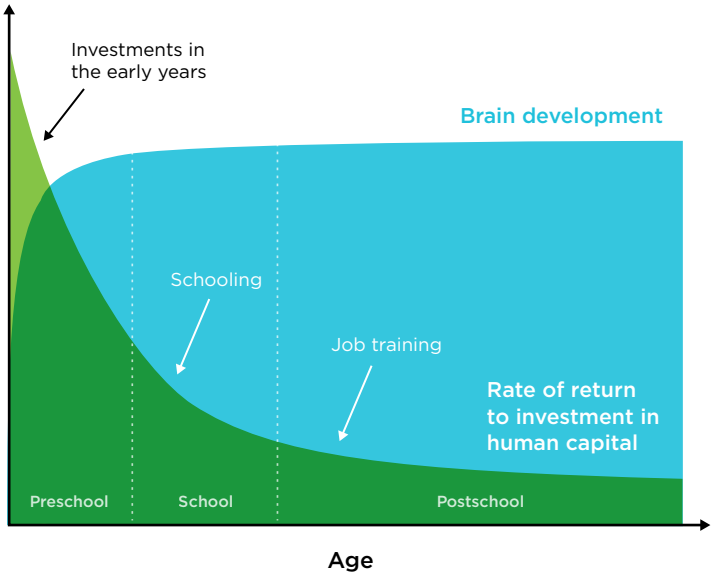
Synthesis principle	Where this fails	Models that identify a mechanism behind this failure	Approaches that address the modeled mechanism
Provide early child nutrition, care, stimulation, and learning opportunities.	Just one in five children in low-income countries attend preschool. One in four children worldwide are stunted.	*Information failure:* Stakeholders may not be aware of relative returns to early investments or how to support early development.	In Jamaica, a program taught caregivers to provide psychosocial stimulation that improved stunted children's developmental scores and later life outcomes.
		Simple optimization with liquidity and credit constraints: Parents are aware but lack the resources to invest.	In Mexico, a conditional cash transfer program improved cognitive and motor development.
		Behavioral (mental bandwidth): Stress of poverty undermines parenting capacity.	In Argentina, Bangladesh, China, and Uganda, center-based programs improved children's outcomes.
Lower school costs; boost motivation and effort.	263 million children remain out of school. Many countries still charge fees for lower secondary school, and primary school, while usually tuition-free, still entails cash outlays in many settings.	*Simple optimization with liquidity and credit constraints:* Parents are aware but lack the resources to invest in any or all children.	In Cambodia, providing scholarships to girls dramatically increased enrollment.
		Information failure: Youth and parents may underestimate the returns to education.	In the Dominican Republic and Madagascar, providing information on the returns to education improved enrollment and learning.
		Behavioral (hyperbolic discounting): Youth may recognize the value of education but plan to invest later (yet "later" never comes).	In Pakistan, reporting child test scores to parents increased enrollment and learning outcomes.
Ensure that, where needed, remediation is the first step in further education and training.	Many skills training programs assume prerequisite skills that youth do not have.	*Information failure:* Training programs receive imperfect signals about the quality of incoming learners.	In U.S. community colleges, improving course placement accuracy and support services helped increase students' long-term performance.
		Simple optimization (on the part of training centers): Remedial students are highly likely to drop out.	In the United States, bridge programs help learners move past remediation quickly.

Source: WDR 2018 team.

include quality pre- and postnatal nutrition, health care, and safe physical environments.[4] Equally crucial are social inputs, including nurturing, protection, and stimulation.[5] Interactions between children and their caregivers—who are often, but not always, their parents—leave a significant imprint, literally shaping the developing brain.[6] Yet poor children's access to these inputs—along with caregivers' awareness of their importance—is often limited. So are programs that invest in children's early development and the policies that guide them.

Poor children are more exposed to health shocks and less likely to receive stimulation, care, and protection from stress. Nutrient deprivation, infectious diseases, and chemically toxic or physically dangerous environments affect many poor children not only after birth, but also in the womb. Exposure to any of these factors during sensitive periods can inhibit normal biological development (spotlight 1), but poor children often encounter these factors in tandem and over time.[7] At the same time, the strains associated with poverty can disrupt parents' decision making and limit their availability, sensitivity, and responsiveness.[8] As a result, poorer children not only have fewer resources such as books or toys, but also receive less stimulation, direction, and support.[9] Poor children are also more likely to experience neglect and harsher discipline, which disrupts early

Figure 5.1 Investments in high-quality programs during children's early years pay off



Source: WDR 2018 team, based on Carneiro, Cunha, and Heckman (2003); Martin (2012).

emotional organization—the keystone of socioemotional abilities—and is associated with worse school performance.[10]

Early childhood development programs are insufficient in number and quality to compensate for poor children's disadvantages, especially in the developing world. In poor communities, resources that stimulate early development outside the home—including quality child care, libraries, recreation centers, and preschool programs—tend to be limited and low in quality.[11] Only half of 3- to 6-year-olds have access to preprimary education. Coverage is strongly associated with income, ranging from 19 percent in low-income countries to 86 percent in high-income countries, with poorer children enrolled at the lowest rates in every country.[12] Children under 3 are widely underserved, with access to services for this age group especially inequitable and uncoordinated.[13] Moreover, reliance on poorly compensated child care workers who receive little to no training, mentoring, or monitoring undermines sustainability, retention, and quality.[14]

Governments do not invest enough in young children. Insufficient understanding of the high payoffs to early interventions, budget constraints, and the challenges of delivering wide-ranging early childhood interventions—health, nutrition, early learning—result in low public investment in young children in most regions. In Sub-Saharan Africa, on average just 2 percent of the education budget goes to preprimary education.[15] In Latin America, the average per capita government spending on children under 5 is a third of that for children ages 6–11.[16] Investments in the early years have increased in developing countries, but strategies often focus on building preschools, neglecting children who have not yet reached preschool age. Though preschool can help, foundations across developmental dimensions are set before age 3. Yet this age group typically receives little government coverage beyond health and nutrition checkups—not enough for healthy overall development.

Early exposure to risks associated with poverty may prevent children from realizing the promise of education. Intense deprivation can result in poor developmental outcomes—such as stunted growth or impaired brain development—that are difficult to address (figure 5.2; spotlight 2). Children who have fallen behind in their physical, cognitive, linguistic, or socioemotional development are more likely to enter grade 1 late, score poorly in school, repeat grades, drop out before they complete primary school, experience poor health throughout their lives, engage in high-risk behavior (particularly in adolescence), be less productive, and have lower earnings.[17] The scale of the problem is vast: nearly half of children under 5 in developing countries are stunted or live in extreme poverty, threatening their prospects of benefiting from the opportunities education can provide.[18]

Strengthening children's ability to learn with well-designed interventions

Effective early childhood interventions can significantly improve poor children's ability to learn. In the United States, at-risk children who participated in well-designed interventions—Perry Preschool, Abecedarian, the Nurse-Family Partnership—benefited well beyond their early years: their school performance, employment, income, overall welfare, and social integration all improved. Such interventions have substantial potential in developing countries because of their lower baselines. In Jamaica, the Reach Up and Learn program, which promoted early child stimulation, led to lower crime rates, better mental health, and 25 percent higher earnings two decades later. There is a consensus on what children need: nutrition, care, stimulation, nurturing, and protection. The evidence on when to implement programs is in line with biological evidence: prevention and early remediation are most cost-effective at specific points in development because adjustments beyond sensitive periods are

difficult, costly, and usually incomplete. But identifying the most effective approaches to improving poor children's developmental outcomes has proven challenging because of the enormous heterogeneity in interventions as well as contexts. Still, several approaches show promise.

Health and nutrition interventions during the first 1,000 days of life (starting at conception) improve children's development. Programs that increase access to maternal health services improve maternal nutrition through diet, supplements, and fortification, while reducing child mortality and early health problems.[19] In isolation, nutritional interventions for children have only modest effects on height or stunting.[20] But when combined with improved sanitation, along with access to child health services, nutritional interventions can yield significant benefits.[21] Breastfeeding and micronutrient supplements are associated with better health and greater cognitive ability, leading to better educational outcomes in developing countries.[22] Deworming, iodine supplements, and immunizations have also led to major improvements in children's ability to learn.[23]

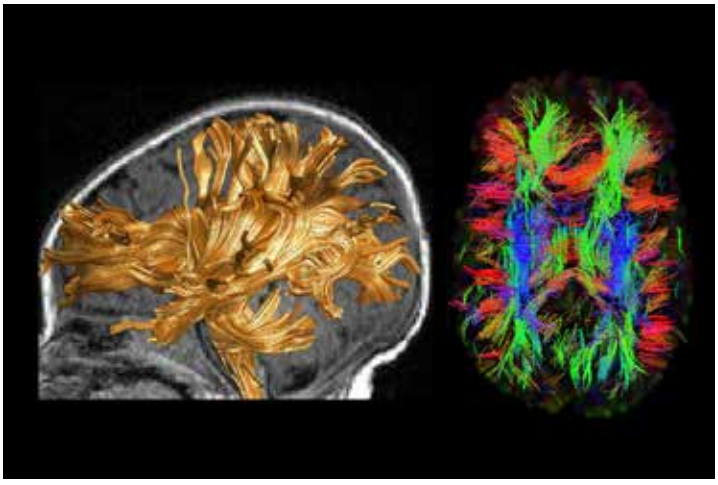
Programs that build caregivers' capacity to support healthy development can substantially improve children's outcomes. Interventions include coaching caregivers at home on positive discipline, as well as promoting increased frequency of quality interventions through nurturing, protection, and stimulating activities (storytelling, singing, playing with household objects). Such interventions have been delivered in diverse ways, including home visits, community meetings, and health checkups.[24] The most effective programs have systematic training and curriculums, as well as opportunities for caregivers to practice and receive feedback.[25] An emerging generation of programs is offering parents incentives through positive reinforcements, with indirect "nudges" when providing information is insufficient or when beliefs or norms are detrimental.[26]

Programs that provide caregivers with cash or psychosocial support complement interventions to improve parenting. Cash transfer programs can address acute material deprivation in households and improve developmental outcomes, particularly when provided alongside—or conditional on—prenatal care and child services. For example, conditional cash transfer (CCT) programs in Ecuador, Mexico, and Nicaragua have reduced stunting, improved cognitive development, and promoted better parenting practices.[27] In Mexico, parenting support programs integrated with CCT programs improved child outcomes beyond the direct effects of the transfers.[28] Also important, transfer programs can alleviate parental time and psychological constraints. In addition, interventions delivered by supervised, nonspecialist health or community workers to address acute maternal stress, depression, and anxiety have led to

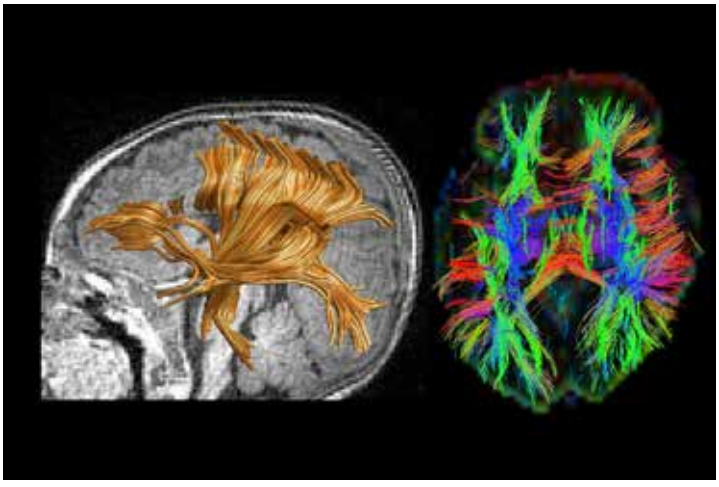
Figure 5.2 Intense deprivation can impair brain development

Brain structure and wiring by stunting status

a. Infant representative of never-stunted growth



b. Infant representative of stunted growth



Source: Nelson and others (2017). © Nadine Gaab and Charles A. Nelson. Used with the permission of Charles A. Nelson; further permission required for reuse.

