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ABDUL LATIF JAMEEL
Poverty Action Lab
TRANSLATING RESEARCH INTO ACTION
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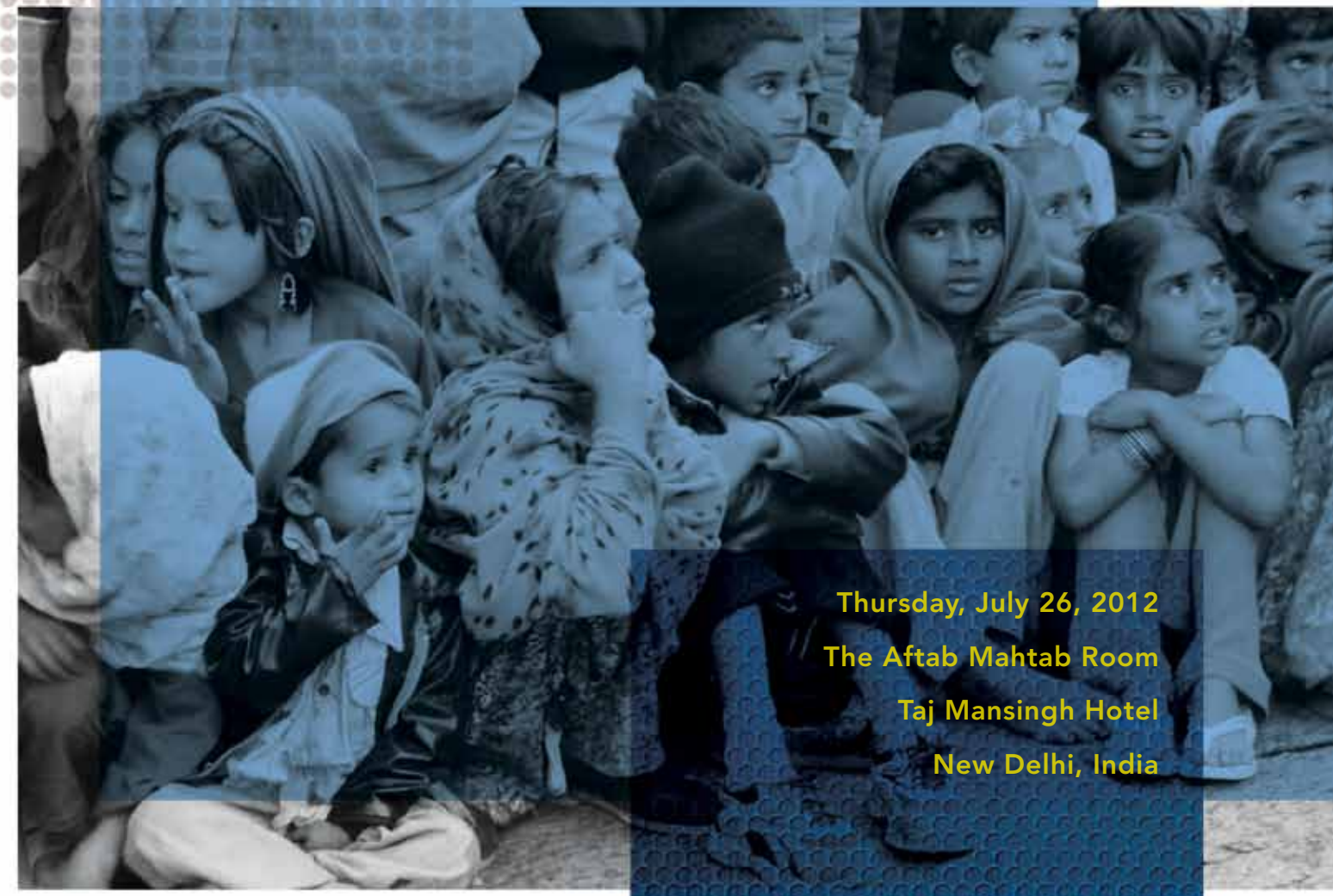
Evidence-Based Programming in
EARLY GRADE READING



Thursday, July 26, 2012
The Aftab Mahtab Room
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New Delhi, India

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the importance of early grade reading

In the past decade, primary school enrollment has increased significantly worldwide, but learning levels in many places remain low. According to the 2011 Annual Status of Education Report (ASER), nearly 97 percent of children in India ages 6–14 years are enrolled in school. However, most children showing up for class are learning very little. Sixty-five percent of Indian children in Std III cannot read a Std I level text, and what's worse, this number has increased 10 percentage points in the last three years.

Reading is the foundation for all other learning activities in the classroom. Children who do not learn to read in primary grades are less likely to perform well in higher grades, limiting their future economic and development opportunities.

