



Technology to Support Adaptive Individualized Instruction

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Education Global Practice

Pedagogical situation – Context

- Learning crisis exacerbated by COVID-19's school closures
- Most important factor contributing to student achievement: quality of instruction
- Most effective interventions at increasing student learning are concerned with improving the quality of instruction (Evans and Popova, 2016):
 - pedagogical interventions that match teaching to individual student learning levels
 - individualized, repeated teacher training, associated with a specific method or task

Teaching in developing countries is complex

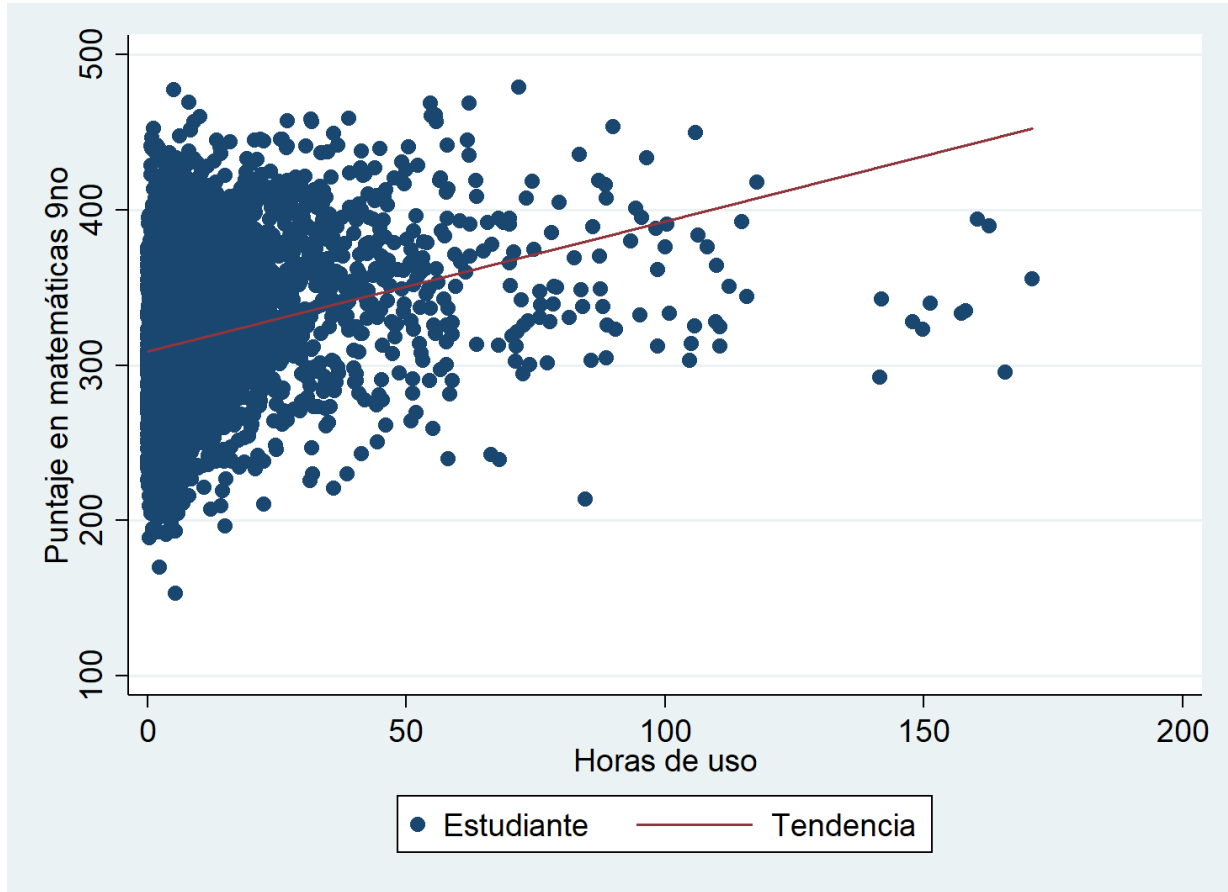
- High student-teacher ratios
- Curricula in developing countries originally designed to screen gifted students for positions of responsibility
- Teaching to the top (or other part of the distribution)
- In Africa: high-quality studies of pedagogical interventions--- those using **adaptive instruction** are almost **four times as effective** at raising student learning as those with non-adaptive instruction

How does technology enter the picture?

