

Doing the Math with Paraeducators:

Enhancing and Expanding a Professional Development Model in PreK to Grade 3 Math Classrooms

"What was helpful was how to engage students in math, ...using more words specific to math I never knew that before because math was my phobia...I turned that around after the workshops into making math fun. You keep children's attention more that way. It helped them build vocabulary too....I would ask, How did you do this? Could you do this another way? I would never thought of using those words." - BPS Paraeducator

Why Focus on Paraeducators

Paraeducators often reflect student demographics and have close ties in the communities they teach. They are well-suited to make connections among staff, students, and families; and they are well-positioned to address social inequities (Rader & Pennell, 2019; Ernst-Slavit & Wenger, 2018). Providing paraeducators with access to sustained PD and opportunities to continue their education can open important pathways to teaching, which will diversify the teaching pool and address the critical teacher shortage that disproportionately affects high-need urban schools (Walker, 2019).

Introduction

In partnership with Boston Public Schools and Washington Township in Indianapolis, we provide professional development for paraeducators in grades PreK-grade 3. This project measures its impact on paraeducators' mathematics pedagogical content knowledge and teaching efficacy. Design-based implementation research is being conducted in Years 1 and 2, followed by an outcomes study during the final phase of the project.

Project Goals

- Redesign and expand a mathematics PD program for PreK-3 paraeducators working in urban schools.
- Test the PD model to support change in paras' instructional behaviors, strategies and engagement with students in mathematics.
- Increase paras' sense of math efficacy, pedagogical content knowledge, and ability to mentor other paraeducators.
- Develop pathways and opportunities for paras to become teachers.

Instrumentation Study

MTEBI Modification Examples

Table 1. Modified and Original MTEBI questions

Original Question: When a para facilitates classroom, it is likely that students will be bored or passive.

Modified Question: I work consistently find better ways to help students learn more.

Original Question: I am not very good at monitoring math.

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Original Question: Most of the time, I cannot help students learn.

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Original Question: A para's professional background can be helpful in a good teaching.

Modified Question: A para's professional background can be helpful in a good teaching.

Original Question: When a para provides support for a child who is struggling in math, the child will eventually do a better job of understanding math concepts.

Modified Question: When a para provides support for a child who is struggling in math, the child will eventually do a better job of understanding math concepts.

- Simplified language for paraeducators who spoke English as a second language and/or lower literacy.
- Modified instructional task names to align with the actual activities for which paras are responsible.
- Removed types of work for which paraeducators are not responsible.

Samples of Pre- and Post Assessments

Windy Day on the Farm Assessment

PreK/PK Pedagogical Content Knowledge task adapted from a classroom activity by Parks (2016) Exploring Mathematics Through Play in the Early Childhood Classroom

Original Question: When a student asks a question, it is important for the teacher to respond in a timely manner.

Modified Question: I think it is important for the teacher to respond in a timely manner.

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Buttons Assessment

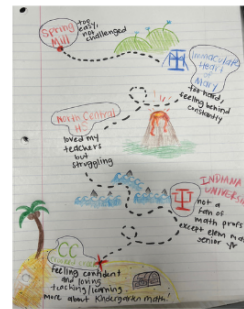
Early elementary pedagogical content knowledge task adapted from Jacobs (2010)

Original Question: When a student asks a question, it is important for the teacher to respond in a timely manner.

Modified Question: I think it is important for the teacher to respond in a timely manner.

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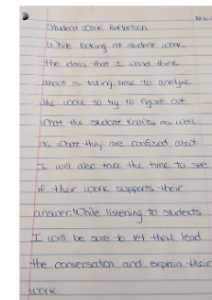
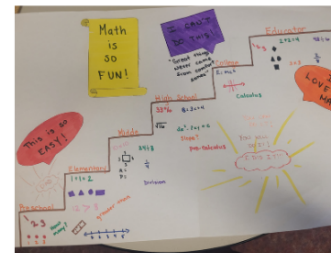
Modified Question: I think it is important for the teacher to respond in a timely manner.



Paraeducators were asked to draw a picture of their math learning journey during their first program PD. Here are two examples of math journeys from childhood until their current role as educators.

Developmental Activities

- Summer PD
- School year PD
- Math Journeys
- Looking at Student Work (LASW) Sessions

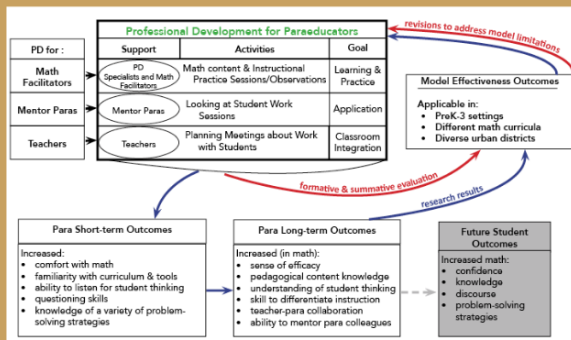


Paraeducator reflection from a LASW Session.

PD Sessions were conducted at the beginning of the project in the summer 2022 and throughout the school year.



Theory of Action



Look at a PowerPoint to learn more about our project activities and assessments.

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