In many developing countries, the reading curriculum is not well-designed. There is often an insufficient supply of reading material, and the material which is available is often inappropriate for the current learning-level of the students. Teacher preparation programmes do not explicitly train teachers how to teach children to read. Teachers are often more focused on completing the prescribed school curriculum than teaching to the actual level of most students in classroom. Further, teachers are seldom held accountable for their students' learning outcomes, and teacher absenteeism is rampant. A key to overcoming these hurdles to improve early grade reading outcomes is incorporating existing evidence on what works, and what does not, in education policy.

In March 2011, the United States Agency for International Development (USAID) announced a new agency-wide education strategy with early grade reading as a key focus area. The target, under the new strategy, is to improve reading skills for 100 million children in primary grades by 2015. Based on both Agency priority as well as India's need, USAID/India expects to contribute significantly to the overall goal.

To advance this agenda, USAID/India, in partnership with the Abdul Latif Jameel Poverty Action Lab (J-PAL) South Asia regional office, is organizing a workshop to explore how we can incorporate existing global evidence to design more effective early grade reading programmes in India. A particular focus will be given to the body of evidence produced by randomised evaluations, as randomised evaluations are generally considered to be the most rigorous, accurate and unbiased method of impact evaluation (for more information on randomised evaluations, see the "Why Randomise?" section below).

9:30 – 10:00	Registration
10:00 – 10:05	Welcome Address: Arvind Pande, *Chairperson, J-PAL South Asia*
10:05 – 10:10	Opening Remarks: William Hammink, *DCM (A), US Embassy, New Delhi*
10:10 – 10:45	Keynote Address: Abhijit Banerjee, *Professor of Economics, Massachusetts Institute of Technology (MIT);* Topic: The Importance of Evidence-Based Programming
	SESSION 1: Teaching at the Right Level
10:45 – 11:30	Review of the Evidence: Abhijit Banerjee, *Professor of Economics, MIT*
11:30 – 11:45	Tea Break
11:45 – 12:00	Implementation Example: Stephen Adu, *Director of Basic Education, Ghana Education Service*; Maame Nketsiah, *National Coordinator, Teacher Community Assistant Initiative (TCAI)*
12:00-12:45	Discussion
12:45 – 1:45	Lunch
1:45 – 1:55	Remark by Mitch Kirby, *Senior Education Advisor, Asia and Middle East Bureau, USAID Washington*
	SESSION 2: The Use of Technology in Education
1:55 – 2:40	Review of the Evidence: Aprajit Mahajan, *Assistant Professor, Stanford University*
2:40 – 2:55	Implementation Example: Sriram Raghavan, *CEO, InKlude Labs*
2:55 – 3:40	Discussion
3:40 – 3:50	Tea Break
3:50 – 4:00	Remark by Luis Crouch, *Coordinator for Global Good Practices, Global Partnership for Education*
	SESSION 3: Teacher Performance Measurement and Management
4:00 – 4:45	Review of the Evidence: Karthik Muralidharan, *Assistant Professor, University of California San Diego (UCSD)*
4:45 – 5:00	Implementation Example: Gulzar Natarajan, *Collector and District Magistrate, Hyderabad*
5:00 – 5:40	Discussion
5:40 – 6:00	Closing Remarks: Abhijit Banerjee, MIT; Madhumita Gupta, USAID

about
the organisers

USAID India The United States Agency for International Development (USAID) is the independent U.S. agency that provides economic, development, and humanitarian assistance around the world in support of U.S. foreign policy goals.

The U.S. is engaged in a strategic partnership with India consistent with India's status as a regional power, its performance as a successful free market democracy, and its commitment to improving conditions for the millions of Indian citizens who continue to live in poverty.

USAID is working with multiple public and private sector partners in India to develop, test, and deploy innovative technologies that address the global challenges of health, food security, climate change, and education.

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J-PAL The Abdul Latif Jameel Poverty Action Lab (J-PAL) was established in 2003 as a research centre within the Economics Department at the Massachusetts Institute of Technology (MIT). It has grown into a global network of researchers united by their use of randomised evaluations to answer policy questions critical to poverty alleviation. In 2007, J-PAL established a South Asia regional office at the Institute for Financial Management and Research (IFMR) in Chennai, and in 2010, opened a policy office in Delhi. J-PAL also has regional offices based at universities in Santiago, Chile; Paris, France; and Cape Town, South Africa.

J-PAL's mission is to reduce poverty by ensuring that policy is based on rigorous evidence. J-PAL works to achieve this mission by conducting randomised evaluations, building the capacity of others to conduct rigorous evaluations, and informing policy by disseminating the lessons from J-PAL research to governments, international development organisations, NGOs, and foundations.

www.povertyactionlab.org

why randomise?

It is not always obvious which policy will have the most desirable effects on educational outcomes. Should scarce funds be spent on school uniforms, treating ailments that keep students away from the classroom, textbooks, or something else? What is the best way to help students who are falling behind? Does performance-based pay for teachers improve learning, or does it promote "teaching to the test"?