Note: The images illustrate two infants, 2–3 months old. The growth of one infant was stunted (panel b); the growth of the other infant was not (panel a). The images were obtained in Dhaka, Bangladesh, using magnetic resonance imaging (MRI). The left side of each panel shows the left side of the head. Each gold line represents a fiber tract—the long, thin fibers (axons) in the brain that transmit information to different neurons, muscles, and glands. It is apparent how much denser and more elaborate the connections are in the nonstunted infant. The colored images on the right side of each panel illustrate the same principles (neural connections) from a different orientation—a cross-section of the brain, from front to back.

better cognitive development, more physical growth, less diarrhea, and higher immunization rates.[29]

Center-based care can promote foundational skills. In countries from Ethiopia to the United States, high-quality, center-based programs have shown substantial benefits in developing children's language, cognitive, motor, and socioemotional skills.[30] By contrast, attending a low-quality, center-based program can be worse than attending none at all.[31] The quality of child-caregiver interactions is a key determinant of such programs' impacts, as Indonesia and Mozambique demonstrated with effective center-based preschool programs for children ages 3 to 6. These programs included minimal infrastructure investments but improved children's cognitive abilities thanks to their interactions with well-trained caregivers (box 5.1).[32] Delivering quality, center-based interventions for children under 3 is harder because they require costlier structural investments (such as lower child-to-staff ratios). Consequently, programs to build parenting capacity might be most cost-effective for children under 3 in resource-constrained environments or to reach marginalized populations.[33]

Bringing it all together

Integrating programs can lead to better development outcomes. Poor children are exposed to multiple risk factors that cannot be adequately addressed by any single intervention. Multifactor programs capture the complex, complementary nature of early childhood development and exploit complementarities (figure 5.3).[34] To be effective, interventions must be delivered during specific stages of development.[35] Packaging interventions to address sequential or related developmental goals can increase effectiveness, especially if intervention packages incorporate benefits for caregivers as well. Integrated intervention packages can build on existing platforms such as community-based strategies or social safety nets, though the effectiveness of any specific strategy will depend on contextual factors.[36] Quality should not be diluted in the effort to increase investments in the early years—say, by relying on volunteers or unqualified workers to deliver services, which is common.[37]

Providing demand-side support can get kids to school, but not necessarily to learn

School is a key input to at-scale learning. Despite major gains in access, many children still don't attend school. Even though school is not the only place that

Box 5.1 Early childhood education prepares young children for school

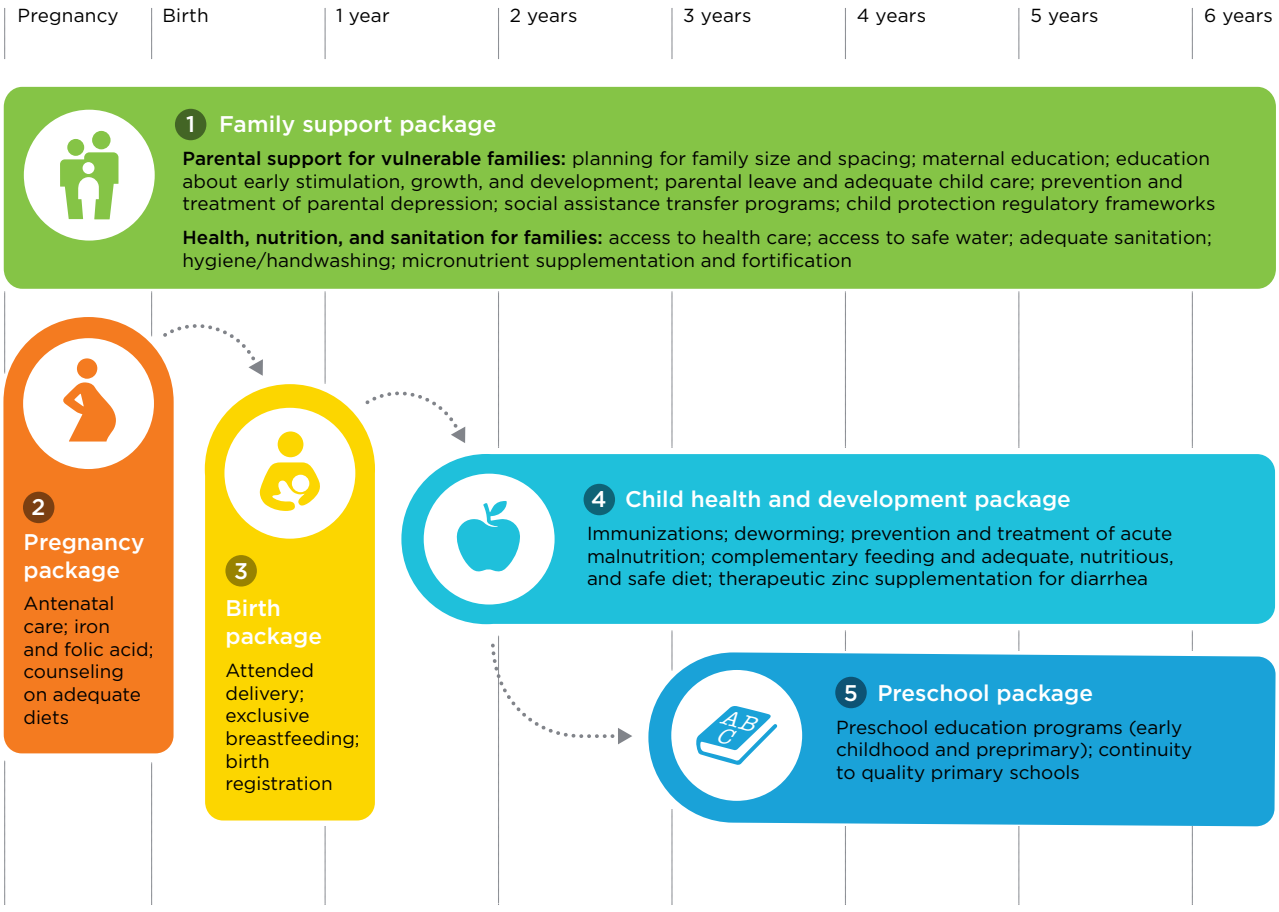
Preschool programs targeting children ages 3–6 can foster foundational skills and boost children's ability to learn. Children who attend preschool have higher attendance and better achievement in primary school. Moreover, they are less likely to repeat, drop out, or need remedial or special education, all of which benefit not only students but also education systems because efficiency is increased.[a] Across countries at all income levels, the most disadvantaged children benefit most from quality early child education programs.[b] But early child education programs are not all equally effective; overly academic and structured programs for children under 5 may undermine their cognitive and socioemotional skills, as well as their motivation to learn, because young children learn best through exploration, play, and interaction with others.[c] Key elements of programs that have led to strong preschool outcomes include curriculums that foster crucial pre-academic abilities (emotional security, curiosity, language, self-regulation) through play; professional development plus coaching that enable teachers to effectively implement relevant curriculums; and positive, engaging classrooms that promote children's innate drive to learn.[d] For early child education gains to be sustained, the content, budget, and capacity of providers of preschool programs should be integrated into formal education systems. In addition, the quality of subsequent learning environments in primary school is an important determinant of the long-term effects of preschool programs.[e]

Source: WDR 2018 team.

a. Klees (2017).
b. Britto and others (2016).
c. Whitebread, Kuvalja, and O'Connor (2015).
d. Phillips and others (2017).
e. Johnson and Jackson (2017).

Figure 5.3 Integrated programs through the early years are necessary for proper child development

Key interventions for young children and their families



Source: Denboba and others (2014).

children learn (box 5.2), most parents want their children to go to school. Moreover, most children want to go. In a survey of Indian mothers with an average of less than three years of education, 94 percent hoped their children would complete at least grade 10.[38] In Kenya, among parents with no education at all, more than half wanted a university education for their children.[39]

Significant costs—both formal fees and a wide array of other expenses—prevent children, especially the most vulnerable, from learning. Nearly 90 percent of the world's low-income countries proclaim free primary education. But for lower secondary education, more than 40 percent of the countries charge fees, along with 10 percent of middle-income countries.[40] In Africa, almost half the expenditures that households incur to send their children to school—for school supplies, learning materials, transportation—are in addition to formal fees.[41] These costs of schooling widen the gaps in school participation separating poorer children from their wealthier peers.

