

IDEAS TO IMPROVE EDUCATIONAL OUTCOMES DURING AND AFTER THE COVID-19 OUTBREAK

At the peak of the Covid-19 pandemic, an unprecedented [1.6 billion](#) children and youth were out of school (UNSDG 2020), affecting approximately [85 percent](#) of the world's student population (World Bank 2020). In September 2022, most schools have finally reopened following a multi-year period with a [combination](#) of in person, remote, and hybrid schooling around the world (Johns Hopkins University, World Bank, and UNICEF 2022). Yet even before the pandemic, [258 million](#) children and youth of primary- and secondary-school age were out of school, and low levels of school quality meant that even students attending school regularly were struggling to achieve basic literacy and numeracy (Vegas and Winthrop 2020). In Kenya, Tanzania, and Uganda, for example, [three-quarters of grade 3 students](#) could not read a basic sentence in 2014. In rural India, [half of students](#) in grade 3 could not solve a two-digit subtraction problem in 2018 (J-PAL 2020b). At the secondary level, in 2015, [an evaluation](#) in Delhi found that students' learning levels spanned five to six grades within each class year from grade 6 to grade 9 (Muralidharan, Singh, and Ganimian 2019). Based on current projections, the share of children below minimum proficiency levels is expected to [increase by 25 percent](#) due to the Covid-19 pandemic (Azevedo et al. 2020).

Learning losses, resulting from school closures, are compounded by [inequities](#), particularly for students who were already left behind by education systems prior to the pandemic (Carvalho and Hares 2020). In response, many countries have pursued online learning during school closures as a stop gap measure. However, fewer [than half of households](#) in low- and middle-income countries have internet access (UNESCO 2019). With differential access to remote learning and home conditions further widening learning gaps among students, children and youth from disadvantaged backgrounds are at high risk of being left further behind. In a [recent review of 40 empirical studies](#) estimating student learning loss, Moscoviz and Evans (2022) find that learning loss was consistently higher among students with lower socioeconomic status in low- middle- and high-income countries, including in contexts with little or no average learning loss.

Meanwhile, as schools reopen, girls and other vulnerable groups are at high risk of not returning to school. School systems must therefore both encourage school re-entry for as many students as possible and ensure equitable learning for all. [Previous research](#) shows that a central barrier to learning is that children and youth enter classrooms at very different levels, many unable to keep up with the curriculum (Muralidharan, Singh, and Ganimian 2019). As the Covid crisis is expected to widen the gap between students with access to learning resources out of school and those without, teachers are likely to return to classes with an even wider range of students' abilities in their classrooms, making their jobs even more difficult, and risking even more students being left behind.

In response, education stakeholders are looking for ways to keep children and youth learning during physical school closures as well as ensuring that as schools resume, students return to school and catch up on lost learning time. In this review, we principally share information from studies conducted by J-

PAL affiliated researchers. We complement those studies with some related evidence and organize the brief into the following sections:

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It is important to note **that many of the interventions cited in this brief were not implemented during a pandemic or disaster.** The Covid-19 conditions have intensified some of the existing barriers to education and simultaneously created new barriers that did not exist pre-pandemic. The conditions facing policymakers, practitioners, and households are unlike the contexts in which many of the interventions summarized were evaluated. Nonetheless, some of the general lessons learned during pre-pandemic times may be relevant for addressing learning during and after the pandemic.

In addition, it is certainly possible that in some cases, health and safety concerns and policies aiming to reduce the transmission of the coronavirus may constrain the kinds of programs that can practically be implemented as outbreaks occur or new variants emerge. Interventions and policies designed to keep children and youth learning during school closures and after school resumption will need to take these factors into consideration.

