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What Works to Improve Learning

Evidence from 300 studies around the world

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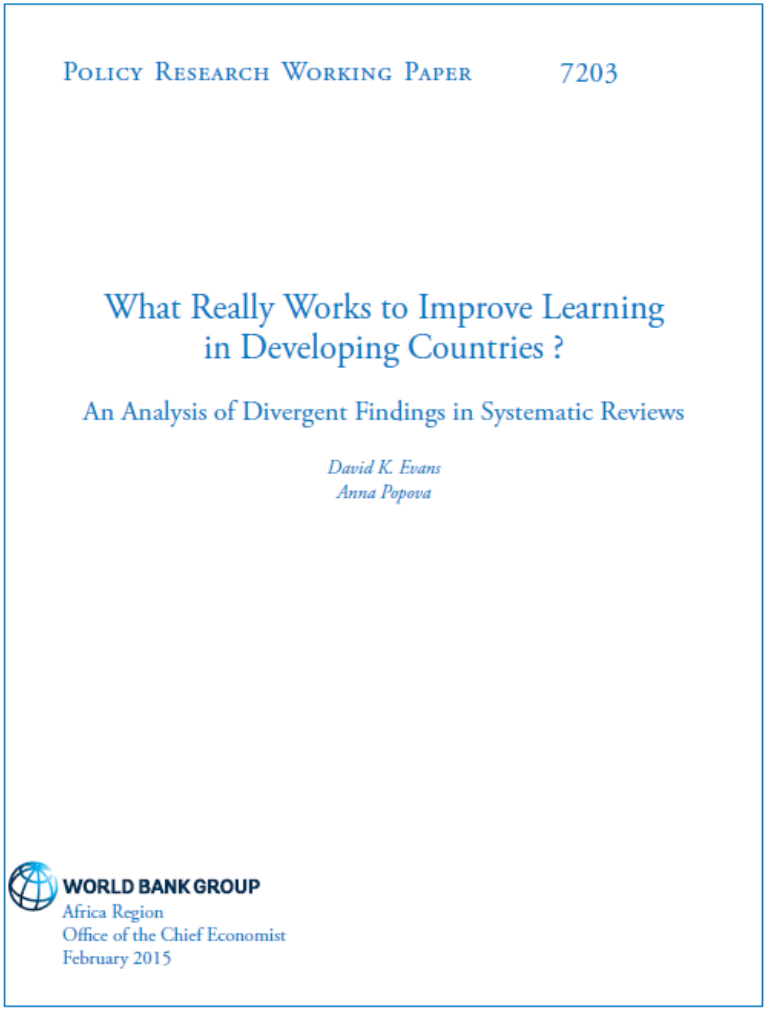