High aspirations for schooling among children and their parents explain why initiatives that ease constraints to schooling for households—so-called demand-side interventions—have been so effective at getting children to school. In many countries, the elimination of school fees has raised enrollments, suggesting that parents simply did not have the resources to pay the fees (figure 5.4).[42] The interventions, which have sought to reduce other costs associated with school, have consistently improved access in the form of enrollment as well as attendance.[43] Nonmerit scholarships—which reduce fees on a smaller scale—have increased enrollment at the

Box 5.2 Communities can leverage the many hours spent outside the classroom to boost learning

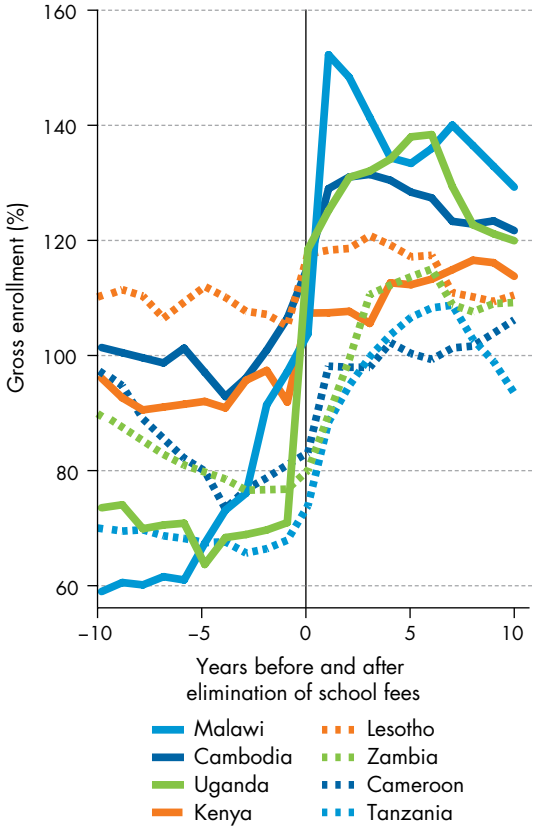
Much learning happens outside the classroom, including from tutoring and at-home programs. Across Africa and Asia, the Literacy Boost program has implemented community reading activities to leverage the many hours that learners spend outside school. These include pairing struggling readers with stronger readers ("reading buddies"), implementing read-a-thons (in which all the books that children read during a specific period are recorded), and providing mini-libraries. Children who participate in such activities have better reading outcomes. In Rwandese communities, implementing Literacy Boost led to better reading skills and school advancement.[a]

Source: WDR 2018 team.

a. Dowd and others (2017); Friedlander and Goldenberg (2016).

Figure 5.4 What happens when school fees are eliminated? Evidence from eight countries

Gross enrollment in years before and after elimination of school fees, selected countries



Source: WDR 2018 team, using data from World Bank (2017); year of policy change from Bentaouet Kattan (2006). Data at http://bit.do/WDR2018-Fig_5-4.
Note: Vertical line indicates last year with fees. Gross enrollment rates include students whose age exceeds the official age group for a particular education level, and so the rate may exceed 100 percent.

primary level in Kenya and at the secondary level in Ghana.[44] The flip side of reducing school fees is increasing household income, which cash transfer programs do. These programs have increased both primary and secondary enrollments.[45]

Information interventions are particularly promising because they cost little.[46] In some cases, demand for education remains low because students and their families underestimate the returns to education. In the Dominican Republic and Madagascar, simply providing information on the returns to education led to improved educational outcomes, though a similar intervention in rural China had no impact.[47] In India, providing job recruiting services for women in their 20s increased school enrollment for teenage girls. Gender leadership quotas in Indian villages eliminated the gender gap in educational attainment.[48]

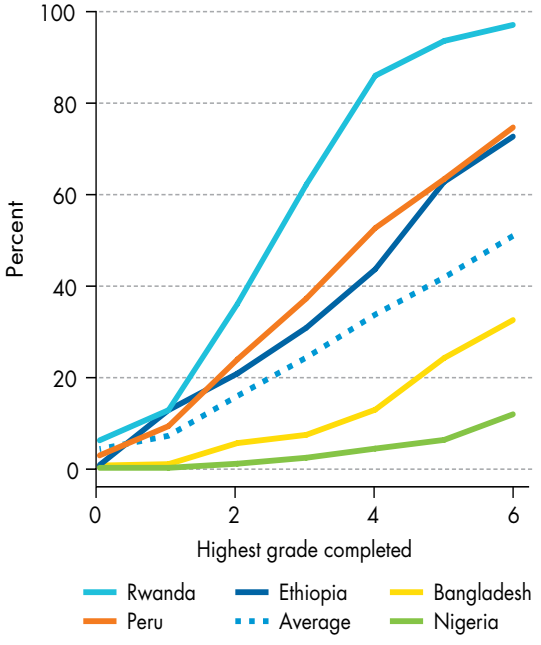
Though interventions that reduce the cost of schooling are highly effective at increasing school participation for most children, especially at young ages, some children do require additional incentives to attend school. In some countries, parents give priority to sending to school their children with the highest cognitive ability or higher perceived—not necessarily actual—returns to schooling (such as boys).[49] In Burkina Faso, beginning in 2008, some families received unconditional cash transfers, while others received cash transfers conditional on children's school enrollment. Boys and children who scored better on tests were equally likely to be enrolled in school under both schemes, but transfers with conditions were significantly more beneficial for girls and children who started out at lower levels of learning.[50] This finding suggests that the most vulnerable children may need more than simple cost reductions to guarantee enrollment in school.

Demand-side interventions can improve learning when programs increase either capacity to learn or student effort. Targeted cash transfers have led to more learning when framed to induce more effort, as have some information interventions.[51] Even in low-quality education systems, students learn more in school than out of it: there is a learning crisis, but the positive relationship between schooling and literacy persists (figure 5.5). When individuals with similar literacy and numeracy levels are compared, those with more schooling have higher earnings, most likely because of other benefits of schooling, including improved socio-emotional skills such as discipline.[52] Getting learners into school is beneficial in its own right.

In addition to getting to school, learners must be motivated. One way to increase motivation is to ensure that learners' skills are rewarded, whether by a labor market that offers high returns or by a higher education system that admits students based on merit rather than connections. Perhaps the most immediate way to motivate students is to provide relevant, quality education that reaches them at their current level of learning. In Kenya, students who drop out of school say their inability to perform well, rather than costs or parental pressures, caused them to leave.[53] Some systems seek to further motivate students with merit-based scholarships or prizes. Such incentives can improve effort as students strive to qualify—whether for a direct financial prize, such as in Benin and Mexico, or a scholarship for girls, such as in Kenya.[54] Direct financial incentives have been less successful in high-income countries, though alternate designs that deliver incentives immediately after tests have raised test scores.[55] Providing caregivers with information about learner performance can also have a large impact, helping caregivers to translate motivation into action (box 5.3). But in general, a positive overall educational experience is likely the backbone of student motivation.

Figure 5.5 Not all education systems are equally productive, but even the least productive deliver some learning to some learners

Percentage of women ages 25–34, by highest grade completed, who can read all of a single sentence in their chosen language, selected countries



Source: Oye, Pritchett, and Sandefur (2016). Data at http://bit.do/WDR2018-Fig_5-5.

Note: The average is calculated across 51 countries.

Remedial education can prepare learners for further education and training

Many young people leave formal education with weak foundational skills, and thus they are unprepared for further education and training. Globally, of every 100 students entering primary education, 61 complete lower secondary education, and just 35 complete upper secondary (figure 5.6).[56] About a third of youth leave school between lower and upper secondary. This problem is especially pronounced in several developing countries, where sizable shares of 15- to 24-year-olds score below the minimum level of literacy proficiency—23 percent in Chile, 29 percent in urban Bolivia, 34 percent in urban Ghana.[57] Improving foundational skills early can alter workers' labor market trajectories. Employed adults ages 15–64 who score at level 2[58] or above in literacy proficiency have significantly higher probabilities of holding high-skill, better-paid white-collar jobs (figure 5.7).[59]

Youth vary greatly in skills and maturity, putting them on a range of different pathways. Some young school leavers enroll in second-chance programs seeking to obtain formal education equivalency diplomas so they can gain access to further education or training.[60] Others pursue remedial coursework to fulfill admission requirements for postsecondary education or training institutions.[61] Another group—usually those with the most serious skills gaps—goes into unstable, low-wage, low-productivity jobs, while some youth remain out of both school and the labor force.[62] It is difficult to reach all these young people.

Box 5.3 Providing information on children's school performance can help parents to motivate their children

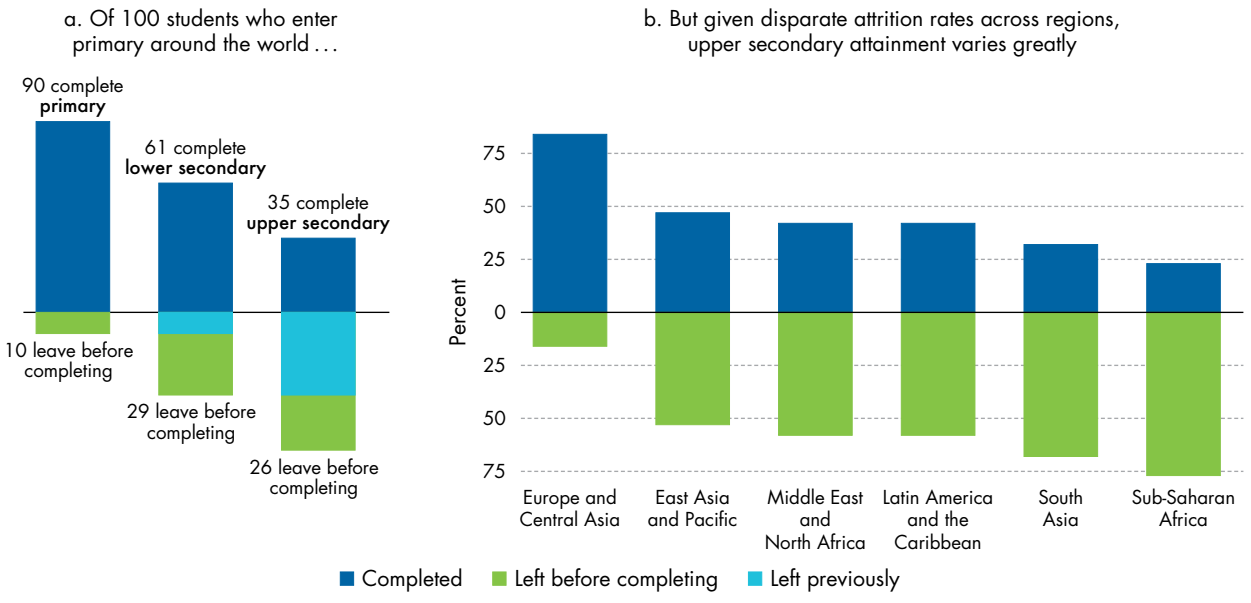
Most parents want their children to succeed in school. Promising interventions in several countries show that providing parents with information about their children's performance can lead to better educational outcomes. In the United States, text messages sent to parents when secondary school students missed assignments led not only to more assignment completion but also to higher test scores.[a] Sending letters to parents about student absences also reduced absenteeism.[b] In Malawi, providing parents with information about their children's academic ability enabled them to buy the appropriate books for their children.[c] In Chile, low-income families received text messages each week detailing their child's attendance record along with a monthly message on behavior and test performance. Students whose parents received the texts were less likely to behave poorly in school, had better grades, and were more likely to move up to the next grade. After receiving the messages, parents expressed a willingness to pay for the service, suggesting that they saw real value to it.[d] But simply providing information to parents is no guarantee of success: a program in Kenya that provided parents with information on their children's literacy levels and suggested strategies to improve them did not lead to change.[e] The programs that have been effective have provided parents with regular updates on the inputs to learning—attendance and performance on individual assignments—rather than just on learning levels. Such information interventions can be automated, making them extremely cost-effective because they leverage the intrinsic motivation of families.

