

Abstract Title Page

Title: Overview of the OGAP Formative Assessment Project and CPRE's Large-Scale Experimental Study of Implementation and Impacts

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Abstract Body

Background / Context:

In this presentation we will present about an ongoing partnership with the Philadelphia School District (PSD) to implement and research the Ongoing Assessment Project (OGAP). OGAP is a systematic, intentional and iterative formative assessment system grounded in the research on how students learn mathematics. The OGAP system consists of an integrated into a set of tools, practices, support materials, and in-depth professional development. OGAP draws on two overlapping lines of research that have informed recent efforts to improve classroom instruction. First, teachers' skilled use of ongoing formative assessment to tailor instruction to student needs is a key factor in improving student learning in mathematics (Black & Wiliam, 1998). The second line of research focuses on the development and use of learning trajectories to specify student development within specific domains (Daro et al., 2011; Sztajn et al., 2012). A learning trajectory orientation can enhance the formative assessment process by providing teachers with a clear articulation of learning goals, a framework for how student thinking develops, and activities that are likely to move students along the path toward achieving those goals (Daro et al., 2011; Heritage, 2008).

OGAP was funded by the National Science Foundation in 2014. Initially funded for New York City, the project site was switched to Philadelphia due to the NYC political context at the time of school selection. The project team negotiated access to Philadelphia and worked with the SDP leaders to develop the sampling frame for the study and recruit participants. This included attending regional leadership team meetings and visiting schools to describe the study to faculty. The project team also coordinates data collection, including primary and administrative data, with SDP leaders.

Research Design:

The program is being implemented and studied as a mixed method randomized control trial of OGAP impacts in grades 3-5 in Philadelphia area schools. In the spring of 2014, CPRE recruited 60 schools (including charters) in the Philadelphia area to participate in the research study of OGAP. These schools were randomly assigned to treatment and control groups, stratified by charter school and district.

Focus of Study:

The formal research study of OGAP is designed to address the following five central research questions, which are broken down into three implementation questions and two impact questions:

Implementation questions include: (1) How do teachers understand the OGAP formative assessment process and use it in their daily practice? (2) Is the frequency and sophistication of teachers' use of OGAP associated with greater increases in mathematical knowledge for teaching or ability to interpret evidence in student work? And (3) Is the frequency and sophistication of teachers' use of OGAP associated with greater student learning? Impact questions are as follows: (4) Does teachers' use of OGAP increase mathematical knowledge for teaching and ability to interpret evidence in student work? What moderating factors affect this relationship?

And (5) Does teachers' use of OGAP significantly improve student performance on both proximal and distal student outcome measures? What mediating and moderating factors affect this relationship?

In order to address these research questions, the research team has had to develop a solid relationship with both district and school personnel. A key aspect of this is working with district personnel to facilitate the collection of implementation data on an externally implemented program.

Instruments:

The OGAP evaluation features a core set of implementation and teacher and student impact measures which are described below. In addition, the study contains a set of qualitative data collection and analyses plans which are not contained in this description.

Teacher Impact Measures.

Measure of Mathematical Knowledge for Teaching (MKT). Drawing on practice-based theory of content knowledge (Shulman, 1987), researchers at the University of Michigan developed multiple-choice items that measure the mathematics used in teaching (Hill et al., 2008; Ball, Thames, & Phelps, 2008).

Teacher Analysis of Student Knowledge (TASK). The TASK is an authentic, contextualized measure of teachers' ability to analyze students' mathematical thinking within a grade-specific content area in relation to research-based learning progressions, and formulate reasoned instructional responses. Each on-line TASK presents a teacher with a carefully designed grade-appropriate set of student responses to a mathematics problem. The TASK is well aligned with OGAP in that it measures three key domains of the formative assessment process related to the specific mathematical concept that is being assessed: 1) Teachers' analysis of student understanding, 2) Teachers' knowledge of mathematical learning, and 3) Teachers' informed instructional decision-making. (Supovitz & Sirinides, 2012; Ebby & Sirinides, 2015).

Teacher Implementation Measure

Logs of teacher practice. At four randomly assigned intervals over the course of the second year of the intervention, teachers are asked to complete a short on-line log that will measure their frequency of use of OGAP items, what they do with the resulting student work, and how they apply it to their instruction. These logs will be converted into an implementation scale to estimate both the frequency and sophistication of teacher use of OGAP.

Student Impact Measures

We use two approaches to measure individual-level Grades 3-5 student outcomes. First, as a proximal measure to OGAP, we will administer a half-hour test of open-ended items to grade three through five students in treatment and control schools at the beginning and end of the first and second years of project implementation. The grade-specific assessments will be composed of items that ask students to solve problems and show their work (to allow for analysis of both performance and strategy sophistication). The assessments will be constructed from items pulled from the OGAP item bank (and removed from the intervention).

Presentation Focus

The presentation will include a brief description of the study and year one experimental impacts on teachers and students. The main emphasis of the presentation will be on the

development of the partnership and collaborative work conducted with the SDP, which has resulted in a follow-up proposal for deeper work. The presentation will be organized as an external research partner's perspective about working with the district in the following areas: (a) facilitating access to and collecting data from schools; (b) organizing the delivery of professional development amidst a variety of district initiatives and priorities; (c) providing information and feedback to the district to keep them aware of progress and challenges; (d) working collaboratively to make sense of early impacts, and; (e) developing ways to deepen the work.

Appendices

Appendix A. References

- Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389-407.
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