IDEAS FOR INTERVENTIONS WHILE SCHOOLING IS DISRUPTED

In this section, we summarize lessons from studies on educational interventions that could be conducted remotely. All of these interventions cited are dependent on technology, and many of the studies were conducted in high-income country contexts which have broader access to technology and higher levels of adult literacy. More research needs to be done to unearth how learning can be delivered remotely, equitably, and effectively in low- and middle-income countries. Lessons from the studies cited below may be helpful in providing ideas for new innovations or adaptations that could be tried and tested in different contexts. In establishing if or how lessons from this review could be helpful in different contexts, it may be important to take note of the following:

- **The programs that leverage technology (mobile phones and television) for learning were not designed as substitutes for schooling.** Many education stakeholders have had to act quickly to design emergency remote learning programs as a replacement schooling option. The studies outlined below focused on complementing learning by encouraging parental engagement or using different mediums to impart different kinds of knowledge, not by replacing schooling.
- **Remote learning packages which rely on access to technological platforms and parental engagement may increase educational inequality.** Policymakers and practitioners will need to consider which technologies are most broadly accessible to try and create more inclusive learning opportunities, but these interventions still risk excluding the poorest. More research is required to understand how to equitably and effectively deliver education remotely.
- **Emergency remote learning packages of support will need to be developed and implemented quickly.** As such, interventions which ordinarily have longer lead times will require adaptation. Decision makers will need to think creatively about existing systems and resources and how they can be effectively re-structured to achieve learning goals. For example, policymakers may need to consider whether there are information systems that can be used to gather phone numbers to reach students and their families with learning content or whether there is existing educational content for television or radio that can be reused in a Covid-19 context.

ENCOURAGING PARENTAL ENGAGEMENT

Student learning often increases with parental involvement. Increased parental involvement may come in the form of parents sitting down to work on academic assignments at home with their children, but may also simply involve parents including short literacy activities into their everyday home lives, or even just remembering to ask their children if they've completed their homework that day. However, parents may not know how to fully engage at home; additionally, asking parents to engage in new activities may lead them to do less of other activities. Below are examples of programs that have bridged this gap by sending parents encouragement, activity suggestions, or other tips, often using SMS text messages as the mode of communication. It's important to note that most of these studies were conducted in the US, so their applicability for new contexts should be carefully considered.

- **Texting parents to encourage learning during the summer in the United States:** A program in the United States sent two SMS messages to parents per week for two months. The texts emphasized the importance of reading and provided resources and ideas for reading activities. The program increased learning outcomes for third- and fourth-graders, although not for first- and second-graders, for whom the literacy tips may have been too advanced (Kraft and Monti-Nussbaum 2017).
- **Texting parents during the school year in the United States:** A program in the United States sent three texts to parents per week for eight months with activities that could be built into existing family routines as well as encouragement and information about the importance of literacy. The program increased parental engagement at home and improved literacy outcomes for children (York, Loeb, and Doss 2018).
- **Phone-based remote learning during Covid-19 in Botswana:** In partnership with Young 1ove and the Botswana Ministry of Basic Education, and using phone numbers collected from primary schools for students in grades 3 through 5, researchers identified 4,500 households who were willing to receive remote learning support via mobile phone. Students in households that received weekly SMS messages and phone calls to review math exercises increased their math skills after twelve weeks, while students who received only SMS messages did not (Angrist, Bergman, and Matsheng 2022).
- **Community video screening and gamified smartphone literacy applications in Nigeria:** A program in Nigeria provided community video screenings aimed to reshape parental aspirations for children aged 6 to 9 years old. A select number of households also received a smartphone pre-loaded with gamified literacy applications. Receiving just community video screenings increased student enrollment but had no effect on learning outcomes. However, community screenings paired with the smartphone applications improved literacy and numeracy skills for the 6 to 9 year old children, as well as for older children who were not directly targeted by the intervention (Orozco and Rascon 2022).

The means of communication, frequency, and content of the messages to parents may vary. For example, studies in the USA used SMS messages, emails, and phone calls to engage parents either [several times a month](#) (Bergman 2015) or [weekly](#) (Kraft and Rogers 2015). [Additional research](#) suggests that three texts a week may be the ideal amount of communication, rather than one or five (Cortes et al. 2021). [Personalizing texts](#) by sending activities tailored to a child's skill level (measured by previous exams) increased parental engagement and led to even more literacy gains (Doss et al. 2017). Furthermore, [related research](#) suggests receiving messages in a less predictable fashion (i.e those that arrive on a random day of the week rather than on the same day of every week) may increase the impact of SMS campaigns (Gallego, Malamud, and Pop-Eleches 2020).

Many programs around the world send other types of information to parents about their child's academic progress (e.g., grades, behavior, etc.). Although the specific type of information these programs shared might not be relevant in the context of Covid-19, their channels of communication to parents serve as examples of ways educators can effectively convey information to parents during this time. These programs are typically very low cost.