Source: WDR 2018 team.

a. Bergman (2015).
b. Rogers and Feller (2016).
c. Dizon-Ross (2016).
d. Berlinski and others (2016).
e. Lieberman, Posner, and Tsai (2014).

Figure 5.6 Young people follow different paths in their education

Completion and attrition rates (percent), by cohort and region

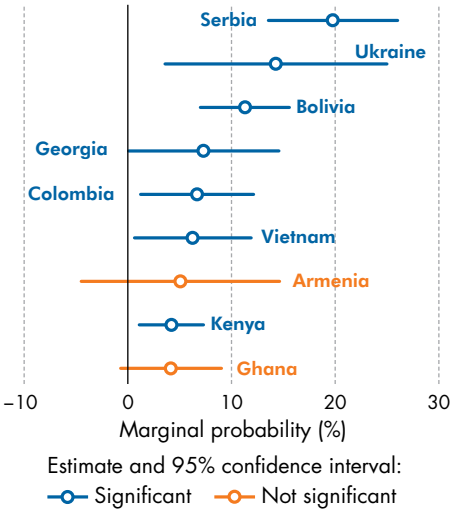


Source: WDR 2018 team, using data from UIS (2017); UNESCO (2015); WIDE (2017). Data at http://bit.do/WDR2018-Fig_5-6.

Note: Estimates are for circa 2010.

Figure 5.7 Workers with higher literacy proficiency are more likely to enter white-collar jobs

Marginal probability of entering high-skill white-collar jobs relative to blue-collar jobs when scoring at level 2 or above in literacy proficiency, for all workers in urban areas of participating countries (2011–14)



Source: WDR 2018 team, using data from World Bank's STEP Skills Measurement Program (http://microdata.worldbank.org/index.php/catalog/step/about). Data at http://bit.do/WDR2018-Fig_5-7.

Motivating them to join second-chance or remedial programs is not easy, especially if they have been out of the education system for some time. Many are uncertain about the benefits of remedial courses, and returning to school settings can stir up negative feelings. In Uganda, early school leavers said they suffered from diminished self-worth, limited life opportunities, and social exclusion associated with early departure from formal education.[63]

Remedial education interventions can work—if they reach the right people using the right approach.[64] Effective remedial education interventions meet young people where they are, helping them transition into careers. Remedial programs are more likely to support students' interests when they are short, relevant to students' lives, delivered by experienced teachers, and part of a long-term plan for career growth.[65] Most evidence to date comes from programs in high-income countries, with three main types of interventions standing out as promising:

- Remedial prevention programs support academically weak students by strengthening their foundational skills and encouraging them to complete a formal education.
- Second-chance programs offer early school leavers, many of whom are low-skilled, an opportunity to reengage with education and training.
- Remedial coursework at the onset of postsecondary education and training increases young people's chances of completing their programs of study.

Remedial prevention programs can help low-performing students and keep them in school

Remedial prevention programs can help at-risk youth who are in the formal education system to prepare for rigorous academic work in further education or training.[66] Three remedial prevention approaches show promise.[67] The first offers support to primary and secondary students willing to stay in school and master foundational skills. Programs in India and Mexico City that offer additional instruction for disadvantaged students have shown positive impacts on foundational skills (especially in India).[68] The second approach offers students early assessments of their academic standing, along with extra instruction to improve performance. A statewide early assessment program in California that supports academically at-risk students shows declining needs for remediation at later stages of education and training.[69] The third approach gives secondary school students the option of registering concurrently in postsecondary courses. Participants in such programs in the United States are less likely to require remediation and more likely to persist in tertiary education and improve academic outcomes.[70]

Second-chance programs offer a way to return to education and obtain training

Second-chance programs give youth who have dropped out of school a path to reengage in nontraditional learning environments, obtain secondary education equivalency qualifications, and enter job training.[71] These programs offer a learning experience that signals a level of achievement to participants, their families, and employers. In Australia and the United States, early school leavers are encouraged to enroll in programs that provide an equivalent to an upper secondary diploma.[72] Though equivalency programs can improve employment, wages, and other education indicators (relative to outcomes for individuals with no credentials), such impacts are often smaller than those for individuals holding traditional educational credentials.[73] Across second-chance interventions, socioemotional skills play an important role in student success—with skills such as the ability to work toward long-term goals

sometimes mattering more than the equivalency certificate itself.

The demand for second-chance programs is high and the evidence is promising, but keeping youth engaged in further education and training requires an integrated policy approach. In Sub-Saharan Africa, there is a demand for programs to reengage early school leavers, especially in low-income or conflict regions.[74] But in practice, programs tend to be small, and few operate within a policy framework that integrates them into the formal education and training systems.[75] For low-income students, who usually make up a disproportionate number of early school leavers around the world, second-chance programs like the Open Basic Programme in India can provide important pathways to educational opportunities.[76] In India, Indonesia, the Philippines, and Thailand, equivalency programs for early school leavers improve students' self-development, especially when programs are aligned with the formal education system.[77] Similarly, second-chance programs in Latin America and the Caribbean yield better results when they take into account the multidimensional needs of young people, connect students to pathways for further education and training opportunities, and provide support to help participants return to productive adulthood.[78]

Postsecondary remedial education programs can help youth succeed in their programs of study

Many students enrolling in postsecondary education and training are not prepared for the rigor of their programs of study. In Chile and Mexico, several postsecondary institutions offer remedial support to academically underprepared students, but impact evaluations of such interventions are rare.[79] In the United States, participation in postsecondary remedial education is widespread, often at great cost to individuals and institutions.[80] About 42 percent of incoming students in two-year institutions and 20 percent in four-year institutions enroll in remedial courses at an annual cost of $1–$7 billion, depending on how the estimates are calculated. Due to this high cost, U.S. institutions have been experimenting with new approaches. There are three main types of remedial models that show promise: accelerated remediation, contextualized instruction, and intensive student support.[81]

Accelerated remediation models reduce the time students spend on remedial coursework. Conventional remedial education programs are often designed as a series of sequential courses that can take multiple semesters to complete, which often leads students to drop out.[82] New accelerated remedial models addressing this problem include fast-track courses, self-paced modularized courses, and efforts to mainstream students directly into postsecondary courses while providing additional instructional support. In the U.S. state of Indiana, a study of two fast-track programs found participants achieve better course pass rates and fewer course withdrawals than students in longer remedial programs.[83] Similarly, evidence on self-paced modularized and mainstreaming programs indicates that participants have higher postsecondary pass rates in math, complete more rigorous course requirements, and attempt tertiary courses at higher rates than nonparticipants.[84]

Contextualized instruction improves the effectiveness of remedial education interventions, because learners benefit most when they engage, interpret, and generate meaning from instructional content relevant to their background.[85] These models are designed to reinforce foundational skills, while emphasizing learners' career aspirations.[86] New approaches include contextualized vocational learning. An example that blends foundational skills upgrading with occupational training is the I-BEST (Integrated Basic Education and Skills Training) program in the U.S. state of Washington. An evaluation of the program finds that participation has positive effects on student learning, including course credit accumulation, persistence in tertiary education, and earning of occupational certificates.[87] Learning community approaches, which emphasize multisubject instruction, project-based work, and learner social interactions, also are showing promising results. In the United States, participation in these programs has a significantly positive relationship with a number of factors associated with student success, such as level of course engagement, student and faculty interactions, or continuation to advanced courses.[88]

Intensive student support can provide an institutional safety net for at-risk youth. New approaches showing promising results include intensive tutoring with supplemental instruction, intensive advising, and student success courses. Intensive tutoring programs range from providing general academic counseling and tutoring to offering special skills training.[89] Evaluations of programs offering sustained tutoring show improvements in course completion and academic standing.[90] Intensive personalized advising services help students navigate course selection and develop career plans. These services can help students take advantage of other forms of support; beneficiaries are also more likely to complete their remedial coursework and stay on in school after

program completion.[91] Student success courses are usually stand-alone, credit-bearing courses for new students that emphasize the development of study skills. Experimental evidence from the United States shows promising results on participants' number of credits earned, classes passed, and class standing.[92]

Finally, recent developments in self-directed technology models are opening new opportunities for youth to work independently to meet their learning needs and upgrade their skills, but this remains a new area for remedial education research, and evidence on their impacts is still sparse.[93]