To design good policy in an environment in which programmes compete for limited funding, we need to know whether and how well a programme works, and whether it provides good value for the money relative to other options. Are there alternative ways of achieving the same (or better) outcomes at a lower cost? Are some components of a programme ineffective and superfluous? Random assignment offers a simple way to answer these questions.

In randomised evaluations, individuals or schools are selected to receive a programme based on a lottery. Those who do not receive the programme form a comparison, or "control," group. Because the selection process is random, the two groups are similar in every respect, except that one group receives the programme, while the other does not.

Therefore, if after the programme is implemented, the group that received the programme has different outcomes (e.g. improved or worsened teacher attendance, higher or lower test scores), we know that this difference was caused by the programme. This clear attribution of which effects were caused by the programme gives us insights about its effectiveness.

Randomised evaluations are particularly appropriate when programmes are oversubscribed, scheduled to be rolled out in a gradual fashion, or initially tested with pilot programmes. In those cases, in which some potential participants would inevitably be denied access, randomisation is one of the fairest and most transparent ways of determining participation.

Randomised evaluations of development programmes are a relatively recent innovation, largely pioneered by J-PAL and its affiliates, and the potential for introducing an element of randomisation into the process of evaluation continues to gain recognition. When properly designed, randomised evaluations can provide insight not only into whether a programme works, but also why it works, allowing for potential scale-up of successful innovations to other areas.

session 1

teaching at the right level

Too many children are in school but not learning. Providing instruction that matches children's initial learning levels is a proven reform that is inexpensive and scalable.

Being in school is not a guarantee that students are learning. There is substantial evidence on the poor quality of learning, despite widespread improvements in school attendance. For example, even though nearly 97 percent of children in India ages 6-14 years are enrolled in school, the 2011 Annual Status of Education Report (ASER) showed that 17 percent of students in Std II cannot even read letters.

One intuitive remedy would be to spend more on educational inputs, such as textbooks and flip charts, but there is little evidence that this by itself is an effective way to improve learning. A randomised evaluation in Kenya found that providing additional textbooks was only effective for already high-achieving students. Academically weaker students were unable to even read the textbooks as they were written in English, which was most students' third language. This highlights a common problem with the education system in many developing countries: curricula oriented toward academically strong students leave the majority of students behind.

Some of the most successful interventions tested by randomised evaluations have addressed this problem by designing instruction programmes geared toward students' actual learning levels, rather than the expectations of a rigid curriculum. Pratham has pioneered several models based on this idea, including remedial education for low-performing students, after-school reading classes led by local volunteers, and summer camps that focus on basic skills. All of these interventions significantly improved test scores, particularly for weaker students at the

bottom of the distribution. A similar evaluation in Kenya found that placing students in different classes by learning level ("tracking") improved test scores across the board.

Many of the programmes that have been most successful in improving early grade reading outcomes, specifically, have involved training teachers to actually teach reading skills and changing lesson plans to devote more time each day to reading activities (i.e. focusing on teaching reading as a "skill" rather than assuming it will be acquired through content-based learning, for which strong reading skills are a prerequisite). For example, a programme in the Philippines, which provided Std IV classes with a set of 60 storybooks and trained teachers to conduct engaging activities to motivate children to read as many of the books as possible during a one-month "read-a-thon," significantly increased reading test scores.

Featured Programme: Read India

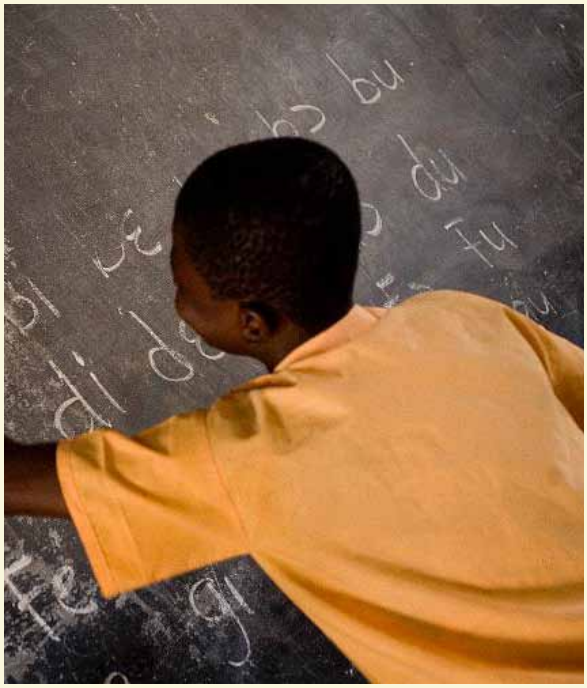
Three models of a basic education programme were compared in two districts of Bihar and Uttarakhand. In the first model, learning materials were distributed to schools without any additional support. In the second model, teachers received learning materials and two week-long training sessions. In the third model, in addition to the learning materials and teacher training, local volunteers were trained to provide extra help either during school hours or after school. In the second and third models, teachers were trained to use the Combined Activities for Maximized Learning (CAMaL) method, which combines reading, writing, and speaking activities so that these competencies develop simultaneously. It involves organizing children into groups by initial learning level, using appropriate teaching-learning activities and materials, and articulating clear learning goals.