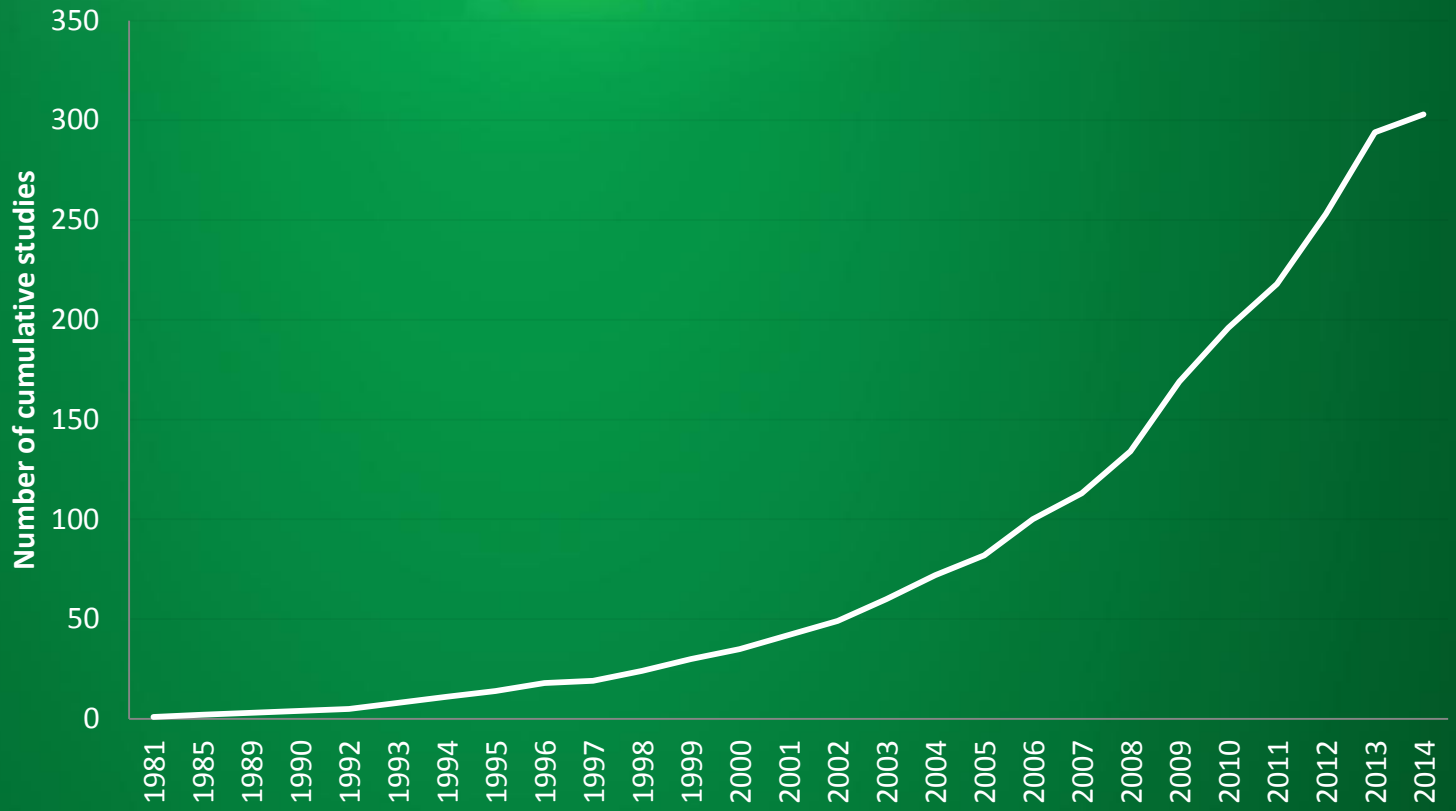
What Really Works to Improve Learning in Developing Countries ? An Analysis of Divergent Findings in Systematic Reviews

David K. Evans
Anna Popova

Blog post: Why do education systematic reviews diverge in their recommendations?

Blog post: Where do they overlap? What really does seem to be effective at improving learning?

Massive Growth in the Evidence on What Works to Improve Learning in Middle-Income and Low-Income Countries



Six recent reviews of education research

Conn 2014 56 studies	Glewwe et al. 2014 79 studies	Kremer et al. 2013 34 studies
Krishnaratne et al. 2013 76 studies	McEwan 2014 66 studies	Murnane & Ganimian 2014 130 studies

300 studies in total

What do the reviews have in common?

- Adapt teaching to student learning levels
- Individualized, long-term teacher training
- Accountability-boosting interventions

Adaptive Instruction

Track Students into Classes by Ability

- Two effects of sorting classes by ability
  - Teacher can teach to ability of students
  - Peer effects: better for top students, worse for bottom students

- In Kenya, tracking increased test scores across the distribution (Duflo et al. 2011)
  - Recent work in USA supports this view

Adaptive Instruction

Train Teachers in Formative Student Assessment

- In one setting, the Early Grade Reading Assessment was applied (Piper & Korda 2011)
- Teachers were trained to continually assess, in order to target teaching to student needs
- Median improvement across reading tests: 0.78 standard deviations

Adaptive Instruction

Computer Assisted Learning for Math and Reading

Dumping computers in schools = Ineffective

- One Laptop per Child in Peru (Cristia et al. 2012)
- Putting computers in schools in Colombia (Barrera-Osorio & Linden 2009)
- No improvements in math or language learning (yes on computer literacy)

Using computers to help children learn at own pace = Effective

- In India, math games that adapt to student ability increased math scores (Banerjee et al. 2007)
- In China, laptops with math software students could use at home increased math scores (Mo et al. 2012)

Adaptive Instruction

Computer Assisted Learning: Khan Academy (Example)

Program

- Videos on how to do math
- Practice problems
- Support resources for teachers

Evaluations

- In the USA, teachers generally found it helped them to adapt teaching to low-performing students (SRI 2014)
- In South Africa (Durban), Khan Academy worked best for basic math concepts (Barman 2013)

Teacher training

Ongoing & in school

- Ongoing training, coaching, & monitoring in rural South Africa (Sailors et al. 2010)
- Training followed by support visits in Mali (Friedman et al. 2010)
- In-school trainers in Chile (Cabezas et al. 2012)