Notes

1. UNICEF, WHO, and World Bank (2016).
2. Hungi (2010).
3. Cunha and others (2006).
4. Black and others (2008); Horton, Alderman, and Rivera (2008); Thompson and Nelson (2001).
5. Coe and Lubach (2007); Garner and others (2012).
6. Center on the Developing Child (2016).
7. Walker and others (2007).
8. Bendini (2015).
9. Black and others (2017).
10. Bradley and Corwyn (2005); McCoy and Raver (2014); Shonkoff and others (2010).
11. Farah and others (2006); McLoyd (1998).
12. These numbers likely overestimate global preschool coverage because many low-income countries do not report access data (Save the Children 2017).
13. Black and others (2017).
14. Devercelli, Sayre, and Denboba (2016).
15. ACPF (2011).
16. Berlinski and Schady (2015).
17. Naudeau and others (2011).
18. Black and others (2017). This is likely an underestimate of the true number of young children who are at risk of not reaching their developmental potential, given the multiple risk factors associated with poverty.
19. Bhutta and others (2013); Britto and others (2016).
20. Galasso and Wagstaff (2016).
21. Galasso and Wagstaff (2016); Skoufias (2016).
22. Eilander and others (2010); Horta, Loret de Mola, and Victora (2015).
23. Galasso and Wagstaff (2016).
24. Almond and Currie (2011); Baker-Henningham and López Bóo (2010).
25. Aboud and Yousafzai (2015); Britto and others (2016).
26. For a review, see World Bank (2015).
27. Britto and others (2016); World Bank (2015).
28. Denboba and others (2014).
29. Rahman and others (2013).
30. Berlinski, Galiani, and Gertler (2008); Engle and others (2011); Favara and others (2017); García and others (2016); Rao and others (2014).
31. Bouguen and others (2013); Rosero and Oosterbeek (2011).
32. Martinez, Naudeau, and Pereira (2012); Nakajima and others (2016).
33. However, center-based care can have the important added benefit of increasing labor force participation or further skills acquisition among parents, especially mothers.
34. Attanasio and others (2014); Denboba and others (2014).
35. Britto and others (2016).
36. Richter and others (2016).
37. Devercelli, Sayre, and Denboba (2016).
38. Serneels and Dercon (2014).
39. Oketch, Mutisya, and Sagwe (2012).
40. World Policy Analysis Center (various years).
41. Foko, Tiyab, and Husson (2012).
42. Al-Samarrai and Zaman (2007); Bold, Kimenyi, and Sandefur (2013); Deininger (2003); Grogan (2009); Lucas and Mbiti (2012); Nishimura, Yamano, and Sasaoka (2008).
43. Morgan, Petrosino, and Fronius (2012); Zuilkowski, Jukes, and Dubeck (2016).
44. Duflo, Dupas, and Kremer (2017); Kremer, Miguel, and Thornton (2009).
45. Filmer and Schady (2008); Fiszbein and Schady (2009).
46. J-PAL (2013).
47. Avitabile and de Hoyos (2015); Jensen (2010); Loyalka and others (2013); Nguyen (2008).
48. Beaman and others (2012); Jensen (2012).
49. Akresh and others (2012); Garg and Morduch (1998); Parish and Willis (1993).
50. Akresh, de Walque, and Kazianga (2013).
51. Avitabile and de Hoyos (2015); Barrera-Osorio and Filmer (2013); Nguyen (2008).
52. Valerio and others (2016).
53. Zuilkowski, Jukes, and Dubeck (2016).
54. Benin: Blimpo (2014); Kenya: Kremer, Miguel, and Thornton (2009); Mexico: Behrman and others (2015).
55. Fryer (2011); Levitt and others (2016).
56. The primary completion cohort is approximated by estimating the net intake rate to last grade in primary, and the lower secondary completion rate is modeled as a function of three components: primary completion rate, effective primary-to-lower-secondary transition rate, and net intake rate to last grade in lower secondary. The regional upper secondary completion rates are estimates from UNESCO's World Inequality Database on Education (WIDE 2017), and the global upper secondary completion rate estimate is based on UNESCO's 2015 projection (UNESCO 2015).
57. OECD (2016); Roseth, Valerio, and Gutiérrez (2016).
58. Low proficiency is defined as level 1 and below on OECD's Programme for the International Assessment of Adult Competencies (PIAAC) and the World Bank's Skills Measurement Program (STEP) literacy assessments, and indicates limited understanding of basic texts. Medium to high proficiency is defined as level 2

and above and indicates the ability to integrate, evaluate, and interpret information from a variety and complexity of text materials.

59. Estimates are based on marginal effect of literacy skills at or above level 2 on the predicted probabilities of entry into high-skill white-collar and blue-collar and other jobs (base outcome). The full specification includes background control variables such as sex, age, education attainment, and proxies for family endowment.
60. Zachry and Schneider (2010).
61. Almeida, Johnson, and Steinberg (2006); NCES (2004).
62. de Hoyos, Rogers, and Székely (2016).
63. Black, Polidano, and Tseng (2012); Tukundane and others (2014); Windisch (2015).
64. The terms "remedial education" and "developmental education" are often used interchangeably to describe programs aimed at supporting low-performing students to enter and complete postsecondary and training programs. The Report uses the term "remedial education" because it is a more widely recognized concept in low- and middle-income countries. (See Bailey and others 2010; Bailey, Bashford, and others 2016; Long and Boatman 2013.)
65. Post (2016).
66. "At-risk" students are defined here as having a higher propensity of dropping out of formal education or of not completing post-basic education and training programs.
67. The typology used is from a systematic review of remedial (developmental) education by Rutschow and Crary-Ross (2014); Tukundane and others (2015); Wilson and Tanner-Smith (2013); and Zachry Rutschow and Schneider (2011).
68. Gutiérrez and Rodrigo (2014); Lakshminarayana and others (2013).
69. Howell, Kurlaender, and Grodsky (2010).
70. Karp and others (2008).
71. Jepsen, Mueser, and Troske (2012).
72. De Witte and others (2013).
73. Tyler and Lofstrom (2009).
74. Inoue and others (2015).
75. Tukundane and others (2015).
76. UNESCO (2010).
77. UNESCO (2010).
78. Cunningham and others (2008).
79. Cabrera (2013); Figueroa and others (2015); Micin and others (2015).
80. Bailey (2009); Clotfelter and others (2015); Scott-Clayton and Rodriguez (2014).
81. Bailey, Jaggars, and Scott-Clayton (2013); Clotfelter and others (2015); Moss, Kelcey, and Showers (2014); Scott-Clayton and Rodriguez (2014).
82. Bailey (2009); Scott-Clayton and Rodriguez (2014).
83. Brown and Ternes (2009).
84. Epper and Baker (2009); "Tennessee Board of Regents: Developmental Studies Redesign Initiative, Jackson State Community College," National Center for Academic Transformation, Saratoga Springs, NY. http://www.thencat.org/States/TN/Abstracts/JSCC%20Algebra_Abstract.htm#FinalRpt.
85. CSS (2007).
86. California Basic Skills Initiative (2009).
87. Jenkins, Zeidenberg, and Kienzl (2009).
88. Engstrom and Tinto (2008); Visher and others (2010); Zhao and Kuh (2004).
89. Zachry Rutschow and Schneider (2011).
90. Scrivener and others (2008); Zachry (2008).
91. Bahr (2008); Visher, Butcher, and Cerna (2010).
92. Scrivener and others (2008); Scrivener, Sommo, and Collado (2009).
93. Zachry Rutschow and Schneider (2011).

References[a]

Aboud, Frances, and Aisha Yousafzai. 2015. "Global Health and Development in Early Childhood." *Annual Review of Psychology* 66: 433–57.

ACPF (African Child Policy Forum). 2011. *The African Report on Child Wellbeing: Budgeting for Children*. Addis Ababa: ACPF. http://resourcecentre.savethechildren.se/sites/default/files/documents/3764.pdf.

Akresh, Richard, Emilie Bagby, Damien de Walque, and Harounan Kazianga. 2012. "Child Ability and Household Human Capital Investment Decisions in Burkina Faso." *Economic Development and Cultural Change* 61 (1): 157–86.

Akresh, Richard, Damien de Walque, and Harounan Kazianga. 2013. "Cash Transfers and Child Schooling: Evidence from a Randomized Evaluation of the Role of Conditionality." Policy Research Working Paper 6340, World Bank, Washington, DC.

Almeida, Cheryl, Cassius Johnson, and Adria Steinberg. 2006. "Making Good on a Promise: What Policymakers Can Do to Support the Educational Persistence of Dropouts." Double the Numbers Series (April), Jobs for the Future, Boston.

Almond, Douglas, and Janet Currie. 2011. "Human Capital Development before Age Five." In *Handbook of Labor Economics*, Vol. 4, Part B, edited by Orley Ashenfelter and David Card, 1315–1486. Amsterdam: North-Holland.

Al-Samarrai, Samer, and Hassan Zaman. 2007. "Abolishing School Fees in Malawi: The Impact on Education Access and Equity 1." *Education Economics* 15 (3): 359–75.

Attanasio, Orazio P., Camila Fernández, Emla O. A. Fitzsimons, Sally M. Grantham-McGregor, Costas Meghir, and Marta Rubio-Codina. 2014. "Using the Infrastructure of a Conditional Cash Transfer Program to Deliver a Scalable Integrated Early Child Development Program in Colombia: Cluster Randomized Controlled Trial." *BMJ* 349 (September 29): g5785.

Avitabile, Ciro, and Rafael E. de Hoyos. 2015. "The Heterogeneous Effect of Information on Student Performance: Evidence from a Randomized Control Trial in Mexico." Policy Research Working Paper 7422, World Bank, Washington, DC.

Bahr, Peter Riley. 2008. "Cooling Out in the Community College: What Is the Effect of Academic Advising on Students' Chances of Success?" *Research in Higher Education* 49 (8): 704–32.

Bailey, Thomas R. 2009. "Challenge and Opportunity: Rethinking the Role and Function of Developmental

a. References to titles of publications that include Taiwan refer to Taiwan, China.

Education in Community College." *New Directions for Community Colleges* 2009 (145): 11–30.

Bailey, Thomas, Dong Wook Jeong, and Sung-Woo Cho. 2010. "Referral, Enrollment, and Completion in Developmental Education Sequences in Community Colleges." *Economics of Education Review* 29 (2): 255–70.

Bailey, Thomas, Joanne Bashford, Angela Boatman, John Squires, and Michael Weiss. 2016. *Strategies for Postsecondary Students in Developmental Education: A Practice Guide for College and University Administrators, Advisors, and Faculty.* Washington, DC: U.S. Department of Education, National Center for Education Evaluation and Regional Assistance, What Works Clearinghouse, Institute of Education Sciences. Available at http://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/wwc_dev_ed_112916.pdf.

Bailey, Thomas R., Shanna Smith Jaggars, and Judith Scott-Clayton. 2013. "Commentary: Characterizing the Effectiveness of Developmental Education: A Response to Recent Criticism." *Journal of Developmental Education* 36 (3): 18–22, 24–25.

Baker-Henningham, Helen, and Florencia López Bóo. 2010. "Early Childhood Stimulation Interventions in Developing Countries: A Comprehensive Literature Review." IDB Working Paper 213, Inter-American Development Bank, Washington, DC.

Barrera-Osorio, Felipe, and Deon Filmer. 2013. "Incentivizing Schooling for Learning: Evidence on the Impact of Alternative Targeting Approaches." Policy Research Working Paper 6541, World Bank, Washington, DC.

Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova. 2012. "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India." *Science* 335 (6068): 582–86.

Behrman, Jere R., Susan W. Parker, Petra E. Todd, and Kenneth I. Wolpin. 2015. "Aligning Learning Incentives of Students and Teachers: Results from a Social Experiment in Mexican High Schools." *Journal of Political Economy* 123 (2): 325–64.