Results: Schools that received materials and training *and had volunteers outside of school hours* saw improvements in test scores

When the CAMaL method was implemented by volunteers in the communities outside of school hours, learning levels significantly improved. However, there was no impact in the other models. These findings demonstrate the challenges of "mainstreaming" curriculum innovations through the regular school system without a substantial shift in what teachers understand to be the priorities of the system. The teachers' perceived emphasis on completing the government-prescribed syllabus crowded out their ability to embrace and utilize the new teaching methods and materials, limiting the program's impact.

The Teacher Community Assistant Initiative (TCAI)

Studies in India and Kenya have shown that improvements in early grade reading can be achieved at relatively low cost by targeting the level of instruction to pupils' abilities, during or after school hours. Based on these insights, the Ghanaian Education Service (GES), in partnership with the Ghana National Association of Teachers (GNAT) and the National Youth Employment Programme (NYEP), are piloting and evaluating the Teacher Community Assistant Initiative (TCAI). This programme trains teachers and teacher community assistants (TCAs) to teach to the learning level of their pupils through several different models.



Intervention: Five hundred schools from across Ghana were randomly selected and allocated into one of four treatment groups, or a comparison group.

1.**In-School Remedial TCAs:** provides in-school remedial classes through TCAs for two hours a day.

2.**After-School Remedial TCAs:** provides remedial classes focused on basic skills taught by TCAs after school hours.

3.**Normal Curriculum TCAs:** tests the effect of smaller class size by pulling out pupils in Std I-III at random to work with TCAs to review the teachers' lessons based on the normal curriculum.

4. **Targeted Lessons Training for Teachers:** trains civil-service teachers to develop their skills in providing small-group instruction targeted at pupils' actual learning levels.

Preliminary Results:

• TCAs had relatively high attendance at school and, when present, were more likely to be teaching.

• Having TCAs provide remedial instruction targeted to the lowest performing pupils both during school and after school had modest impacts on basic literacy skills after just a few months.

• Both training teachers to target their lessons and reducing class size by adding a TCA had minimal effects on test scores, which suggests that the impacts from the in-school and after-school remedial TCAs were driven by the combination of intensive basic-skills instruction with targeting of low-performing pupils.

RECOMMENDATIONS

Programmes focusing on teaching and learning in the classroom should integrate the following components (where applicable):

•A focus on basic skills, including a designated time each day devoted to reading activities

—Programmes can be implemented in school or after school hours

• Testing children to determine their current level and adapting lesson plans to fit this level

—Additional materials (textbooks, reading books, interactive charts, etc.) are beneficial if targeted at the right level and supplemented with adequate teacher training on how to use them effectively

•Tracking or grouping students by initial learning level, rather than age or grade level, or pulling out the lowest performing children for more focused instruction

—Classes may be divided (i.e. grouped by initial learning level) using some combination of regular (government) teachers, contract teachers, and volunteers. Volunteers can be effective, even with very little training, at least in early grades

•A strategy for integrating lesson plans focusing on basic skills into the current, standard curriculum

—If a focus on basic skills cannot be fully integrated into the regular curriculum, regular learning camps (after school, weekend, summer) can provide opportunities to focus on developing basic skills for weaker performing students

•Training teachers to integrate changes in materials or lesson plans to accommodate students' need for training in basic skills

Room for Innovation

•How can a focus on basic skills be integrated into the current government curriculum?

•What is the best delivery model for basic skills instruction? In school or after school hours? Using contract, para-teachers, or volunteers?

•How do we persuade parents to demand that the education system focuses on teaching children the skills they need to learn rather than what the curriculum dictates? How should we design information campaigns for parents? Do conditional cash transfers have a role to play?

•Should teachers have specific lesson plans? How much freedom should they be given to determine the teaching plans?

•How can learning camps best be used to supplement the regular school year? What is the ideal duration, age-group/class, subject? Do regular weekend learning camps more effectively sustain any improvements in learning than camps during summer vacation?

•How can technology be used more effectively to facilitate a focus on basic skills and learning at an individualized pace?

•Does it help to provide children with more enjoyable (but perhaps less "educational") reading materials?

session 2
the use of technology in education

Evidence on the effectiveness of technology in education is mixed. Technology has the potential to improve learning if it is interactive and targeted to the current learning level of the student.