- **Chile:** weekly texts to parents of children in grades 4-8 (Berlinski et al. 2017).

- **United States examples 1 and 2:** texts, emails, and phone calls to parents (example 1: several times a month to parents of children in grades 6-11; example 2: weekly to parents of children in upper secondary school) (Bergman 2015; Kraft and Rogers 2015).
- **United States examples 1 and 2:** texts to parents (example 1: weekly to parents of children in grades 6-12; example 2: bi-weekly to parents of children in grades 6-12) (Bergman and Chan 2019; Bergman, Edmond-Verley, and Notario-Risk 2018).
- **Other programs in Colombia, Mozambique, and Pakistan** used take-home weekly or yearly report cards to provide parents with similar information (Barrera-Osorio et al. 2018; de Walque and Valente 2018; Andrabi, Das, Khwaja 2017).

Several implementation features may present challenges for a phone-based program. First, policymakers and practitioners will need caregivers' contact information and consent. Second, these interventions rely on someone in the household being literate. For contexts with low adult literacy rates, automated calls could be used to boost understanding of the message. However, this does not help if parents are still required to assist children with educational activities they do not understand. Additionally, in some areas, cell phone, internet, or electricity coverage can prevent parents from receiving phone messages. In these cases, schools should determine the most reliable method of communication. Finally, working parents may not have the time to help children with educational activities or may not have resources (such as books) to do so. More research could help shed light on how best to support parents facing barriers to engage with their children on education.

REMOTE AND DISTANCE LEARNING

Large-scale efforts to utilize technology in support of online learning, distance education, and remote learning during the Covid-19 pandemic are quickly emerging and developing. Yet despite growing interest in the potential for technology-enabled instruction to ensure remote student learning, the evidence on the impact of greater use of technology for learning is both limited and mixed.

[J-PAL's Education Technology Evidence Review \(2019d\)](#) summarizes key takeaways from 126 rigorous studies of technology-based education interventions, focusing on literature from high-income countries with supporting evidence from low- and middle-income countries where relevant, prior to the Covid-19 pandemic. It is important to note that policymakers reading this brief may face a very different context to the programs discussed here, so adaptations may be needed. Key lessons from the Evidence Review include:

- **Online and blended instruction:** Combining online and in-person instruction can work as well as traditional in-person only classes, which suggests blended learning may be a cost-effective approach for delivering instruction. Students in online-only courses, however, tend to perform worse than students in in-person-only courses.
- **Computer-assisted learning:** Educational software (or “computer-assisted learning”) programs designed to help students develop particular skills have shown enormous promise in improving learning outcomes, particularly in math.

A few interventions that leveraged these lessons to provide technology-aided instruction during the Covid-19 pandemic include:

- [Online tutoring during Covid-19 school closures In Italy](#): During the Covid-19 pandemic in Italy, researchers designed a free online tutoring program delivered by volunteer university students for students grade 6 to 8 identified by school principals as those with the greatest potential to fall behind during distanced learning. Receiving three-to-six hours of tutoring per week improved students' academic performance, socio-emotional skills, and psychological well-being (Carlana and La Ferrara 2021).
- (ongoing) [Helping students learn at home in India](#): In Haryana, India, the state-wide Covid-19 response strategy leveraged a remote-learning solution to teach students while government-run schools remain closed. Researchers are studying whether helping teachers and students in Grades 9 to 10 engage with the technology-enabled learning materials and/or having prior experience with educational technology before the pandemic improves learning outcomes (de Barros 2022).
- (ongoing) [“Hybrid” digital learning in rural India](#): Researchers are studying whether programs with high-quality digital content made available on easily accessible devices, supported by appropriate social support structures, and implemented directly in communities can improve learning outcomes and related skills for children in grades 5-8 (Banerjee, Duflo, and Pawlik 2022).

LEVERAGING EXISTING EDUCATIONAL MEDIA PROGRAMING

“Edutainment” is a type of program in which educational content is shared via mass media communication (such as radio or T.V.). The content encourages fun, accessible learning. Creating this type of content may require significant up-front investment of time and resources and may not be feasible during a rapid response. Creating new materials may also encourage in-person interactions that are inadvisable during the Covid-19 pandemic. However, if existing material is available, it may increase learning, and encouraging students to take advantage of such resources may increase their reach.

