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Supporting teachers’ practices: A teacher educator-embedded professional development model

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The poster describes preliminary results from ongoing professional development with two U.S. mathematics teachers, one Algebra 1 and one eighth grade mathematics teacher, designed to increase and enhance teachers’ content knowledge and transform their classroom instruction by embedding the author (i.e., researcher) in teachers’ practices. The poster also articulates the embedded PD model. Preliminary results show participating teachers are engaging their students in more rigorous mathematics, teachers are demonstrating increased self-efficacy and are more frequently engaging students in mathematical sense making, reasoning, modeling, generalizing, and communicating.

Keywords: Mathematics instruction, mathematics teachers, theory practice relationship.

Description of research topic

The poster describes ongoing professional development (PD) in the United States with one eighth grade math teacher (students 13-14 years) and one ninth grade Algebra 1 teacher (students 14-15 years) designed to increase and enhance teachers’ content knowledge and transform their classroom instruction by embedding the author (i.e., researcher) in teachers’ practices. The poster focuses on the following research questions: How does embedding a mathematics teacher educator in a mathematics classroom (embedded PD) impact (1) participating teachers’ content knowledge, (2) participating teachers’ instruction, (3) students’ self-efficacy, and (4) student achievement?

Theoretical framework


Method

Throughout embedded PD, the author (i.e., researcher) and participating teachers relied on: participating teachers’ prior assignments, assessments and notes; textbooks and district generated documents (e.g., curriculum maps); state-level standards and documents; and a variety of Internet resources (e.g., GeoGebra, NRICH Project). Throughout the planning of a lesson, which may take multiple in-person or online meetings (or both), the researcher attempts to motivate the teacher to make explicit (and objects thought, discussion and subsequent reflection) her (i.e., teacher’s) understandings of: the mathematics inherent in the lesson, hypotheses of their students’ knowledge, theories of mathematics learning and teaching, activities and assessments (Simon, 1995; Thompson, 2013). As such, notions of meanings, ways of thinking and the need for the teacher and her students to articulate their meanings, thinking, and reasoning are consistently addressed (Thompson, 2013).

Participants

Participating teachers reported on the poster involve Tami (eighth grade math) and Jeremy (Algebra 1). Tami’s eighth grade class contained 15 students of both genders and multiple races. Five (of the
15) students were on individual education plans. Jeremy’s Algebra 1 class contained 25 students of both genders and multiple races.

**Data and analysis**

Data consisted of: (1) video- and audio-recordings of and physical documents related to lesson co-planning sessions; (2) video- and audio-recordings of lesson implementations (i.e., co-teaching); and, (3) video- and audio-recordings of and physical documents related to teachers’ reflection on student work and classroom instruction. Two embedded co-teaching descriptions will be described on the poster, one involving a co-planning session with Tami, the other involving co-teaching with Jeremy. Analysis will serve to characterize some of the differences exhibited in tasks, activities, and classroom interactions highlighted as a result of the embedded model.

**Preliminary results**

Teachers engaged in embedded PD have indicated their participation has provided them the support to do what they believe is best for their students and their practice while not feeling constrained by district and state demands. Rather than feeling the need to rush through content and focus on skills and procedures, embedded co-teaching has allowed participating teachers to focus on understanding, coherence, and discourse. Preliminary results show participating teachers are engaging their students in more rigorous mathematics and both students and teachers are demonstrating increased self-efficacy and are more frequently engaging in mathematical sense making, reasoning, modeling, generalizing, and communicating.

**References**