Technology has the potential to improve the quality of teaching and learning in the classroom, particularly where teachers have little motivation and/or are poorly educated themselves. While the existing evidence suggests that technology has limited benefit in developed countries, where classrooms are relatively well functioning, evaluations of technology-based programmes in the developing world are more promising. In developing countries, where the quality of teaching is often poor and many schools rely on rote learning and memorisation, rather than development of students' critical thought processes, technology can provide a more interactive learning tool. It can also be easily tailored to children's current learning level, helping them progress at the rate at which they learn, rather than at a rate dictated by teachers or by a rigid curriculum.

Given the increasing interest in information and communication technology (ICT) and its use in education, particularly in India, it is essential to determine how best to introduce new technologies and encourage their use to optimise learning gains. Evidence suggests that simply providing computer equipment and software is not enough. Varying circumstances within schools must be taken into account, and *how* technology-based programmes are integrated into the classroom is crucial. For example, there is mixed evidence on whether it is better to use computer-assisted learning (CAL) as a replacement for or supplement to traditional classroom curricula. An evaluation of a CAL programme that was implemented in a well-established network of NGO-run schools in Western India found that one hour per day of after-school CAL instruction significantly improved test scores. However, students in a "pull-out" programme that replaced one hour of classroom time actually did worse. In contrast, another CAL programme in India, which was implemented in government-run schools with more limited resources, had a large positive effect on test scores, even when it replaced classroom time (described further in the "Featured Programme" section below). These results underscore the importance of considering the relative productivity of the existing learning environment.

The One Laptop per Child (OLPC) programme, which aims to provide a laptop to every school-age child in the developing world, has generated considerable interest in the effects of technology in the home on learning achievement. A study in Romania found that computer vouchers provided to low-income families had both positive and negative impacts. While children in households given vouchers performed better in cognitive and computer skills tests, they had lower school grades in maths, English, and Romanian. Despite efforts by the government to provide educational software, few households installed the software on their computer, and few children reported using the computer for homework or other educational purposes. Instead, most children played computer games on a daily basis. The evidence suggests that winning a computer voucher reduced the time spent doing homework, watching TV, and reading. However, parental rules regarding homework helped mitigate some of these negative effects on school performance.

Featured Programme: Computer Assisted Learning (CAL) in India

Researchers hired a team of instructors from the local community and gave them five days of computer training. These instructors then provided Std IV students in government-run schools in Vadodara with basic instruction on how to use the computer software. Once familiar with the computers, students spent two hours per week working with educational maths software that consisted of self-paced games.

Results: Students' maths scores improved after using the CAL software

Students who participated in the CAL programme experienced significant improvements in maths scores, but saw little change in language scores, suggesting that the programme did not have spillover effects on learning in other subjects.

Room for Innovation

- How can the above evidence for what works in ICT for education generally be translated into early grade reading-specific programmes?

- Are ICT programmes more effective during school hours or outside of school? If they are more effective outside of school, is it because of the technology or the extra hours of instruction (and could the same or better impacts be achieved with other extra-curricular innovations)?

- Is it more effective to train existing teachers or to implement ICT programmes externally?

- Should ICT instruction focus on students at a certain level? Do different subsets of students benefit differently from ICT?

- Computers can be expensive. How can we reduce the cost of ICT programmes so they may be implemented at scale? Are there different types of technology devices (projectors, pictalks, etc.) that may be more easily used on a large-scale basis?

RECOMMENDATIONS

Information and Communication Technology (ICT) is not the panacea for education that it is often purported to be. It can serve as a beneficial tool for improving learning outcomes, but the details of the implementation significantly affect the success of the programme. If technology is going to be integrated into any learning programme, the programme should take into account the following guidelines:

• Technology should be fully integrated into the subject matter instruction, and teachers need to be given sufficient training, both in how to use the technology and in how to teach students to use it.

• It is important to consider the relative productivity of the current learning environment. ICT programmes may be more beneficial in situations where the current quality of teaching is low. When the quality of teaching is high, replacing teaching time with computers may actually be detrimental to student learning.

• ICT can be an effective tool to help students learn at their own pace.

session 3
teacher performance measurement and management

If teachers and students are absent or unmotivated, investments in education can be wasted. However, there is evidence that teachers respond to objectively administered incentives from the government or community groups with credible authority.

Motivating better teaching in schools involves complex interactions between students, teachers, parents, and institutions, each of whom is responding to different sets of incentives. Several programmes aimed at improving service delivery have been implemented with varying degrees of success.

Incentives can be a useful tool to motivate teachers and increase attendance rates. For example, a programme in Andhra Pradesh that provided bonus payments to teachers based on the average improvement of their students' test scores in independently administered learning assessments led to significant improvements in test scores. Although the programme had no impact on teacher attendance, when present, teachers exerted more effort (described further on page 16) When incentives are tied to student learning outcomes, it is important to discourage "teaching to the test" by ensuring that tests measure the students' ability to apply knowledge rather than simply their ability to memorize. A similar incentive programme in Kenya saw a brief increase in test scores, but no changes were seen in either teacher attendance or frequency of homework assignments. Instead, teachers ran more test-preparation sessions, raising concerns that the higher test scores simply reflected increased rote learning.

