

Middle School Mathematics Performance

Art & Science Research Report (2016)

Methodology and Context

- Art & Science is a research firm that has been working with PBS since 2013.
- Art & Science team conducted telephone interviews with math educators and administrators at 9 middle schools in fall 2016.
- 78% of PBS graduates over 3 years are enrolled at these schools.
- Interview questions developed collaboratively between PBS and Art & Science professionals
- Confidentiality so nothing was attributed to a particular school (ensuring forthright responses)
- The 9 math programs vary considerably.
- 6 of the 9 schools use ability grouping or tracking starting in 6th-Grade with placement primarily driven by a test developed at the individual school, not a nationally normed test.

Next Steps for PBS

- Opportunity for new conversations with area middle schools to build their understanding of PBS math and learn more about what they do
- Discuss the Opportunity for Improvement (at right) and integrate into our curriculum

Key Findings

- Re: collaborative learning in math, PBS graduates positively stand out compared to their peers.
- PBS graduates are prepared to be successful in a variety of different math classroom environments, demonstrated by their strong assimilation to the range of programs represented in this study.
- No math achievement or learning gap that can be attributed to the PBS program
- No consistent math weaknesses in PBS graduates
- There is, however, a variation in skill levels and degrees of preparedness among PBS graduates.

Opportunity for Improvement

Goal is to narrow the variation in skill and preparedness among individual students: We will focus on ensuring consistent preparation in the three key areas identified through the research as important for 6th-grade math learning, as follows:

- Basics of operations critical to math fluency;
- Applying operations to fractions and decimals, and exposing students to percentages;
- Building up “habits of mind” that mark a curious, confident, and resilient individual who is comfortable tackling unfamiliar math problems.

CDD Math Curriculum Review: Third-party Assessment (2017)

Methodology and Context

- As part of the ongoing CDD process, we engaged Stanford-trained Amanda Confer to observe, review, and assess our mathematics program in December 2015 and February 2017. She is currently Director of Mathematics at Camino Nueva Charter Academy, Los Angeles.
- Her findings and suggestions are based on a total of five days on campus that included class observations, making a GATHER presentation, leading a parent education session, discussions with the administration, and interviews with parents, faculty, and students.

Key Findings: Strengths that indicate high-quality math experiences

- Students are engaged in mathematics learning and know multiple strategies to solve problems.
- Students routinely explain their thinking at a high level.
- Many teachers have a deep understanding of quality mathematics instruction and task design.
- Rigorous thinking is often required of students.
- Teachers habitually ask open-ended questions and require students to include numbers, pictures, and words in their responses.

Key Findings: Areas of growth that indicate room for improvement

- Lacking a math vision or agreed-upon priority content for each grade level
- Teachers are often providers of knowledge, not facilitators of learning.
- Desire for more differentiation for extension and remediation
- Student progress is not consistently and clearly shared with families.
- Students do not always attend to the thinking of their classmates.

Next Steps for PBS

- Develop a “math vision” and determine content priorities.
- Share more actionable information with families.
- Operationalize our approach by building a more cohesive mathematics professional learning community.