Bendini, Maria Magdalena. 2015. "The Effect of Stress on Developmental Trajectories: Empirical Evidence from Peru." Dissertation, University of Maryland, College Park, MD.

Bentaouet Kattan, Raja. 2006. "Implementation of Free Basic Education Policy." Education Working Paper 7, World Bank, Washington, DC.

Bergman, Peter. 2015. "Parent-Child Information Frictions and Human Capital Investment: Evidence from a Field Experiment." CESifo Working Paper 5391, Center for Economic Studies and Ifo Institute, Munich.

Berlinski, Samuel, Matias Busso, Taryn Dinkelman, and Claudia Martinez. 2016. "Reducing Parent-School Information Gaps and Improving Education Outcomes: Evidence from High Frequency Text Messaging in Chile." Working paper, Abdul Latif Jameel Poverty Action Lab, Massachusetts Institute of Technology, Cambridge, MA.

Berlinski, Samuel, Sebastian Galiani, and Paul J. Gertler. 2008. "The Effect of Pre-primary Education on Primary School Performance." *Journal of Public Economics* 93 (1–2): 219–34.

Berlinski, Samuel, and Norbert R. Schady, eds. 2015. *The Early Years: Child Well-Being and the Role of Public Policy*. Development in the Americas Series. Washington, DC: Inter-American Development Bank; New York: Palgrave Macmillan.

Bhutta, Zulfiqar A., Jai K. Das, Arjumand Rizvi, Michelle F. Gaffey, Neff Walker, Susan Horton, Patrick Webb, et al. 2013. "Evidence-Based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" *Lancet* 382 (9890): 452–77.

Black, David, Cain Polidano, and Yi-Ping Tseng. 2012. "The Re-engagement in Education of Early School Leavers." *Economic Papers* 31 (2): 202–15.

Black, Maureen M., Susan P. Walker, Lia C. H. Fernald, Christopher T. Andersen, Ann M. DiGirolamo, Chunling Lu, Dana Charles McCoy, et al. 2017. "Early Childhood Development Coming of Age: Science through the Life Course." *Lancet* 389 (10064): 77–90.

Black, Robert E., Lindsay H. Allen, Zulfiqar A. Bhutta, Laura E. Caulfield, Mercedes de Onis, Majid Ezzati, Colin Mathers, et al. 2008. "Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences." *Lancet* 371 (9608): 243–60.

Blimpo, Moussa P. 2014. "Team Incentives for Education in Developing Countries: A Randomized Field Experiment in Benin." *American Economic Journal: Applied Economics* 6 (4): 90–109.

Bold, Tessa, Mwangi S. Kimenyi, and Justin Sandefur. 2013. "Public and Private Provision of Education in Kenya." *Journal of African Economies* 22 (supplement 2): ii39–ii56.

Bouguen, Adrien, Deon Filmer, Karen Macours, and Sophie Naudeau. 2013. "Impact Evaluation of Three Types of Early Childhood Development Interventions in Cambodia." Policy Research Working Paper 6540, World Bank, Washington, DC.

Bradley, Robert H., and Robert F. Corwyn. 2005. "Caring for Children around the World: A View from Home." *International Journal of Behavioral Development* 29 (6): 468–78.

Britto, Pia Rebello, Stephen J. Lye, Kerrie Proulx, Aisha K. Yousafzai, Stephen G. Matthews, Tyler Vaivada, Rafael Perez-Escamilla, et al. 2016. "Nurturing Care: Promoting Early Childhood Development." *Lancet* 389 (10064): 91–102.

Brown, R., and R. Ternes. 2009. "Final Report to the Lilly Endowment Grant: Grant for Targeted and Accelerated Remediation." Ivy Tech Community College, Indianapolis, IN.

Cabrera, Gabriela. 2013. "Programas de Apoyo a Transiciones Académicas del Sistema Escolarizado en la UNAM." Paper presented at Tercera Conferencia Latinoamericana sobre el Abandono en la Educación Superior, Mexico City, November 13–15.

California Basic Skills Initiative. 2009. "Contextualized Teaching and Learning, a Faculty Primer: A Review of Literature and Faculty Practices with Implications for California Community College Practitioners." Research and Planning Group, Academic Senate for California Community Colleges, and Bay Area Workforce Funding Collaborative, San Rafael, CA.

Carneiro, Pedro, Flavio Cunha, and James J. Heckman. 2003. "Interpreting the Evidence of Family Influence on Child Development." Paper presented at Federal Reserve Bank of Minneapolis and McKnight Foundation's conference, "Economics of Early Childhood Development: Lessons for Economic Policy," Minneapolis, October 17.

Center on the Developing Child. 2016. "From Best Practices to Breakthrough Impacts: A Science-Based Approach to Building a More Promising Future for Young Children and Families." Center on the Developing Child, Harvard University, Cambridge, MA.

Clotfelter, Charles T., Helen F. Ladd, Clara Muschkin, and Jacob L. Vigdor. 2015. "Developmental Education in North Carolina Community Colleges." *Educational Evaluation and Policy Analysis* 37 (3): 354–75.

Coe, Christopher L., and Gabrielle R. Lubach. 2007. "Mother-Infant Interactions and the Development of Immunity from Conception through Weaning." In *Psychoneuroimmunology*, edited by Robert Ader, 455–74. Burlington, MA: Elsevier Academic Press.

CSS (Center for Student Success). 2007. *Basic Skills as a Foundation for Student Success in California Community Colleges*. San Rafael, CA: CSS, Research and Planning Group.

Cunha, Flavio, James J. Heckman, Lance J. Lochner, and Dimitriy V. Masterov. 2006. "Interpreting the Evidence on Life Cycle Skill Formation." In *Handbook of the Economics of Education*, Vol. 1, edited by Eric A. Hanushek and Finis Welch, 697–812. Handbooks in Economics Series 26. Amsterdam: North-Holland.

Cunningham, Wendy V., Linda McGinnis, Rodrigo García Verdú, Cornelia Tesliuc, and Dorte Verner. 2008. *Youth at Risk in Latin America and the Caribbean: Understanding the Causes, Realizing the Potential*. Directions in Development: Human Development Series. Washington, DC: World Bank.

de Hoyos, Rafael E., Halsey Rogers, and Miguel Székely. 2016. "Out of School and Out of Work: Risk and Opportunities for Latin America's *Ninis*." World Bank, Washington, DC.

Deininger, Klaus. 2003. "Does Cost of Schooling Affect Enrollment by the Poor? Universal Primary Education in Uganda." *Economics of Education Review* 22 (3): 291–305.

Denboba, Amina D., Rebecca K. Sayre, Quentin T. Wodon, Leslie K. Elder, Laura B. Rawlings, and Joan Lombardi. 2014. "Stepping Up Early Childhood Development: Investing in Young Children for High Returns." October, Children's Investment Fund Foundation and World Bank, Washington, DC.

Devercelli, Amanda E., Rebecca K. Sayre, and Amina D. Denboba. 2016. "What Do We Know about Early Childhood Development Policies in Low and Middle Income Countries?" SABER-ECD Brief Note 1, World Bank, Washington, DC.

De Witte, Kristof, Sofie Cabus, Geert Thyssen, Wim Groot, and Henriëtte Maassen van den Brink. 2013. "A Critical Review of the Literature on School Dropout." *Educational Research Review* 10: 13–28.

Dizon-Ross, Rebecca. 2016. "Parents' Beliefs and Children's Education: Experimental Evidence from Malawi." Working paper, Booth School of Business, University of Chicago.

Dowd, Amy Jo, Elliott Friedlander, Christine Jonason, Jane Leer, Lisa Zook Sorensen, Jarrett Guajardo, Nikhit D'Sa, et al. 2017. "Lifewide Learning for Early Reading Development." *New Directions for Child and Adolescent Development* 155: 31–49.

Duflo, Esther, Pascaline Dupas, and Michael R. Kremer. 2017. "The Impact of Free Secondary Education: Experimental Evidence from Ghana." Paper presented at Ghana Education Evidence Summit 2017, "Towards Quality Education in Ghana: Using Evidence to Achieve Better Learning Outcomes," Accra, Ghana, March 28.

Eilander, Ans, Tarun Gera, Harshpal S. Sachdev, Catherine Transler, Henk C. M. van der Knaap, Frans J. Kok, and Saskia J. M. Osendarp. 2010. "Multiple Micronutrient Supplementation for Improving Cognitive Performance in Children: Systematic Review of Randomized Controlled Trials." *American Journal of Clinical Nutrition* 91 (1): 115–30.

Engle, Patrice L., Lia C. H. Fernald, Harold Alderman, Jere R. Behrman, Chloe O'Gara, Aisha Yousafzai, Meena Cabral de Mello, et al. 2011. "Strategies for Reducing Inequalities and Improving Developmental Outcomes for Young Children in Low-Income and Middle-Income Countries." *Lancet* 378 (9799): 1339–53.

Engstrom, Cathy McHugh, and Vincent Tinto. 2008. "Learning Better Together: The Impact of Learning Communities on the Persistence of Low-Income Students." *Opportunity Matters* 1: 5–21.

Epper, Rhonda M., and Elaine D. Baker. 2009. "Technology Solutions for Developmental Math: An Overview of Current and Emerging Practices." *Journal of Developmental Education* 26 (2): 4–23.

Farah, Martha J., David M. Shera, Jessica H. Savage, Laura Betancourt, Joan M. Giannetta, Nancy L. Brodsky, Elsa K. Malmud, et al. 2006. "Childhood Poverty: Specific Associations with Neurocognitive Development." *Brain Research* 1110 (1): 166–74.

Favara, Marta, Martin Woodhead, Juan Francisco Castro, Grace Chang, and Patricia Espinoza. 2017. "Pre-school Education and Skills Development in Peru, Vietnam, Ethiopia, and India: Evidence from Young Lives." World Bank, Washington, DC.

Figueroa, Lorna, Bernardita Maillard, Nelson Veliz, Samara Toledo, and Máximo González. 2015. "La Experiencia de los Programas Propedéuticos y su Articulación con la Escuela." Paper presented at Quinta Conferencia Latinoamericana sobre el Abandono en la Educación Superior, Talca, Chile, November 11–13.

Filmer, Deon, and Norbert R. Schady. 2008. "Getting Girls into School: Evidence from a Scholarship Program in Cambodia." *Economic Development and Cultural Change* 56 (3): 581–617.

Fiszbein, Ariel, and Norbert R. Schady. 2009. *Conditional Cash Transfers: Reducing Present and Future Poverty*. With Francisco H. G. Ferreira, Margaret E. Grosh, Niall Keleher, Pedro Olinto, and Emmanuel Skoufias. World Bank Policy Research Report. Washington, DC: World Bank.