Evidence suggests that incentives which are objectively administered and directly connected to some kind of conduct or outcome are the most effective. For example, when teachers in an NGO-run school in India were provided with cameras and their salaries linked to taking daily photos of themselves with their pupils (as proof of attendance), teacher absenteeism fell and test scores went up significantly. However, in settings where supervisors were given discretion over administering incentives, similar programmes became entirely ineffective. In Kenya, school principals rewarded teachers whether they showed up or not, resulting in no improvements in attendance.

Attempts to increase accountability through community monitoring have had mixed results, depending on the context and the details of the implementation. In India, simply informing communities of the low levels of learning and high teacher absenteeism in their respective communities had no impact on parents' or the school committees' engagement, or on students' test scores. In a different context, a programme in Uganda, which combined an information dissemination campaign with specific "action plans" to mobilise the community, significantly increased attendance rates among health care providers.

Teachers need to believe they will be held accountable by monitoring bodies. An intervention in Kenya (described further in the "Featured Programme" section below) gave local parent-teacher committees funds to hire extra teachers whom they had the power to replace if they performed poorly. These locally accountable teachers had significantly lower absence rates than the government teachers.

Featured Programme: Empowering parents in Kenya

One hundred forty schools in Western Kenya were randomly selected to receive funding to hire a local "contract" teacher. Parent teacher associations were given responsibility for hiring the contract teachers and were free to replace them if they performed poorly. Half of these schools were also randomly chosen to receive school-based management (SBM) training. The training was designed to empower parents to monitor both the existing government teachers' and contract teachers' performance. Parents were asked to perform attendance checks on teachers on a regular basis.

Results: Locally accountable contract teachers had significantly lower absence rates than the government teachers, but the SBM training increased accountability among government teachers

Contract teachers, who were accountable to the local parent teacher association, had significantly higher attendance rates than their government counterparts. Government teachers responded to the introduction of contract teachers by decreasing their own effort. Subsequently, students assigned to a contract teacher saw significantly greater improvements in test scores than those assigned to a government teacher. However, the SBM training helped to mitigate the negative effort response by government teachers. Government teachers in schools that received SBM training were more likely to be present and teaching, and student test scores were correspondingly higher in their classes.

Performance-Based Pay in Andhra Pradesh

Intervention: Two hundred government-run schools in rural Andhra Pradesh were randomly assigned to one of two types of teacher performance pay models (both based on students' test scores): group bonuses based on school-wide performance and individual bonuses based on the performance of the individual teacher's own students. One hundred schools were not enrolled in any incentive scheme and served as the comparison group. The average bonus was calibrated to be around 3 percent of a typical teacher's annual salary and the tests were designed to discourage "teaching to the test."

Results:

- At the end of two years, students in both types of incentive schools performed significantly better in both language and maths tests than those in comparison schools. Students did significantly better on both mechanical components of the test (designed to reflect rote learning) and conceptual components (designed to capture deeper understanding of the material), suggesting that the gains in test scores represented an actual increase in learning.

- Students in both types of incentive schools also performed better on subjects for which there were no incentives, suggesting possible positive "spillovers" in learning benefits.

- School-level group incentives and teacher-level individual incentives performed equally well in the first year, but the individual incentive schools outperformed the group incentive schools in the second year of the programme.

- It appears that the main impact mechanism of the incentive programme was not increased teacher attendance, but greater teacher effort. Teacher interviews indicate that teachers in incentive schools assigned more homework and class work, conducted extra classes beyond regular school hours, gave more practice tests, and paid special attention to weaker children.

- Performance-based bonus payments to teachers were significantly more cost-effective at increasing student test scores compared with spending a similar amount of money on additional schooling inputs.

RECOMMENDATIONS

There is not one, proven method to improve teacher accountability and performance. However, within specific methods, we can offer some concrete recommendations:

•Incentivising teachers can be very effective at increasing attendance and/or improving student learning levels.

—Even very small financial incentives can lead to significant improvements in learning outcomes.

—If incentives are tied to student learning outcomes, the tests must measure the ability to apply knowledge rather than simply rote learning.

•Objectively administered and direct incentives are the most effective. Supervisors should not be given discretion over administering the incentives. The programme manager need to be invested in the incentive scheme, and must have proper training and credible authority.

•Community monitoring can be used to hold teachers accountable, but it is most effective when people are given specific tasks and training, and when they feel they have the ability and a clear avenue to affect change.

Room for Innovation

•How can incentive schemes be structured to most effectively improve overall teacher performance (and not just increase test preparation), so as to most effectively improve student learning outcomes?

