

Teacher Perceptions of Self-Efficacy on Number Talks Through Professional Development

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Introduction

- Mathematics education has shifted from rote memorization to a focus on problem-solving, reasoning, and mathematical discourse, as emphasized by the National Council of Teachers of Mathematics (NCTM).
- Number Talks, a structured classroom routine that encourages mental computation and discussion, have emerged as a pedagogical tool to support these practices.
- However, limited research exists on how professional development (PD) influences teachers' self-efficacy in implementing Number Talks.

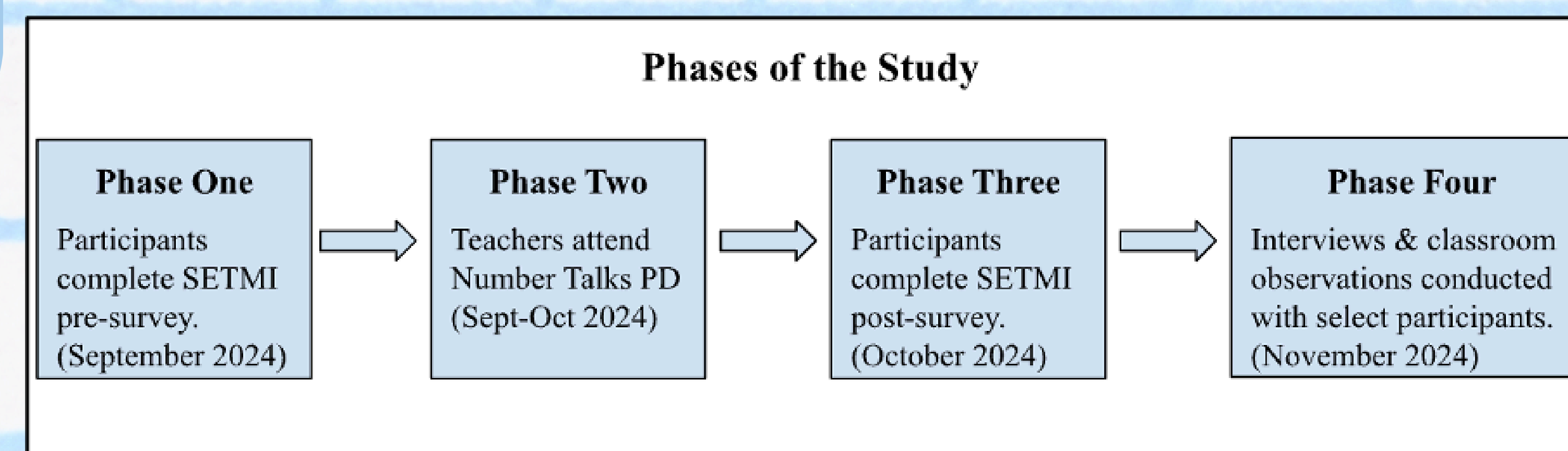
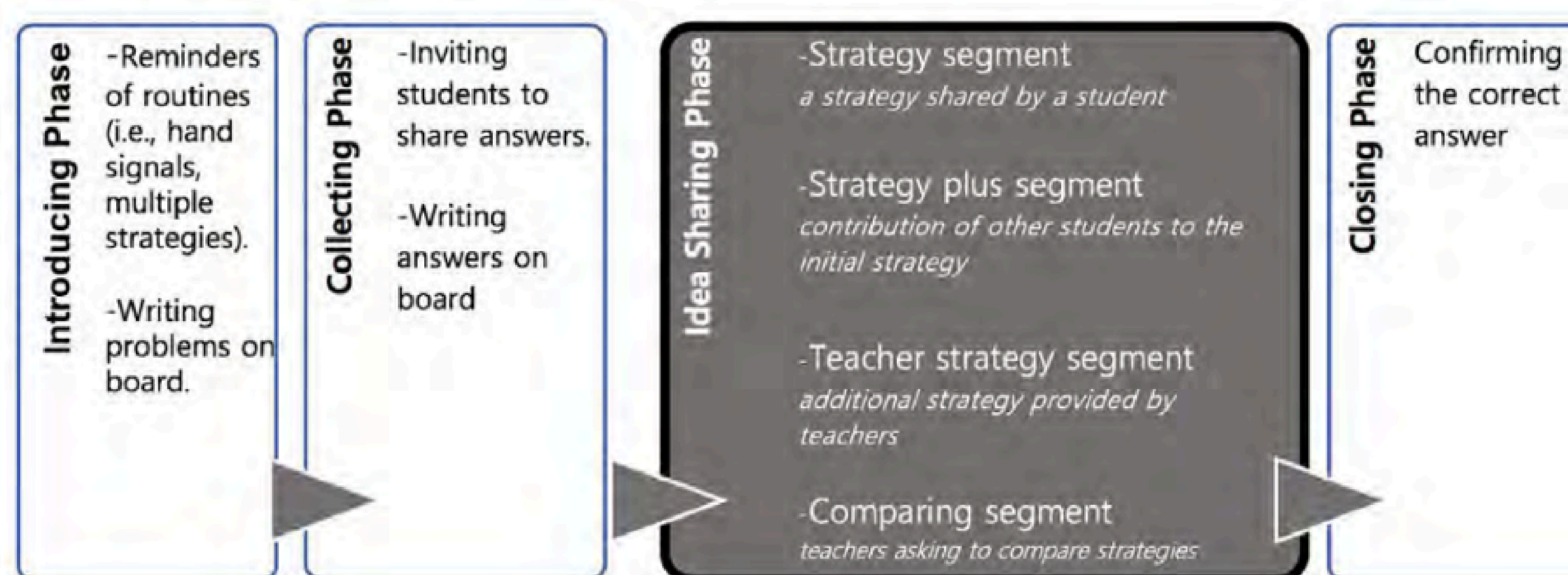
Research Objectives

