Visual Access to Mathematics: A Blended Professional Development Course for Teachers of English Learners

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ABSTRACT

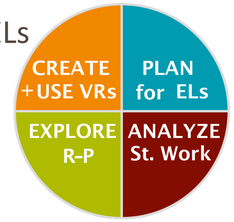
Designing and studying a sustained, blended online and face-to-face course for grades 6-8 mathematics teachers and EL specialists that seeks to deepen their understanding of visual representations for rational number & ratio and proportion tasks, increase their integration of strategies to support ELs during math instruction, and improve their ability to analyze artifacts of ELs' mathematical thinking.

PROFESSIONAL DEVELOPMENT

Goals:

Increase teachers' knowledge & abilities to:

- create and use visual representations
- plan lessons to integrate support for ELs
- analyze visual representations to understand student thinking for ELs
- draw on mathematical knowledge for teaching ratio & proportion content

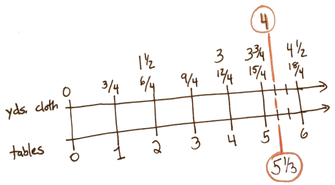


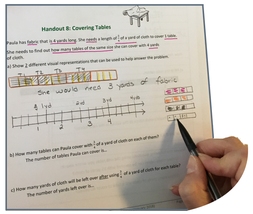
Course structure:

RESEARCH QUESTIONS

Overarching questions:

1. What supports allow teachers to develop mathematical knowledge for teaching & knowledge about instructional planning to support ELs?
2. What is the effect of VAM PD on teachers' knowledge about using VRs to support mathematical problem solving among ELs?





RESEARCH PHASES

PD iterative design & study:

Year 1: development with local educators

Year 2: formative field test, 20 teachers

Year 3 (underway): Cluster randomized control study, 100 teachers from 50 schools

FORMATIVE DATA SOURCES

Observations of PD, reflections from facilitators, and teacher surveys, interviews, & focus groups

PARTICIPANTS

Formative Field Test (Year 2): 20 local middle grades math or EL teachers, and specialists

Pilot Study (Year 3): 100 middle grades math or EL teachers, and coaches, from 5 New England states

PD – EMERGING THEMES

- Importance of varied online activity support
- Clear communication of goals across all activities
- Streamlined asynchronous course directions
- Use online whiteboard & desktop sharing

CONCLUSIONS

Blended PD designs can be powerful vehicles for rigorous, interactive, engaged professional learning that overcome challenges of distance & time.

- Importance of customizable online platform able to combine with other tools to enrich interactivity
- Asynchronous structures provide flexibility but need guidelines, accountability, & supports
- Important to build relationships and trust early in the course and through synchronous sessions
- Goals, activities, & instructions must be quickly consumable online