•How can incentives be integrated into the government school system in the face of political and administrative hurdles?

•Recent evidence suggests that state governments' current monitoring and supervision activities can reduce teacher absenteeism at a relatively low cost if consistently implemented; what is the most efficient means of enforcing basic compliance? What frequency of monitoring visits is most effective?

•Can incentives be used to increase teachers' commitment and passion for teaching in the long run?

•What combinations of positive and negative incentives for teachers are most effective at improving learning levels?

•Can incentives for students improve teacher attendance and performance?

•How can technology (e.g. cameras, SMS, fingerprinting, etc.) be used to

presenter bios

ARVIND PANDE serves as Chairman of J-PAL South Asia, where he advises on research projects and efforts to communicate findings from J-PAL evaluations to senior policymakers in the region. Mr. Pande brings more than 35 years of experience as a career civil servant at the District, State and Central Government Levels in India. He has also worked with the World Bank in Washington D.C., the Prime Minister's Office in New Delhi, and the corporate public sector. He has diverse experience in policy formulation and implementation, relating to multilateral and bilateral aid, socioeconomic development projects, industrial policy, scientific institutions, environment policy, and public sector management. After superannuating as Chairman and CEO of SAIL (India's largest steelmaker), he has served as an advisor on various issues like banking, industrial finance, industrial relations, land acquisition, resettlement and rehabilitation, mining policy, environment impact assessment, and corporate social responsibility.

WILLIAM HAMMINK is a career Senior Foreign Service Officer with more than 31 years at USAID working on international development and humanitarian programs. Since August 2011, Mr. Hammink has been the Mission Director of USAID/India, where he oversees a $109 million program addressing the critical challenges of food security, climate change, and health. Under his leadership, USAID/India is engaged in a new model of development cooperation, where U.S. assistance is a powerful catalyst for the development of innovative models that can be scaled with funds from Indian public and private partners to reduce poverty in India. This new development model also seeks to leverage Indian creativity, expertise, and resources to source and scale innovations being developed and tested in India that will benefit vulnerable populations in other countries. Mr. Hammink, who received Bachelor's and Master's degrees from the University of Minnesota, joined USAID in 1981 and has served in seven posts on three continents: Sudan, Swaziland, Senegal, Ethiopia, Madagascar, Russia, and West Bank/Gaza.

SESSION 1:

TEACHING AT THE RIGHT LEVEL

ABHIJIT BANERJEE is the Ford Foundation International Professor of Economics at the Massachusetts Institute of Technology (MIT). In 2003 he founded the Abdul Latif Jameel Poverty Action Lab (J-PAL), along with Esther Duflo and Sendhil Mullainathan, and remains one of the directors of the lab. Banerjee is a past president of the Bureau for the Research in the Economic Analysis of Development, a Research Associate of the National Bureau of Economic Research (NBER), a Centre for Economic Policy Research (CEPR) research fellow, International Research Fellow of the Kiel Institute, a fellow of the American Academy of Arts and Sciences and the Econometric Society, and has been a Guggenheim Fellow and an Alfred P. Sloan Fellow. J-PAL received the inaugural BBVA Frontiers of Knowledge Award for world-class research, and Professor Banerjee received the Infosys Prize 2009 in Social Sciences and Economics. In 2011, he was named one of Foreign Policy magazine's top 100 global thinkers. He is the author of a large number of articles and three books, including Poor Economics, which he co-authored with Esther Duflo and which won the Goldman Sachs Business Book of the Year. His areas of research are development economics and economic theory.

STEPHEN ADU is currently the Deputy Director-General in-charge of management services and also the Director for Basic Education, Ghana Education Service. He is a professional teacher having served in the Ghana Education Service since September 1977. Before assuming his current position, he was the Deputy Director of the Teacher Education Division (TED) in-charge of the In-Service Teacher Education and Training (INSET) programme. In addition, he was a key architect of the Untrained Teachers' Diploma in Basic Education (UTDBE) programme and Whole School Development programme. Mr. Adu holds a Master's Degree in Educational Management, a Bachelor's Degree in Design and Technology Education, and a Diploma in Industrial Arts Education. He is currently pursuing a Professional Doctorate Degree at University of Sussex, UK.

MAAME NKETSIAH is the National Coordinator for the TCAI programmes—a large remedial education initiative in Ghana. In this role, she oversees the implementation of the interventions in collaboration with the Ghana Education Service, the Ghana National Association of Teachers and the National Youth Employment Programme. She brings significant experience in planning and managing large-scale multi-sector projects from her prior positions with the Earth Institute at Columbia University's Millennium Villages Project and the International Planned Parenthood Federation. Ms. Nketsiah holds a Master's Degree in Population and International Health from Harvard University's School of Public Health.