Foko, Borel, Beifith Kouak Tiyab, and Guillaume Husson. 2012. "Household Education Spending: An Analytical and Comparative Perspective for 15 African Countries."

Working paper, Pôle de Dakar for Education Sector Analysis, Regional Bureau for Education in Africa, United Nations Educational, Scientific, and Cultural Organization, Dakar, Senegal.

Friedlander, Elliott, and Claude Goldenberg, eds. 2016. *Literacy Boost in Rwanda: Impact Evaluation of a Two Year Randomized Control Trial*. Stanford, CA: Stanford University.

Fryer, Roland G. 2011. "Financial Incentives and Student Achievement: Evidence from Randomized Trials." *Quarterly Journal of Economics* 126 (4): 1755–98.

Galasso, Emanuela, and Adam Wagstaff. 2016. "The Economic Costs of Stunting and How to Reduce Them." With Sophie Naudeau and Meera Shekar. Policy Research Note 5, World Bank, Washington, DC.

García, Jorge Luis, James J. Heckman, Duncan Ermini Leaf, and María José Prados. 2016. "The Life-Cycle Benefits of an Influential Early Childhood Program." NBER Working Paper 22993, National Bureau of Economic Research, Cambridge, MA.

Garg, Ashish, and Jonathan Morduch. 1998. "Sibling Rivalry and the Gender Gap: Evidence from Child Health Outcomes in Ghana." *Journal of Population Economics* 11 (4): 471–93.

Garner, Andrew S., Jack P. Shonkoff, Benjamin S. Siegel, Mary I. Dobbins, Marian F. Earls, Laura McGuinn, John Pascoe, et al. 2012. "Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health." *Pediatrics* 129 (1): e224–e231.

Grogan, Louise. 2009. "Universal Primary Education and School Entry in Uganda." *Journal of African Economies* 18 (2): 183–211.

Gutiérrez, Emilio, and Rodmiro Rodrigo. 2014. "Closing the Achievement Gap in Mathematics: Evidence from a Remedial Program in Mexico City." *Latin American Economic Review* 23 (14): 1–30.

Horta, Bernardo L., Christian Loret de Mola, and Cesar G. Victora. 2015. "Breastfeeding and Intelligence: A Systematic Review and Meta-Analysis." *Acta Paediatrica* 104 (S467): 14–19.

Horton, Sue, Harold Alderman, and Juan A. Rivera. 2008. "The Challenge of Hunger and Malnutrition." Copenhagen Consensus 2008 Challenge Paper, Copenhagen Consensus Center, Tewksbury, MA.

Howell, Jessica S., Michal Kurlaender, and Eric Grodsky. 2010. "Postsecondary Preparation and Remediation: Examining the Effect of the Early Assessment Program at California State University." *Journal of Policy Analysis and Management* 29 (4): 726–48.

Hungi, Njora. 2010. "What Are the Levels and Trends in Grade Repetition?" SACMEQ Policy Issues 5, Southern and Eastern Africa Consortium for Monitoring Educational Quality, Paris.

Inoue, Keiko, Emanuela di Gropello, Yesim Sayin Taylor, and James Gresham. 2015. *Out-of-School Youth in Sub-Saharan Africa: A Policy Perspective.* Directions in Development: Human Development Series. Washington, DC: World Bank.

Jenkins, Davis, Matthew Zeidenberg, and Gregory S. Kienzl. 2009. "Educational Outcomes of I-BEST, Washington State Community and Technical College System's Integrated Basic Education and Skills Training Program: Findings from a Multivariate Analysis." CCRC Working Paper 16, Community College Research Center, Teachers College, Columbia University, New York.

Jensen, Robert T. 2010. "The (Perceived) Returns to Education and the Demand for Schooling." *Quarterly Journal of Economics* 125 (2): 515–48.

———. 2012. "Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India." *Quarterly Journal of Economics* 127 (2): 753–92.

Jepsen, Christopher, Peter R. Mueser, and Kenneth R. Troske. 2012. "Labor-Market Returns to the GED Using Regression Discontinuity Analysis." IZA Discussion Paper 6758, Institute for the Study of Labor, Bonn, Germany.

Johnson, Rucker C., and C. Kirabo Jackson. 2017. "Reducing Inequality through Dynamic Complementarity: Evidence from Head Start and Public School Spending." NBER Working Paper 23489, National Bureau of Economic Research, Cambridge, MA.

J-PAL (Abdul Latif Jameel Poverty Action Lab). 2013. "Informing Future Choices." J-PAL Policy Briefcase, J-PAL, Massachusetts Institute of Technology, Cambridge, MA.

Karp, Melinda Jane Mechur, Juan Carlos Calcagno, Katherine Lee Hughes, Dong Wook Jeong, and Thomas R. Bailey. 2008. "Dual Enrollment Students in Florida and New York City: Postsecondary Outcomes." CCRC Brief 37, Community College Research Center, Teachers College, Columbia University, New York.

Klees, Steven J. 2017. "Will We Achieve Education for All and the Education Sustainable Development Goal?" *Comparative Education Review* 61 (2): 425–40.

Kremer, Michael R., Edward Miguel, and Rebecca L. Thornton. 2009. "Incentives to Learn." *Review of Economics and Statistics* 91 (3): 437–56.

Lakshminarayana, Rashmi, Alex Eble, Preetha Bhakta, Chris Frost, Peter Boone, Diana Elbourne, and Vera Mann. 2013. "The Support to Rural India's Public Education System (STRIPES) Trial: A Cluster Randomised Controlled Trial of Supplementary Teaching, Learning Material and Material Support." *PLoS ONE* 8 (7): e65775.

Levitt, Steven D., John A. List, Susanne Neckermann, and Sally Sadoff. 2016. "The Behavioralist Goes to School: Leveraging Behavioral Economics to Improve Educational Performance." *American Economic Journal: Economic Policy* 8 (4): 183–219.

Lieberman, Evan S., Daniel N. Posner, and Lily L. Tsai. 2014. "Does Information Lead to More Active Citizenship? Evidence from an Education Intervention in Rural Kenya." *World Development* 60: 69–83.

Long, Bridget T., and Angela Boatman. 2013. "The Role of Remedial and Developmental Courses in Access and Persistence." In *The State of College Access and Completion: Improving College Success for Students from Underrepresented Groups,* edited by Laura W. Perna and Anthony P. Jones, 77–95. New York: Routledge.

Loyalka, Prashant, Chengfang Liu, Yingquan Song, Hongmei Yi, Xiaoting Huang, Jianguo Wei, Linxiu Zhang, et al. 2013. "Can Information and Counseling Help Students

from Poor Rural Areas Go to High School? Evidence from China." *Journal of Comparative Economics* 41 (4): 1012–25.

Lucas, Adrienne M., and Isaac M. Mbiti. 2012. "Access, Sorting, and Achievement: The Short-Run Effects of Free Primary Education in Kenya." *American Economic Journal: Applied Economics* 4 (4): 226–53.

Martin, Paul. 2012. "Responsabilidad Social Corporativa y Primera Infancia." Paper presented at Ministry of Development and Social Inclusion's Semana de la Inclusión, Lima, October 21–24.

Martinez, Sebastian, Sophie Naudeau, and Vitor Pereira. 2012. "The Promise of Preschool in Africa: A Randomized Impact Evaluation of Early Childhood Development in Rural Mozambique." Save the Children, Fairfield, CT, February 14. World Bank, Washington, DC. http://siteresources.worldbank.org/INTAFRICA/Resources/The_Promise_of_Preschool_in_Africa_ECD_REPORT.pdf.

McCoy, Dana Charles, and C. Cybele Raver. 2014. "Household Instability and Self-Regulation among Poor Children." *Journal of Children and Poverty* 20 (2): 131–52.

McLoyd, Vonnie C. 1998. "Socioeconomic Disadvantage and Child Development." *American Psychologist* 53 (2): 185–204.

Micin, Sonia, Natalia Farías, Beatriz Carreño, and Sergio Urzúa. 2015. "Beca Nivelación Académica: La Experiencia de una Política Pública Aplicada en una Universidad Chilena." *Calidad en la Educación* 42: 189–208.

Morgan, Claire, Anthony Petrosino, and Trevor Fronius. 2012. "A Systematic Review of the Evidence of the Impact of Eliminating School User Fees in Low-Income Developing Countries." Evidence for Policy and Practice Information and Co-ordinating Centre, Social Science Research Unit, Institute of Education, University of London, London.

Moss, Brian G., Ben Kelcey, and Nancy Showers. 2014. "Does Classroom Composition Matter? College Classrooms as Moderators of Developmental Education Effectiveness." *Community College Review* 42 (3): 201–20.

Nakajima, Nozomi, Amer Hasan, Haeil Jung, Sally Anne Brinkman, Menno Prasad Pradhan, and Angela Kinnell. 2016. "Investing in School Readiness: An Analysis of the Cost-Effectiveness of Early Childhood Education Pathways in Rural Indonesia." Policy Research Working Paper 7832, World Bank, Washington, DC.

Naudeau, Sophie, Naoko Kataoka, Alexandria Valerio, Michelle J. Neuman, and Leslie Kennedy Elder. 2011. *Investing in Young Children: An Early Childhood Development Guide for Policy Dialogue and Project Preparation*. Directions in Development: Human Development Series. Washington, DC: World Bank.

NCES (National Center for Education Statistics). 2004. "Educational Attainment of High School Dropouts 8 Years Later." Issue Brief NCES 2005–026, NCES, Institute of Education Sciences, U.S. Department of Education, Washington, DC.

Nelson, Charles A., Nadine Gaab, Yingying Wang, Swapna Kumar, Danielle Sliva, Meaghan Mauer, Alissa Westerlund, et al. 2017. "Atypical Brain Development in Bangladeshi Infants Exposed to Profound Early Adversity." Presented at conference of Society for Research in Child Development, Austin, TX, April.

Nguyen, Trang. 2008. "Information, Role Models, and Perceived Returns to Education: Experimental Evidence from Madagascar." MIT working paper, Massachusetts Institute of Technology, Cambridge, MA.

Nishimura, Mikiko, Takashi Yamano, and Yuichi Sasaoka. 2008. "Impacts of the Universal Primary Education Policy on Educational Attainment and Private Costs in Rural Uganda." *International Journal of Educational Development* 28 (2): 161–75.

OECD (Organisation for Economic Co-operation and Development). 2016. *Skills Matter: Further Results from the Survey of Adult Skills*. OECD Skills Studies Series. Paris: OECD.