- Individualized instruction seems to raise student achievement
- Technology helps with many of the challenges teachers face in the classroom
- Technology can support teachers adapt instruction to the level of their students for all students in different ways:
 - Teach at multiple levels
 - To all students
 - At different pace
 - With different pedagogical approaches (either for the teachers on what to teach or directly with the students)

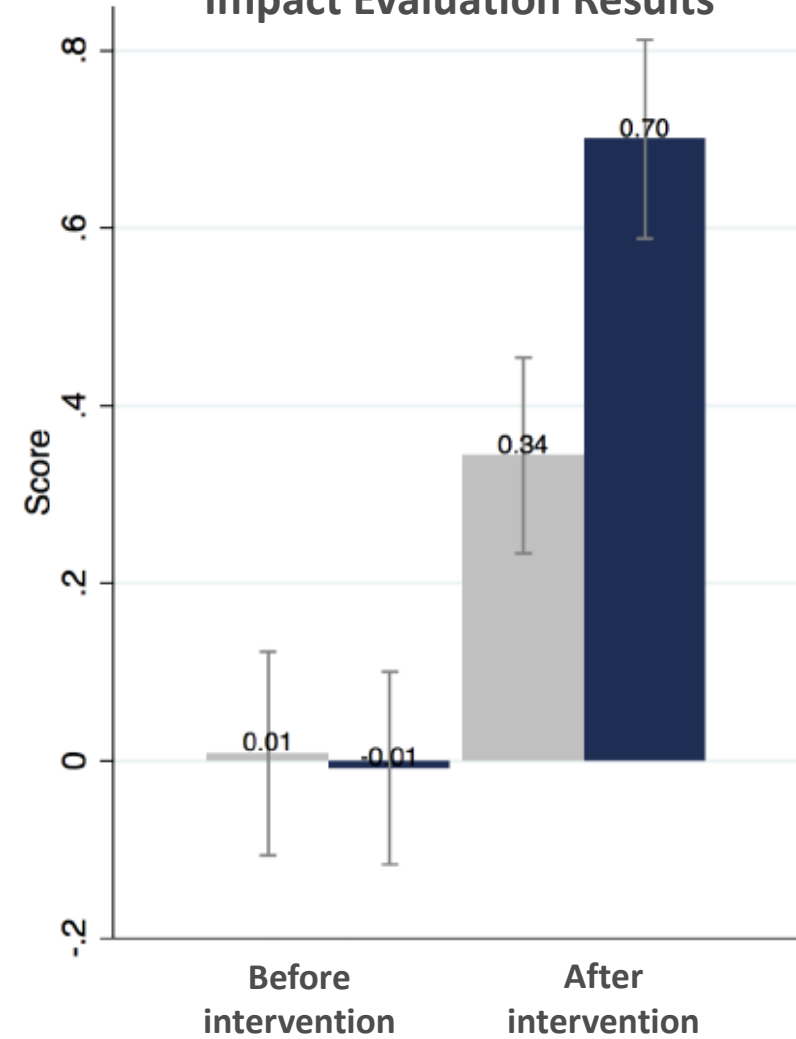
Dominican Republic and India

Dominican Republic



Source: World Bank and Minister of Education of the Dominican Republic

India: Impact Evaluation Results



Source: Muralidharan et al. (2017). Disrupting Education? Experimental Evidence on Technology-Aided Instruction in India. NBER Working paper Series 22923, National Bureau of Economic Research, USA. ([Link](#))

Implementation requirements

The trick is making sure that students can use the software

Can you make sure that

1. a computer/tablet/phone is available? (Not 1:1)
2. hardware has the right software? (feedback, collects data, language, contextualized and aligns with curriculum, simple, it is actually adaptive!)
3. principals, teachers, and students are on board?
4. connectivity exists? (not necessary)
5. electricity is available?
6. hardware is securely stored?
7. it is implemented in the school?
8. it can be scaled up?
9. funding exists?
10. you understand the context and adapt the solutions to it?
11. You measure the impact of technology on learning and other variables?
12. Others you might add...



Key messages

- Focus on the pedagogical problem to solve, then focus on the technology:
That way this technology has enormous potential!
- Countries are best positioned to **design the pedagogical intervention** (e.g. hours per weeks, integration, use of data)
- Providers “provide” the tool, but they will “not provide” you with information about:
 - **How to** use it in public schools
 - **How to** integrate it in schools, with varying degrees of teachers’ digital skills
 - **Simple solutions for low implementation capacity**– Products have too many bells and whistles – be in control of what you want
 - **Valuable information is collected** regarding the differences in learning levels; these data presents an opportunity for teachers to better cater to students’ learning gaps, even during normal classroom hours

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Podcast on implementation challenges:

- Apple: <https://podcasts.apple.com/us/podcast/mitigating-learning-losses-accelerating-learning-through/id1523333192?i=1000524702586>
- Spotify: https://open.spotify.com/episode/6lqG04BaEuzzmbAouKiMAG?si=8VHG5JJaSEG1sqUfbrfexw&dl_branch=1
- Anchor: <https://anchor.fm/world-bank-edutech/episodes/Mitigating-Learning-Losses-and-Accelerating-Learning-through-Adaptive-Learning-lessons-from-Ecuador-and-the-Dominican-Republic-e12dav5>



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