Building Number Sense Across the District: Mathematics Professional Development for Teachers Jessica Shumway & Julie Everett

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Problem Statement Goal

•The formative assessment data for elementary mathematics exhibits a district-wide gap in number sense. Teachers lack a solid foundation in how to teach early mathematics, specifically knowledge of and skills for what to do if students struggle with math.

•To increase teachers' knowledge of early mathematics and improve teachers' instructional practices of number sense by implementing embedded, sustained, professional development focused on building students' number sense.

Activities	Outputs	Short-term Outcomes	Long-term Outcomes
Eight book study sessions ( <i>Number</i> <i>Sense Routines</i> ) Two Skype discussions with author/consultant Two full-day on-site trainings	Attendance; participation; preparation (completed the reading; brought case study homework); & collaboratively- developed number sense routines for teachers' use.	Increase in teachers' pedagogical content knowledge (PCK) for mathematics teaching. Implementation of number sense routines in classrooms Increase teacher enthusiasm for teaching mathematics. Improve skill in recognizing student knowledge and planning routines based on students' current knowledge.	Overall improve PCK for mathematics teaching. Daily implementation of number sense routines in a responsive and content-based way. Improve attitudes and/or motivation for teaching mathematics in the early grades. Improve skills in analyzing student work, understanding students' math thinking, and planning routines responsive to students' learning and/or needs
Case study activities	Collection of work samples over a school year.	Improved skill in analyzing student work.	Increase formative math assessment scores.

- **Rationales:** Teachers' mathematics instruction and students' mathematics achievement improve with teachers' increased content knowledge and improved instructional practices. Number sense is foundational for all mathematics learning.
- Assumptions: Professional development structure in place, need for consultant, and teachers eager to learn and improve.