- This study examined the impact of a professional development series on elementary teachers' self-efficacy in implementing Number Talks.
- It explored how teachers perceive their ability to use Number Talks to enhance students' number sense and investigated how they enact the practice in their classrooms.

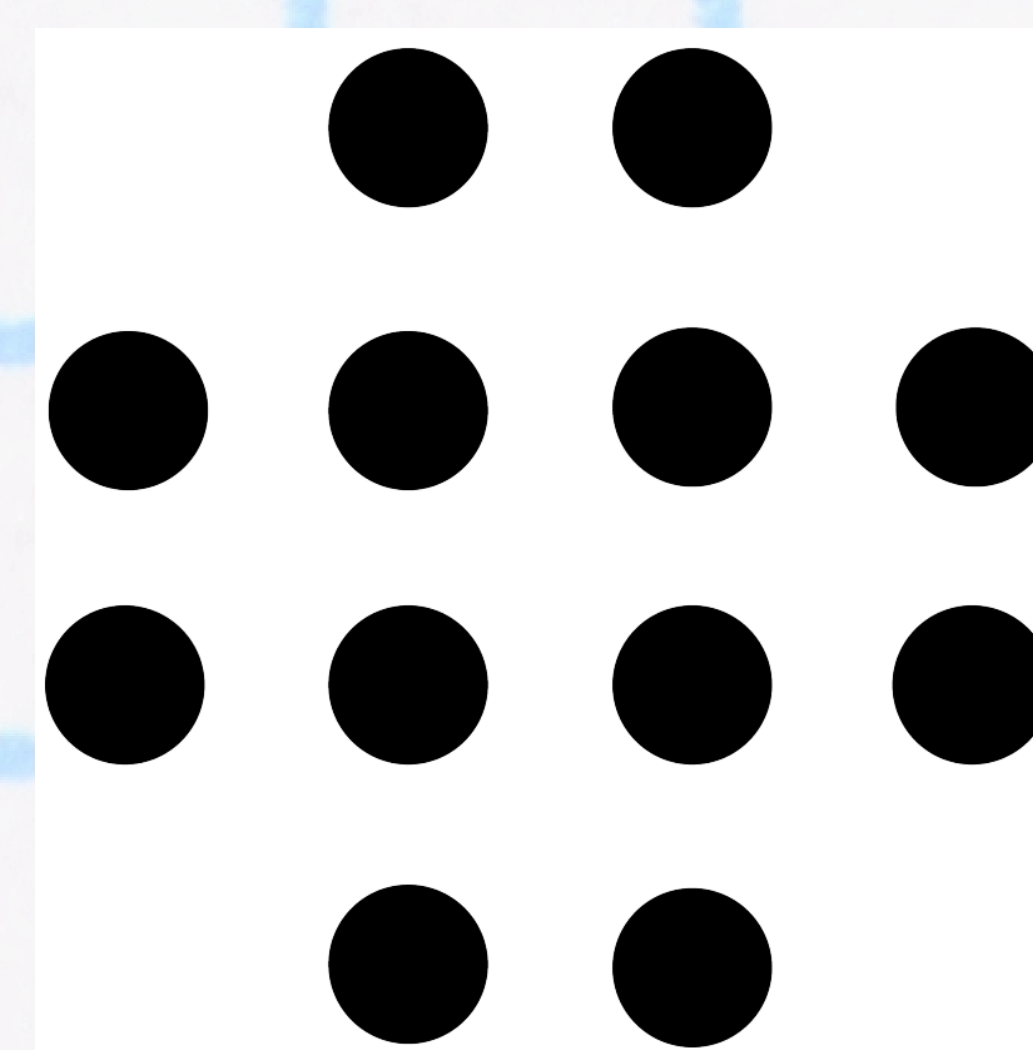
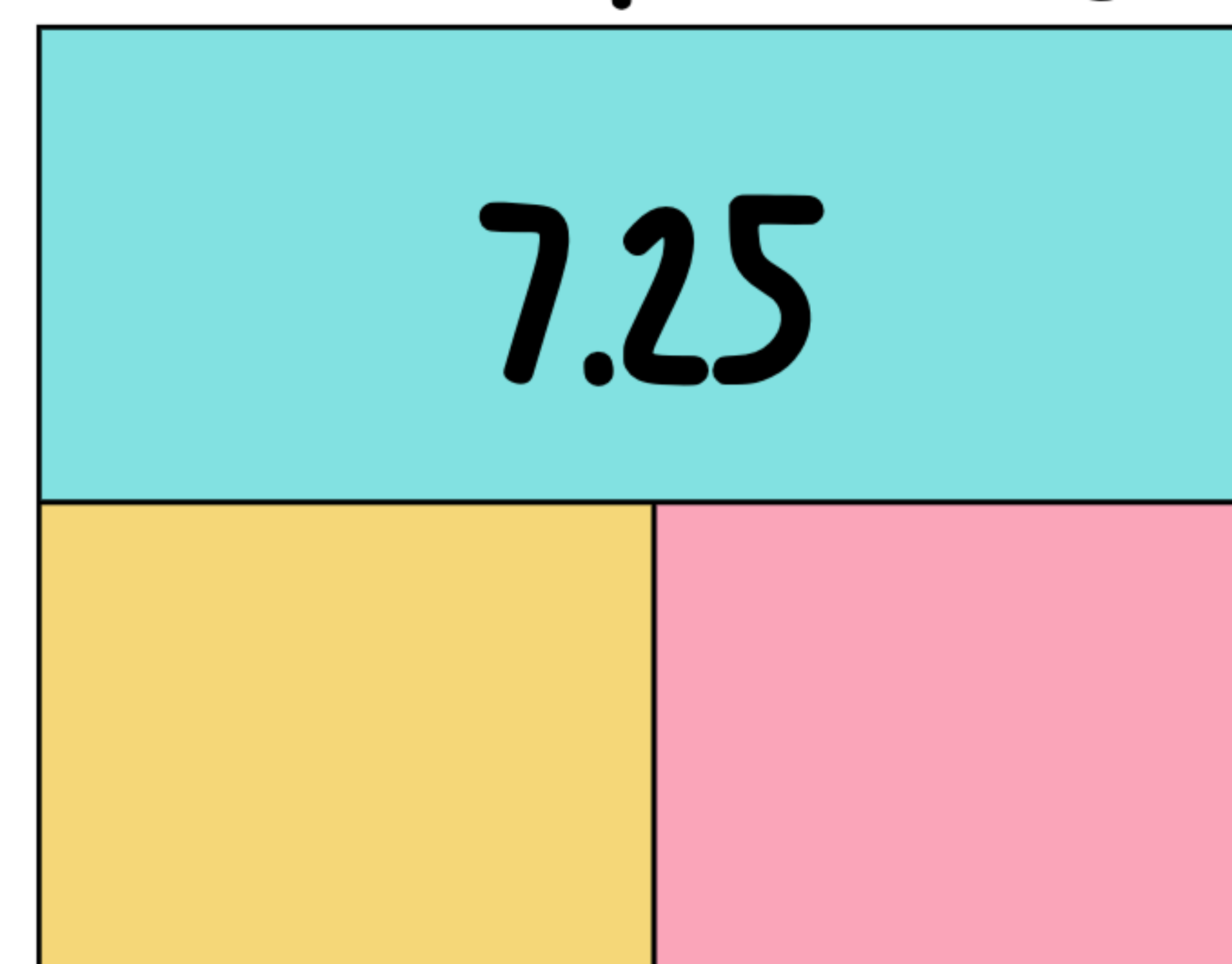
Methodology