Below are examples of successful edutainment programs from across Africa. Some were disseminated through in-person channels that may or may not have been feasible at the pandemic's peak (for instance, the example from Nigeria was disseminated through community events, and the example from Uganda through film festivals). Alternative remote channels which allow people to keep a safe distance from each other may have been necessary, such as radio, T.V., or social media that families could access from their homes. This would also require certain infrastructure to be in place and would depend on the reach of that infrastructure in the context (such as households having access to radio or T.V., reliable electricity, etc.). Many countries are already using radio or other forms of mass communication to disseminate educational material during school disruptions.

- [Sexual education edutainment in Nigeria](#): MTV Shuga is a drama featuring educational storylines about HIV/AIDS. This study involved community screenings in 80 urban and semi-urban communities in seven towns in southwest Nigeria for 18- to 25-year-olds. Exposure to MTV Shuga improved viewers' knowledge and attitudes, increased HIV testing, reduced risky sex, and among women, led to fewer sexually transmitted infections. Exposure to MTV Shuga

also reduced the likelihood that male viewers justified violence (Banerjee, La Ferrara, and Orozco 2019a, 2019b).

- **Edutainment to change norms and behaviors in post-genocide Rwanda:** A radio soap opera in Rwanda used archetypal rural Rwandan characters to act out familiar scenes depicting tensions involving power-hungry authority figures. While the radio program had little effect on changing individual beliefs and attitudes, it did have a strong impact on listeners' willingness to express dissent and the ways they resolved problems. Radio listeners became more likely to express dissent with peers and less likely to defer to local officials when solving local problems (Paluck and Green 2009).
- **Edutainment to reduce gender-based violence in Uganda:** In Uganda, videos encouraged communities to counter violence against women (VAW). Ranging from 4-8 minutes each, the videos depicted deadly violence by a husband toward his wife and appealed to viewers to speak out about VAW. The anti-VAW vignettes significantly reduced the likelihood of VAW occurring in villages where the vignettes were shown. Results suggest that this reduction may have occurred because the videos reduced the perception that those who speak out about VAW will face social sanctions and thereby increased individuals' willingness to report incidents of VAW (Green, Wilke, and Cooper 2020).
- **Edutainment via social media to change gender norms in India:** In India, researchers shared two short edutainment campaigns, each under 25 minutes long, delivered through Facebook Messenger and designed to reshape gender norms and reduce the social acceptability of violence against women. One campaign shared the messaging through a humorous fake reality TV drama and the other presented a docu-series with clear calls to action. People exposed to the docu-series were more likely to share video-clips with friends and add a frame against violence against women in their Facebook profile picture, a public disapproval of the practice (Donati, Orozco, and Rao 2022).

The examples above highlight edutainment programs that were effective at delivering a specific message, typically related to health and/or changing cultural norms. It is important to note that these lessons may not translate directly to broader educational outcomes. Using media to share a specific message is different from teaching, which needs to be tailored to age groups and/or learning levels. Descriptive evidence suggests that people listened to educational programming delivered through the radio, T.V., etc., during the Covid-19 pandemic; however, we do not know if the programming was effective at improving educational outcomes. More evidence is needed to understand the role edutainment programs can play in improving learning outcomes.

IDEAS FOR INTERVENTIONS TO INCREASE ENROLLMENT AND ATTENDANCE

In this section we share findings from interventions targeting school participation.

ENCOURAGING SCHOOL PARTICIPATION AS SCHOOLS RESUME

Even as schools reopen, [researchers speculate](#) that many students may not return to school due to the extended time they have already been away or the higher economic burdens their families now face. This may affect [the participation of genders differently](#). For example, [early evidence has shown](#) that as schools re-opened in Kenya and Uganda after Covid-19 closures, fewer adolescent girls returned to school than adolescent boys (Kwauk, Schmidt, and Ganju 2021). Other risk factors may also affect girls' enrollment, such as pregnancy. Additionally, in some parts of the world, boys may be less likely to return to school if their families need income and they [face pressure to work](#) (UNESCO and Global Education Monitoring Report Team 2018). As such, when designing programs, it's important to consider the gendered impact of Covid-19 and the different barriers girls and boys may need to overcome to return to school.

