

## **The Dire Role of Program Design and Fidelity of Implementation: Lessons From a Large-Scale On-site Teacher Training Program**

There is limited evidence for the effectiveness of on-site teacher training interventions, particularly in the context of developing countries. Snilstveit, et al. (2015) report 21 studies (in 11 countries) conducting impact evaluations on interventions oriented towards improving the quality of instruction through what the authors call “structured pedagogy”. All of these programs offer pedagogical training to teachers, and most of them also have a mentoring and classroom observation component, which provides teachers with feedback. In general, the evidence shows that these structured pedagogy interventions have a positive effect on student learning. However, there is a great deal of heterogeneity in the effect sizes across studies, and some interventions even show evidence of negative effects.

Most studies evaluating these types of interventions examine the effects on student learning, but ignore the effects on the pedagogical performance of teachers. In their review of the literature, Snilstveit et al. (2015) report that just four studies examine the effects of these programs on teacher-level outcomes, with mixed results. This wide variation can be explained by differences in both program implementation and design. This paper contributes to the existing literature in two important ways. First, it amends the dearth of evidence on the effectiveness of on-site, in-service teacher training on teaching practices, particularly in the context of low- and middle-income countries. Second, it provides evidence on the role of implementation in the improvement of educational outcomes.

We study the impact of the program Learning for All (LFA), the flagship in-service teacher training program in Colombia. We aim to answer to main questions: What is the impact of LFA on teaching practices? To what extent the quality and intensity of the implementation process explains the effects (or lack thereof) of the program?

The LFA program targets low-performing public primary schools and offers two main components: language and mathematics educational materials (student and teacher guides) and on-site training for teachers. The on-site professional development component seeks to provide mentorship to teachers by assigning an experienced teacher as a mentor, who meets regularly with the teacher to improve their teaching practices. The program started in 2012 and benefits 4,311 school throughout the country.

We use matching techniques to select a sample of schools that were -on average- identical in observable pre-treatment characteristics, with the only difference being program treatment status. We use the Propensity Score Matching method, taking as sampling frame the full population of public schools in Colombia (n=17,414). Our database contains detailed information on the characteristics of these schools in 2009 and 2010 (before the LFA program began). Then, within this matched sample we randomly selected our final analytical sample of 400 schools: 200 each in the treatment and control groups. Primary data on teaching practices was collected for this 400 schools using teacher and student surveys as well as direct classroom observation instruments.

The results show that the program had a positive impact on particular teaching practices, including the amount of time teachers dedicate to lesson planning, familiarity with and following of curriculum standards, and the creation of learning communities for collaborative work and sharing experiences. However, no desired impacts were found on what actually happens in the classroom. Unexpectedly, our estimates show that in LFA schools teachers conducted fewer active learning activities, spent less time on effective teaching, and had less teacher-student interaction than in comparable non-LFA schools. This could explain the fact that we do not observe any effects on student-level efficiency and quality outcomes.

Analyzing the information on program fidelity of implementation, we find great heterogeneity in the quality and intensity of the implementation of the LFA program across beneficiary schools. This makes it unsurprising that the impact of the program varies depending on how well the implementation adhered to the original design. In general, for the variables where we find the desirable program impacts (such as lesson planning, following curriculum standards, and materials use) the impact of the program is greatest for schools with a high degree of implementation, that is, at schools adhering closely to the program design (high-LFA). However, for some desirable outcome variables (such as effective teaching time or teaching strategies) we find no differences by degree of implementation. Qualitative evidence from conversations with teachers and LFA mentors suggests that the quality of the mentorship may vary according to the preferences and training of the mentors. With no clear guidelines established ex ante, mentors actually chose how to conduct the on-

site professional development, which partly explains the degree of variation in the activities involved.

This demonstrates two types of problems that pose as an opportunity for significantly improving the program. First, the design of the program should prescribe what should happen during on-site professional development activities. The fact that the intervention has no desirable impact on what occurs in the classroom suggests that a more structured mentorship is required, assuring that the teacher effectively develops and improves their teaching practices. Second, the results point to a generalized implementation problem. The fact that effects differ by the degree of fidelity of implementation suggests that, if a minimum level of implementation fidelity is guaranteed (in terms of the number of visits, mentorship activities, materials, among others), the program would have a better chance of generating larger desired outcomes.

Based on these results, the authors provided specific recommendations to the Ministry of Education on the design and implementation of the program. Part of these recommendations were followed by the Ministry of Education in 2015 and will be evaluated.

## **References**

Snilstveit, B, Stevenson, J, Phillips, D, Vojtkova, M, Gallagher, E, Schmidt, T, Jobse, H, Geelen, M, Pastorello, M, and Evers, J, 2015. *Interventions for improving learning outcomes and access to education in low- and middle- income countries: a systematic review*, *3ie Systematic Review 24*. London: International Initiative for Impact Evaluation (3ie).