SESSION 2: THE USE OF TECHNOLOGY IN EDUCATION

APRAJIT MAHAJAN is an Assistant Professor in the Department of Economics at Stanford University and a J-PAL affiliated professor. Mahajan's research interests are in development and econometrics with a regional focus on India. Ongoing research includes field-experiments on management practices in large firms and the provision of health-improving technologies in rural India.

SRIRAM RAGHAVAN is a serial entrepreneur with a successful track record in building social businesses. He is the founder and CEO of InKlude Labs, a company set up to scale empirically-evidenced solutions to social problems. Prior to this, he served as the Co-Founder and CEO of Comat Technologies, a leading information service provider to rural communities in India. In 2008, Comat was awarded the Legatum FORTUNE Technology Prize for its role in fostering social and economic growth in the developing world. He has also received several personal accolades, including being honoured as a Young Global Leader by the World Economic Forum (2010), the Social Innovation Park Fellow Award (2010), and the Super Achiever of the Year Award (2006). Mr. Raghavan holds a Bachelor's degree in Electronics Engineering.

SESSION 3: TEACHER PEFORMANCE MEASUREMENT AND MANAGEMENT

KARTHIK MURALIDHARAN is an Assistant Professor in the Economics Department at the University of California, San Diego (UCSD). His research focuses on improving education and health in developing countries. He has studied the impact of performance-pay for teachers, the impact of contract teachers, and the impact of cash grants to schools on student learning outcomes in India via large-scale randomised evaluations. Current projects include studying the impact of school choice programmes in India, and the impact of teacher certification, across the board salary increases for teachers, and continuous teacher training programmes in Indonesia.

GULZAR NATARAJAN is the Collector and District Magistrate of Hyderabad. He is an IAS officer of the 1999 batch. For the past year, Mr. Natarajan has been working on translating the core policy messages from the Andhra Pradesh Education Research Projects (AP RESt) into implementable and scalable modules. Mr. Natarajan's interests include economics, infrastructure projects finance, international affairs, equity markets and finance, and urban and electricity sector issues. He has maintained a blog on urbanomics since 2007 (http://gulzar05.blogspot.in/).

ADDITIONAL SPEAKERS

MITCH KIRBY is the USAID Senior Education Advisor for Asia. From Washington, DC he supports USAID field missions in 12 countries throughout Asia. Mr. Kirby has 20 years of experience with USAID in Washington and field missions, planning, designing, and managing education programs in over 30 countries. Mr. Kirby was a member of the Policy Task Team that wrote the new USAID Education Strategy which calls for evidence-based programming to improve reading for 100 million children. He holds a M.Ed. degree in International Education Policy, Planning and Administration from Harvard University.

LUIS CROUCH is a senior economist (PhD Berkeley 1981) and Vice President at RTI International (Research Triangle Institute) in Washington D.C., where he specializes in education planning, the measurement of performance indicators, education reform, and education finance. He has worked in all aspects of policy reform and analysis, from household and school surveys, to data analysis, to high level policy dialogue and reform motivation. He has been technical advisor to South Africa 's Department of Education since 1995. He has worked in some 15 countries around the world. His most recent areas of work have been Indonesia and Peru.

SHOBHINI MUKERJI is the Executive Director of J-PAL South Asia. At J-PAL South Asia, she oversees all the research, policy and training activities and has experience in the education and health sector in particular. Ms. Mukerji is a principal investigator on a randomized evaluation of an education project which looks at interventions to improve learning levels of children in government schools. She has extensive experience in managing large scale assessments, training and capacity building, data management and analysis. She has previously been employed with Pratham, a large scale education initiative in India, and has worked on research projects with the Commonwealth Education Fund (CEF-UK), UNDP and UNICEF. She holds a Master's degree in Social Research Methods from the London School of Economics with a focus on Social Policy and Statistics.

MADHUMITA GUPTA is the Mission Economist and the Office Director for the Office of Special Activities, Governance and Education at the United States Agency for International Development (USAID) / India, overseeing programs targeted to economic reform and development both at the national and state level. She is also the Mission Information and Communication Technologies (ICT) Coordinator. She brings over 20 years of experience to the field of development. Prior to joining USAID/India, Ms. Gupta worked at the Brookings Institute, Washington, D.C., the Organization for Economic Cooperation and Development (OECD) in Paris, France, and at the World Bank India Resident Mission on a wide variety of micro and macroeconomic related programs, largely focused on technology, trade and macro-economic policy implementation issues. She began her career with the U.S. private sector conducting competitive supply-demand studies and modeling for the U.S. hospitality industry in the Caribbean region. She also had the opportunity to work on a one-on-one basis with some of India's top industrialists as the Economist at the Economic and Scientific Research Foundation of the Federation of Indian Chambers of Commerce and Industries.

further reading

SESSION 1: TEACHING AT THE RIGHT LEVEL

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