Enrollment and attendance can be increased by reducing the cost of education and addressing perception gaps about the benefits of education, including making the benefits more salient. J-PAL has produced several policy briefs summarizing lessons on how to [encourage school participation](#) (J-PAL 2017) and how the effects of these programs [differ by gender](#) (J-PAL 2019a), as well as how to [reduce teenage pregnancies](#) (J-PAL 2018b). Evidence suggests that general lessons that improve enrollment and attendance overall may help the most disadvantaged gender, usually girls, most.

However, the costs and benefits associated with schooling may be different during the Covid-19 pandemic. For example, children may have taken on income-generating work due to economic shocks, and caregivers may be fearful of sending their children back to school because of health concerns. Policymakers and practitioners will need to carefully consider these changes when considering how to boost enrollment.

Reducing the financial costs of schooling can increase participation. Lessons from cost-reduction interventions include:

- [Eliminating school fees](#) where they exist can improve school participation. In Ghana, a program provided scholarships for secondary school students that covered tuition and fees for four years at a local public school. Seventy-five percent of scholarship winners enrolled in secondary school immediately upon receiving the scholarship, almost four times the enrollment rate of those without scholarships. Additionally, women who won scholarships married later and delayed childbirth, particularly unwanted pregnancies (Duflo, Dupas, and Kremer 2021). [Ongoing research in Tanzania](#) is exploring whether providing low-income, out-of-school youth with scholarships to attend alternative education centers that prepare individuals to pass the Tanzanian secondary school exit exam impacts education and labor market outcomes (Sheth and Khakshi 2022).

- **Small financial incentives** such as free meals or small scholarships, or removing small costs such as free uniforms, can also have a large impact on participation. For example, [providing free breakfast to students in Kenya](#) increased participation by 8.5 percentage points (31 percent) among children who received the program compared to those that did not (Vermeersch and Kremer 2005). Similarly, [providing free uniforms to 6th grade students in Kenya](#) reduced students' dropout rate by 16.5 percent (Duflo, Dupas, and Kremer 2015).
- **Conditional cash transfers (CCTs)** also [consistently increase school enrollment and attendance](#) (J-PAL 2019b). The size and timing of a CCT can affect the degree to which it encourages enrollment. Small changes in the [timing of a CCT](#), such as providing the CCT when enrollment fees are due, can affect the ability of families to save and pay for school and can therefore affect school enrollment decisions (Barrera-Osorio et al. 2011). However, CCTs can be time-consuming and costly to set up, especially if there is no existing infrastructure in place. Where mobile money technology is available, it could provide a way to deliver [cheaper](#) per-transfer costs than cash (Aker et al. 2016).

Reducing the effort cost of attending school can also increase participation.

- **Reducing travel costs** by decreasing the distance to school can also increase school enrollment. Some programs have created new schools using existing infrastructure in local communities where few schools exist. While this will be less relevant during the Covid-19 pandemic, other options to reduce distance or travel time such as [providing adolescent girls with bicycles](#) to ride to school may be more feasible (Muralidharan and Prakash 2017).

Where misperceptions about the benefits of education exist, [programs that address perception gaps](#) can encourage school participation (J-PAL 2018a).

- **[Correcting underestimations about the returns to education](#)**: Providing information on the actual returns to education in the Dominican Republic led 8th grade boys to complete 0.2 additional years of schooling (Jensen 2010).
- **[Providing information on job opportunities for educated candidates](#)**: In villages that received recruiting services detailing job opportunities and related qualifications for young women in rural India, girls aged 6 to 17 were more likely to be enrolled in school (Jensen 2012).
- **[Correcting parental misbeliefs about the value of regular attendance and their child's absences](#)**: Relatedly, mailing parents information that emphasized the importance of regular school attendance in early grades and reporting how many days their child had missed school reduced further absences relative to students whose parents did not receive the information (Robinson et al. 2018).

Decision makers considering these interventions should carefully consider the potential effects of the Covid-19 pandemic on returns to education and job opportunities.