Oketch, Moses, Maurice Mutisya, and Jackline Sagwe. 2012. "Parental Aspirations for Their Children's Educational Attainment and the Realisation of Universal Primary Education (UPE) in Kenya: Evidence from Slum and Non-slum Residences." *International Journal of Educational Development* 32 (6): 764–72.

Oye, Mari, Lant Pritchett, and Justin Sandefur. 2016. "Girls' Schooling Is Good, Girls' Schooling with Learning Is Better." Education Commission, Center for Global Development, Washington, DC.

Parish, William L., and Robert J. Willis. 1993. "Daughters, Education, and Family Budgets: Taiwan Experiences" [refers to Taiwan, China]. *Journal of Human Resources* 28 (4): 863–98.

Phillips, Deborah A., Mark W. Lipsey, Kenneth A. Dodge, Ron Haskins, Daphna Bassok, Margaret R. Burchinal, Greg J. Duncan, et al. 2017. "Puzzling It Out: The Current State of Scientific Knowledge on Pre-kindergarten Effects, a Consensus Statement." Center for Child and Family Policy, Duke University, Durham, NC; Brookings Institution, Washington, DC.

Post, David. 2016. "Adult Literacy Benefits? New Opportunities for Research into Sustainable Development." *International Review of Education* 62 (6): 751–70.

Rahman, Atif, Jane Fisher, Peter Bower, Stanley Luchters, Thach Tran, M. Taghi Yasamy, Shekhar Saxena, et al. 2013. "Interventions for Common Perinatal Mental Disorders in Women in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis." *Bulletin of the World Health Organization* 91 (8): 593–601.

Rao, Nirmala, Jin Sun, Jessie M. S. Wong, Brendan Weekes, Patrick Ip, Sheldon Shaeffer, Mary Young, et al. 2014. "Early Childhood Development and Cognitive Development in Developing Countries: Education Rigorous Literature Review." Faculty of Education, University of Hong Kong, Hong Kong SAR, China.

Richter, Linda M., Bernadette Daelmans, Joan Lombardi, Jody Heymann, Florencia López Bóo, Jere R. Behrman, Chunling Lu, et al. 2016. "Investing in the Foundation of Sustainable Development: Pathways to Scale Up for Early Childhood Development." *Lancet* 389 (10064): 103–18.

Rogers, Todd, and Avi Feller. 2016. "Intervening through Influential Third Parties: Reducing Student Absences at Scale via Parents." Working paper, Harvard University, Cambridge, MA.

Rosero, José, and Hessel Oosterbeek. 2011. "Trade-Offs between Different Early Childhood Interventions: Evidence from Ecuador." Tinbergen Institute Discussion Paper TI 2011–102/3, Faculty of Economics and

Business, University of Amsterdam; Tinbergen Institute, Amsterdam.

Roseth, Viviana V., Alexandria Valerio, and Marcela Gutiérrez. 2016. *Education, Skills, and Labor Market Outcomes: Results from Large-Scale Adult Skills Surveys in Urban Areas in 12 Countries*. STEP Skills Measurement Series. Washington, DC: World Bank.

Rutschow, Elizabeth Zachry, and Shane Crary-Ross. 2014. "Beyond the GED: Promising Models for Moving High School Dropouts to College." MDRC, New York.

Save the Children. 2017. "Windows into Early Learning and Development: Cross Country IDELA Findings Fueling Progress on ECD Access, Quality, and Equity." Save the Children International, London.

Scott-Clayton, Judith, and Olga Rodriguez. 2014. "Development, Discouragement, or Diversion? New Evidence on the Effects of College Remediation Policy." *Education Finance and Policy* 10 (1): 4–45.

Scrivener, Susan, Dan Bloom, Allen LeBlanc, Christina Paxson, Cecilia Elena Rouse, and Colleen Sommo. 2008. "A Good Start: Two-Year Effects of a Freshmen Learning Community Program at Kingsborough Community College." With Jenny Au, Jedediah J. Teres, and Susan Yeh. Opening Doors Project, MDRC, New York, March.

Scrivener, Susan, Colleen Sommo, and Herbert Collado. 2009. "Getting Back on Track: Effects of a Community College Program for Probationary Students." Opening Doors Project, MDRC, New York.

Serneels, Pieter, and Stefan Dercon. 2014. "Aspirations, Poverty, and Education: Evidence from India." Young Lives Working Paper 125, Young Lives, Oxford Department of International Development, University of Oxford, Oxford, U.K.

Shonkoff, Jack, Pat Levitt, W. T. Boyce, Judy Cameron, Greg Duncan, N. A. Fox, Megan Gunnar, et al. 2010. "Persistent Fear and Anxiety Can Affect Young Children's Learning and Development." Working Paper 9, Center on the Developing Child, Harvard University, Cambridge, MA.

Skoufias, Emmanuel. 2016. "Synergies in Child Nutrition: Interactions of Food Security, Health and Environment, and Child Care." Policy Research Working Paper 7794, World Bank, Washington, DC.

Thompson, Ross A., and Charles A. Nelson. 2001. "Developmental Science and the Media: Early Brain Development." *American Psychologist* 56 (1): 5–15.

Tukundane, Cuthbert, Alexander Minnaert, Jacques Zeelen, and Peter Kanyandago. 2015. "A Review of Enabling Factors in Support Intervention Programmes for Early School Leavers: What Are the Implications for Sub-Saharan Africa?" *Children and Youth Services Review* 52: 54–62.

Tukundane, Cuthbert, Jacques Zeelen, Alexander Minnaert, and Peter Kanyandago. 2014. "'I Felt Very Bad, I Had Self-Rejection': Narratives of Exclusion and Marginalisation among Early School Leavers in Uganda." *Journal of Youth Studies* 17 (4): 475–91.

Tyler, John H., and Magnus Lofstrom. 2009. "Finishing High School: Alternative Pathways and Dropout Recovery." *Future of Children* 19 (1): 77–103.

UIS (UNESCO Institute of Statistics). 2017. Education indicators. http://data.uis.unesco.org.

UNESCO (United Nations Educational, Scientific, and Cultural Organization). 2010. "Achieving EFA through Equivalency Programmes in Asia-Pacific: A Regional Overview with Highlights from India, Indonesia, Thailand, and the Philippines." Asia and Pacific Regional Bureau for Education, UNESCO, Bangkok.

———. 2015. "How Long Will It Take to Achieve Universal Primary and Secondary Education?" Technical background note for the Framework for Action on the post-2015 education agenda. http://en.unesco.org/gem-report/how-long-will-it-take-achieve-universal-primary-and-secondary-education.

UNICEF (United Nations Children's Fund), WHO (World Health Organization), and World Bank. 2016. "Levels and Trends in Child Malnutrition: UNICEF/WHO/World Bank Group Joint Child Malnutrition Estimates, Key Findings of the 2016 Edition." UNICEF, New York; WHO, Geneva; World Bank, Washington, DC. http://www.who.int/nutgrowthdb/estimates2015/en/.

Valerio, Alexandria, María Laura Sánchez Puerta, Namrata Raman Tognatta, and Sebastián Monroy-Taborda. 2016. "Are There Skills Payoffs in Low- and Middle-Income Countries? Empirical Evidence Using STEP Data." Policy Research Working Paper 7879, World Bank, Washington, DC.

Visher, Mary G., Kristin F. Butcher, and Oscar S. Cerna. 2010. "Guiding Developmental Math Students to Campus Services: An Impact Evaluation of the Beacon Program at South Texas College." With Dan Cullinan and Emily Schneider. Report, MDRC, New York.

Visher, Mary G., Emily Schneider, Heather Wathington, and Herbert Collado. 2010. "Scaling Up Learning Communities: The Experience of Six Community Colleges." Report, National Center for Postsecondary Research, Teachers College, Columbia University, New York.

Walker, Susan P., Theodore D. Wachs, Julie Meeks Gardner, Betsy Lozoff, Gail A. Wasserman, Ernesto Pollitt, Julie A. Carter, et al. 2007. "Child Development: Risk Factors for Adverse Outcomes in Developing Countries." *Lancet* 369 (9556): 145–57.

Whitebread, David, Martina Kuvalja, and Aileen O'Connor. 2015. "Quality in Early Childhood Education: An International Review and Guide for Policy Makers." With contributions from Qatar Academy. WISE 20, World Innovation Summit for Education, Qatar Foundation, Doha.

WIDE (World Inequality Database on Education). 2017. Completion indicators. http://www.education-inequalities.org.

Wilson, Sandra Jo, and Emily E. Tanner-Smith. 2013. "Dropout Prevention and Intervention Programs for Improving School Completion among School-Aged Children and Youth: A Systematic Review." *Journal of the Society for Social Work and Research* 4 (4): 357–72.

Windisch, Hendrickje Catriona. 2015. "Adults with Low Literacy and Numeracy Skills: A Literature Review on Policy Intervention." OECD Education Working Paper 123, Organisation for Economic Co-operation and Development, Paris.

World Bank. 2015. *World Development Report 2015: Mind, Society, and Behavior*. Washington, DC: World Bank.

———. 2017. World Development Indicators (database). World Bank, Washington, DC. http://data.worldbank.org/data-catalog/world-development-indicators.

World Policy Analysis Center. Various years. Is Education Tuition-Free? (database). World Policy Analysis Center, Fielding School of Public Health, University of California, Los Angeles. http://www.worldpolicycenter.org/policies/is-education-tuition-free/is-beginning-secondary-education-tuition-free.

Zachry, Elizabeth M. 2008. "Promising Instructional Reforms in Developmental Education: A Case Study of Three Achieving the Dream Colleges." With Emily Schneider. MDRC, New York.

Zachry, Elizabeth M., and Emily Schneider. 2010. "Building Foundations for Student Readiness: A Review of Rigorous Research and Promising Trends in Developmental Education." NCPR working paper, National Center for Postsecondary Research, Teachers College, Columbia University, New York.

Zachry Rutschow, Elizabeth M., and Emily Schneider. 2011. "Unlocking the Gate: What We Know About Improving Developmental Education." MDRC, New York, June.

Zhao, Chun-Mei, and George D. Kuh. 2004. "Adding Value: Learning Communities and Student Engagement." *Research in Higher Education* 45 (2): 115–38.

Zuilkowski, Stephanie Simmons, Matthew C. H. Jukes, and Margaret M. Dubeck. 2016. "'I Failed, No Matter How Hard I Tried': A Mixed-Methods Study of the Role of Achievement in Primary School Dropout in Rural Kenya." *International Journal of Educational Development* 50: 100–07.