Targeted to a method

- Combine flashcards with training in India (He et al. 2008)
- Training in specific literacy method in Kenya & Uganda (Lucas et al. 2014)

Accountability for Teachers

- Teacher incentives have been effective at improving test scores where effort (e.g., attendance) is a major problem
  - Performance incentives in India (Muralidharan & Sundararaman 2011)
  - Attendance incentives in India (Duflo et al. 2012)
  - Implemented with strong teachers unions in Chile (Bruns & Luque 2014)
- But teachers cannot teach what they don't know ⇨ <u>Good training</u> (Murnane & Ganimian 2014)

Accountability for Schools

- Providing report cards with school & child learning info to parents in Pakistan increased & sustained student learning, especially in poor performing private schools (Andrabi et al. 2009)

- Public disclosure of school average test scores increased learning in Brazil, but only for private schools (Camargo et al. 2011)

Don't Forget Curriculum – Evidence from the USA

Test of pre-K maths curriculum

- "Pre-K Mathematics"
  - Teacher guided, small-group activities
  - Twice a week for 20 minutes
  - Take-home activities
- Increase of 19 percentile points (IES 2013a)

Test of 4 primary maths curricula

- Best-performing curriculum
  - Blends student- & teacher-centered (questioning + teaching procedures)
  - Real-world situations (IES 2013b)
- Three best – similar effects – moved students 9 percentile points (Agodini et al 2013)

Arguably among the most cost-effective interventions (Whitehurst 2009)

And what about textbooks?

Textbooks in Kenya

- Language of Instruction challenges
  - Textbooks did increase the scores of **best** students … but little effect on other students.
  - Textbooks are written in English, most students' third language, so could not be used effectively. (Kramer et al 2009)

Textbooks in Sierra Leone

- Books available… but no impact on student learning!
  - Textbooks as non durable goods … and in the face of uncertainty, kept "out of the hands" of children (Sabarwal et al 2014)

The devil is in the details!

Count the Benefits and the Costs

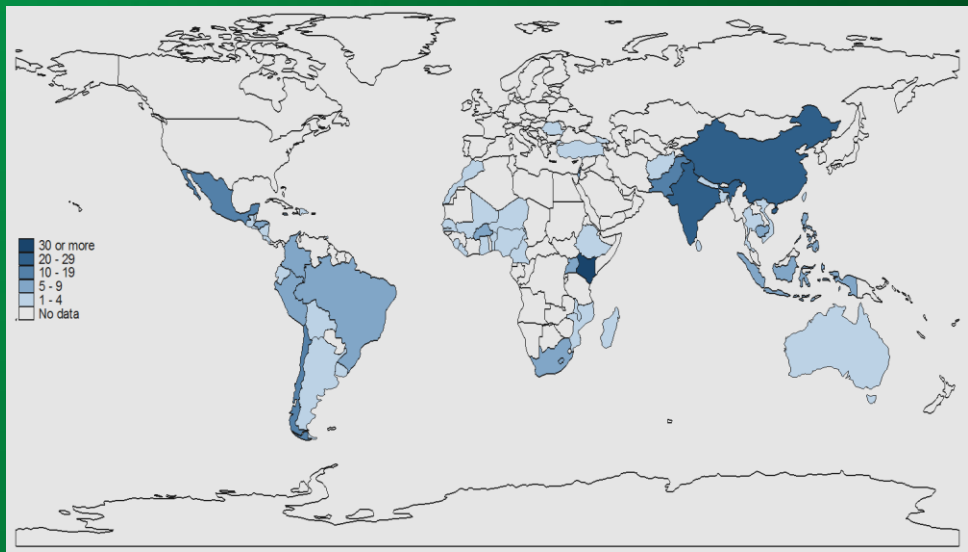
- All these interventions have high benefits
- Some may have relatively low costs: tracking students by ability
- Others may have much higher costs: computer-assisted learning, infrastructure

- Adjust locally for the most cost effective: biggest impact per $

Build better evidence

- We can only report on those interventions carefully evaluated … E.g. How does mother tongue instruction fare?
- Prospective evaluations of new programs are the best way to inform the next generation of programs

Distribution of evidence across reviews



Remember

- Across 6 reviews of 302 studies, a few interventions stand out
  - Pedagogy that adapts to student needs **(strong evidence!)**
    - This includes certain computer interventions
  - Teacher training that is repeated, in-school, and tied to a specific task **(strong evidence!)**
  - Accountability, both for teachers and for schools **(suggestive evidence!)**

Thank you

www.worldbank.org/education

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