Of the studies included in J-PAL's review, [Roll Call: Getting Children into School](#) (2017) which include [gender-disaggregated results](#) (J-PAL 2019a), **analysis suggests that most programs that improved school participation overall were as effective—if not more effective—for girls as they were for boys.**

Overall, the analysis found that programs aimed at increasing participation in general tend to help the disadvantaged gender most (the gender with the lowest initial attendance rate; [Evans and Yuan \(2022\)](#) find relatedly that girls often benefit dramatically from general access interventions. This is likely because the most marginalized students, who start off attending school less frequently, are more sensitive to the costs and perceived benefits of education and therefore may benefit more from participation interventions focused on those issues.

J-PAL's review, [Enhancing Women's Agency: Cross-Cutting Lessons From Experimental and Quasi-Experimental Studies in Low- and Middle-Income Countries](#) (2020a) **found that adolescent groups serve as a platform to deliver hard and soft skills training programs for girls, leading to improvements in economic impacts or school enrollment increases.**

It is important to note that there may be barriers to schooling and labor market access that are unique to adolescent girls in particular, such as teenage pregnancy and child marriage. While some of the studies summarized in the review did have positive effects on delaying teenage pregnancy and marriage, policymakers may choose to tackle these issues directly, especially as the Covid-19 pandemic may intensify existing risk factors for girls. A [randomized evaluation](#) looking at women's agency during the Ebola outbreak in Sierra Leone found that adolescent girls in crisis affected villages, who were not able to go to school, spent more time with men and were 7.2 percentage points more likely to become pregnant and not re-enroll in school after the epidemic (Bandiera et al. 2018).

Adolescent group programs aim to empower adolescent girls by offering them hard, soft, and life skills training. Hard skills enable girls to start income-generating activities, while soft and life skills range from negotiation skills and resilience building to reproductive and sexual health training. Their effectiveness may vary depending on the reasons why girls are dropping out of school, becoming pregnant, or not entering the labor market. Some examples include:

- [In Sierra Leone](#), researchers evaluated the impact of a program to address challenges faced by adolescent girls by bundling health education, vocational skills training, and micro-credit. Girls in villages that received the program spent more time away from men during the Ebola outbreak, thereby reducing out-of-wedlock pregnancies by 7 percentage points and enabling them to re-enroll in school post-crisis. A long-term follow-up in 2019-20 showed that impacts persisted, and girls from program villages were more likely to select partners who were more educated and more averse to gender-based violence (Bandiera et al. 2020).
- [In Zambia](#), researchers designed and evaluated the impact of a training program that taught adolescent girls skills to negotiate health and educational decisions with authority figures in their lives. They found that girls who were taught negotiation skills had better attendance and exam scores in the following three years. The negotiation training appeared to have larger effects on girls with higher abilities, suggesting that girls with higher potential returns to education, who were on the margin of continuing schooling in a context with high dropout rates, were best able to change their parents' investments in their education through negotiation (Ashraf et al. 2020).
- [In Bangladesh](#), researchers evaluated the impacts of a conditional incentive program and an adolescent empowerment program. They found that offering incentives (in this case, cooking oil)

conditional on delayed marriage was an effective way to increase student enrollment. The empowerment program also increased student enrollment (Buchmann et al. 2021).

- (ongoing) **In Mozambique**, researchers are studying whether providing information about gender-based violence (GBV) to girls and/or boys alongside a strengthening of in-school responses to GBV, can change social norms around tolerance and bystander behaviors (Amaral et al. 2022).

IDEAS FOR INTERVENTIONS TO ACCELERATE LEARNING AS SCHOOLING RESUMES

Getting children back into the classroom and subsequently keeping schools open is a top priority of many school systems, and there exist numerous effective Covid-19 mitigation factors that can help keep schools open. For example, while many schools have focused on washing surfaces as a mitigating factor, research suggests that [utilizing face masks](#) (Abaluck et al. 2022), [improving ventilation](#) (Sopeyin et al. 2020), and [vaccinating against Covid-19](#) (IVAC 2022) are top factors that reduce the spread of the disease. For more information on lessons from rigorous evidence on how to improve adherence to Covid-19 protocols, please see [this brief](#) by J-PAL's Health Sector (J-PAL 2021). In the section below, we outline strategies to accelerate learning as schooling resumes.

TAILORING INSTRUCTION TO STUDENT LEARNING LEVELS

When children return to school, many learning gaps will need to be filled. One approach that could help children catch up on skills is **tailoring instruction to the learning level of the student**.