A mixed-methods approach was used, incorporating:

- Quantitative Data:** Pre- and post-surveys using the Self-Efficacy for Teaching Mathematics Instrument (SETMI).
- Qualitative Data:** Interviews with participating teachers and classroom observations of Number Talks implementation.
- Participants:** Elementary teachers (grades 3-5) from a NJ Title I school district.



NUMBER BONDS



121	16
9	73

Findings

- Participation in the PD series significantly improved teachers' self-efficacy in implementing Number Talks.
- Teachers reported increased confidence in facilitating mathematical discussions and mental computation strategies.
- Classroom observations revealed variations in how Number Talks were enacted, with some teachers adhering closely to PD guidelines and others modifying the approach to fit their teaching styles.

Discussion

- This study contributes to the growing body of research on mathematics education by highlighting the role of PD in enhancing teacher self-efficacy for implementing Number Talks.
- The findings suggest that well-structured PD can support teachers in integrating Number Talks effectively, ultimately fostering students' number sense and mathematical reasoning.
- Future research should explore long-term impacts on student achievement and the scalability of Number Talks PD programs.

	Pre-Self-Efficacy (SE)	Pre-Mathematical Skills (MS)	Post Self-Efficacy (SE)	Post Mathematical Skills (MS)
Mean	2.79	2.89	4.63	4.58
Standard Deviation	1.18	1.24	0.60	0.61
Median	3.00	3.00	5.00	5.00
Mode	2.00	3.00	5.00	5.00