The growing body of evidence on student learning indicates that dedicating a portion of teaching time to [tailoring instruction to students' learning levels](#) is an effective and cost-effective approach to closing student achievement gaps and improving overall learning outcomes. Tailored instruction can be delivered effectively through multiple channels: during or after school and by tutors, volunteers, government teachers, or through education technology (J-PAL 2019c).

- **Teaching at the Right Level (TaRL)** is an evidence-based intervention proven to quickly equip children in grades 3-5 with basic reading and arithmetic skills. At the classroom level, TaRL consists of three simple steps: (i) assess children one-on-one through a simple oral reading and mathematics test; (ii) group children by learning level rather than by age or grade; and (iii) focus on foundational reading and mathematics for a period of the day or year using a combination of activities proven to promote the acceleration of learning outcomes. For two decades, J-PAL and Pratham have collaborated to develop a cost-effective, scalable TaRL approach through experimentation and learning in India. Governments or NGOs in twelve African countries are currently implementing TaRL approaches (TaRL 2022).
- **Technology-Aided Instruction in India:** In India, secondary students received vouchers to attend a personalized, technology-aided after school instruction program, Mindspark. Students

received 45 minutes of computer-assisted learning focused on math, Hindi, and English as well as 45 minutes of instructor-led small group instruction. Receiving vouchers to attend Mindspark centers increased learning levels across all groups of students and was cost-effective compared to other instruction types. Results showed that the 4.5-month intervention improved students' math and Hindi test scores by 0.37 and 0.23 standard deviations respectively, thereby demonstrating some of the largest impacts on middle-school learning seen in education research (Muralidharan, Singh, and Ganimian 2019).

- **Targeted Teaching in Secondary Schools in India:** In Odisha, India, researchers evaluated an intensive remedial program that aims to help prepare students in class 9 to pass their 10th grade board exams by using targeted instruction and leveraging existing personnel and structure in the education sector. Results are forthcoming (Beg et al. 2022).
- **Remedial education, tracking, and smaller class sizes in Ghana:** Researchers partnered with the government of Ghana to evaluate four different interventions aimed at improving achievement in schools: assistant-led remedial lessons that pulled students out of the typical class for part of the day, assistant-led after school remedial lessons, assistant-led smaller class sizes teaching grade-level content, and teacher-led tracking for part of the day. All four interventions increased student learning relative to students in comparison schools (Duflo, Kiessel, and Lucas 2022).
- (ongoing) **Online Math Curriculum in Peru:** In schools from the lowest quintile of academic performance in Lima, Peru, researchers are studying the adoption, diffusion, and impacts of an online math curriculum specifically designed to provide a more equitable environment for remote learning and promote remedial education in preparation for school reopening. The interventions will support teachers with take-up and use of the program (Malamud et al. 2022).

ACCELERATING LEARNING THROUGH TUTORING

A related approach that could help accelerate learning once schools resume is leveraging tutoring—supplemental one-on-one or small group instruction. [J-PAL's Evidence Review on Tutoring \(2020c\)](#) summarizes learnings from across 96 randomized evaluations of tutoring programs for preschool through secondary students, focusing on literature from high-income countries with some examples from low- and middle-income countries where relevant. Key lessons from the Evidence Review include:

- Across all studies included in this analysis, tutoring programs consistently led to large improvements in learning outcomes for students, with an overall pooled effect size of 0.37 standard deviations. This impact translates to a student advancing from the 50th percentile to nearly the 66th percentile in academic performance.
- Tutoring programs led by teachers or paraprofessional tutors were generally more effective than programs that used nonprofessional (volunteer) or parent tutors. Paraprofessional tutors include, among others, school staff members, undergraduate students in education, and service fellows.
- The effects of tutoring programs tended to be strongest among students in earlier grades, though a smaller set of programs at the secondary level were also found to be effective at improving learning outcomes.

- While overall effects for math and reading tutoring programs were similar, reading tutoring tended to be relatively more effective for students in preschool through first grade, while math tutoring tended to be more effective for students in second through fifth grade.
- Tutoring programs conducted during school tended to have larger impacts than those conducted after school.

A few notable ongoing and completed tutoring interventions include:

- [Secondary school math tutoring in the United States](#): Saga Education is a nonprofit organization that utilizes a specific tutoring model for secondary school students who have fallen behind. The model rests on five main characteristics: daily tutoring sessions, in-school delivery, personalized instruction, supportive relationships with tutors, and a research-based curriculum. Saga employs paraprofessional tutors—typically recent college graduates, individuals changing careers, and retirees—who meet with two students at a time. Students in Saga in Chicago Public Schools learned an extra one to two years’ worth of math beyond what their peers learned in an academic year. Tutoring raised participants’ average national percentile rank on 9th and 10th grade math exams from around the 38th percentile to the 45.8th percentile. Student grade point averages (GPAs), used as a metric for overall academic achievement, increased by 0.58 out of a 4.0 grade point scale, and the students’ failure rates in math fell by more than 50 percent (Cook et al. 2014; Ander, Guryan, and Ludwig 2016).
- [Online tutoring by college volunteers in the United States](#): In a study conducted during the pandemic in 2021, the program paired volunteer college students from selective universities in the United States with middle school students in one-on-one online tutoring twice a week for 30 minutes during the school day. The program focused on supplementing student learning in math and reading and was geared mostly to students of color from low-income backgrounds. The program was lower-cost than many other tutoring programs but had no detectable impacts on learning outcomes (Kraft et al. 2022).
- The [study in Italy](#) (Carlana and La Ferrara 2021) mentioned in the section on Remote and Distance Learning on online tutoring during Covid-19 school closures is being [piloted in the Dominican Republic](#) and pre-piloted in other contexts.

LEVERAGING STRUCTURED PEDAGOGY TO IMPROVE LEARNING

A third approach that could help students learn is providing teachers with support as they return to the classroom. In areas where teachers have low pedagogical and/or content knowledge, providing them with guiding lesson plans (but not a strict script) along with training and monitoring to support implementation can increase learning.

Structured pedagogy typically refers to a package of activities implemented together. RTI International, an organization who has conducted [extensive research and synthesis on structured pedagogy models](#), includes four elements in the broad definition: (1) student materials such as textbooks, (2) lesson plans for teachers to follow in classrooms, (3) teacher training to support their skill development, and (4) ongoing support to teachers, including monitoring and coaching. Combining these aspects into a package allows each element to complement the rest (Science of Teaching 2021).

As noted in the “[Cost-Effective Approaches to Improve Global Learning](#)” (2020) report from the World Bank, FCDO, and Building Evidence in Education (BE2), structured pedagogy plans have been implemented with success [in Kenya](#) (Piper et al. 2018) and [The Gambia](#) (Eble et al. 2021), with the Kenya study specifically noting the cost-effectiveness of the program.

A few notable examples of structured pedagogy approaches include:

- **[Identifying the essential ingredients to literacy and numeracy improvement](#)**: Researchers evaluated the Kenya Primary Math and Reading Initiative which provided teacher professional development and coaching, student textbooks, and/or structured teachers’ guides. Providing all three interventions was both most effective at improving learning outcomes, and also most cost-effective given the additional impact on learning (Piper et al. 2018).
- **[Improving reading outcomes in Kenya](#)**: Literacy levels remain low in parts of Kenya, despite increasing levels of school participation. Researchers evaluated the PRIMR Initiative which aims to improve literacy learning by aligning curriculum and teacher practices with current research, providing ongoing instructional support and observation, and supplying basic instructional materials and English and Kiswahili books for students. The intervention improved oral reading fluency in grade 1 formal and nonformal schools and grade 2 nonformal schools for both English and Kiswahili (Piper, Zuilkowski, and Mugenda 2014).
- **[Remedying very low learning levels in rural parts of low-income countries](#)**: In remote areas of The Gambia, researchers evaluated a multi-pronged para-teacher intervention that combined after-school supplementary classes, scripted lesson plans, and frequent monitoring focused on improving teacher practice. After three academic years, Gambian children receiving the intervention scored 46 percentage points, or 3.2 standard deviations, better on a combined literacy and numeracy test than children in the comparison group (Eble et al. 2021). Researchers conducted a similar intervention in [Guinea Bissau](#), where they created simple schools that offered four years of education to primary-school aged children. Children who received the intervention scored 58.1 percentage points better than the comparison group on early grade reading and math tests (Fazzio et al. 2021).

If you are interested in learning more about the content in this wrap-up, please contact: JPAL_Education@povertyactionlab.org.

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