



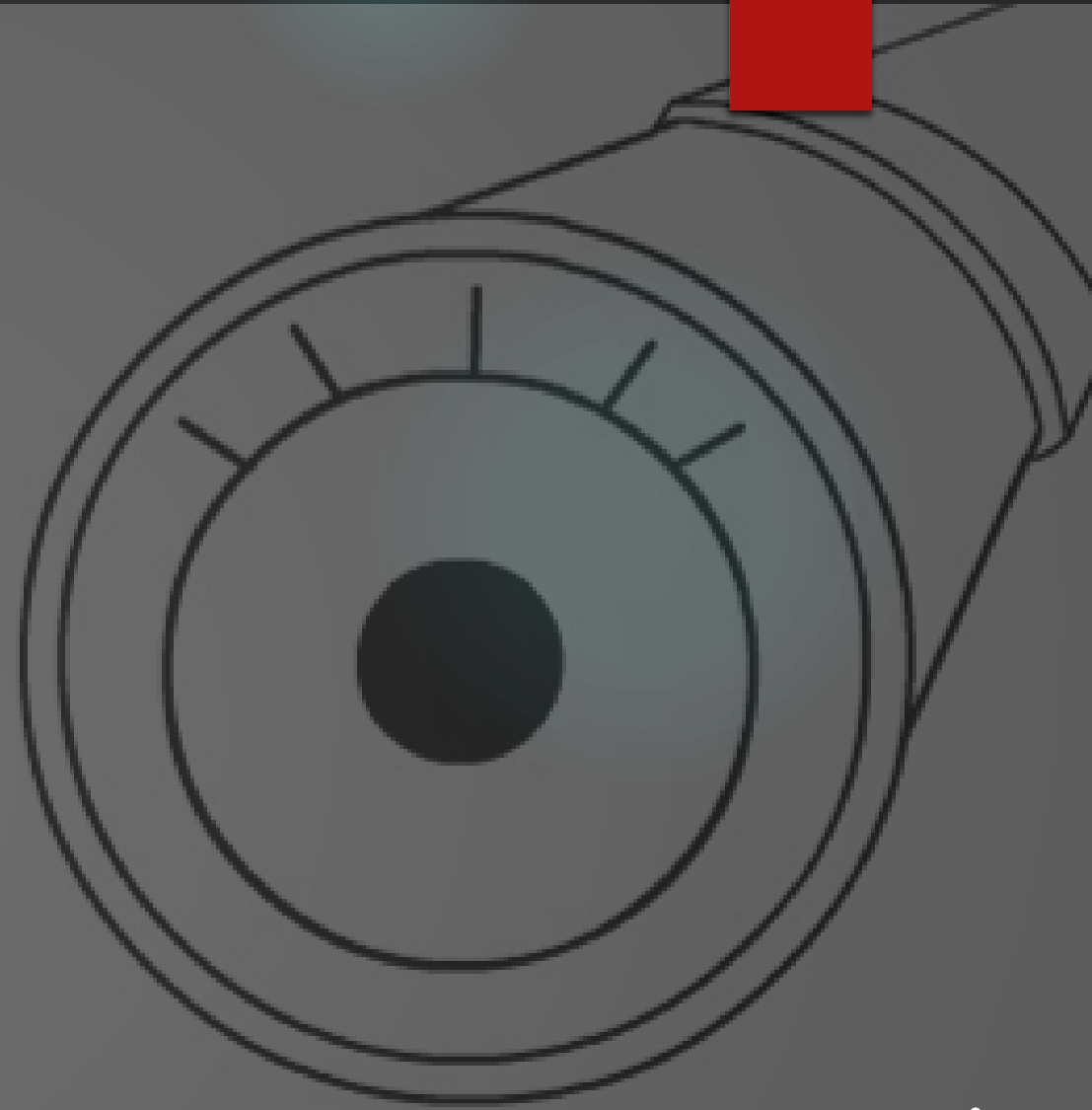
# Self-Efficacy & Professional Development for Math Educators

MATTHEW BONHAMGREGORY & LEXI CEVALLOS



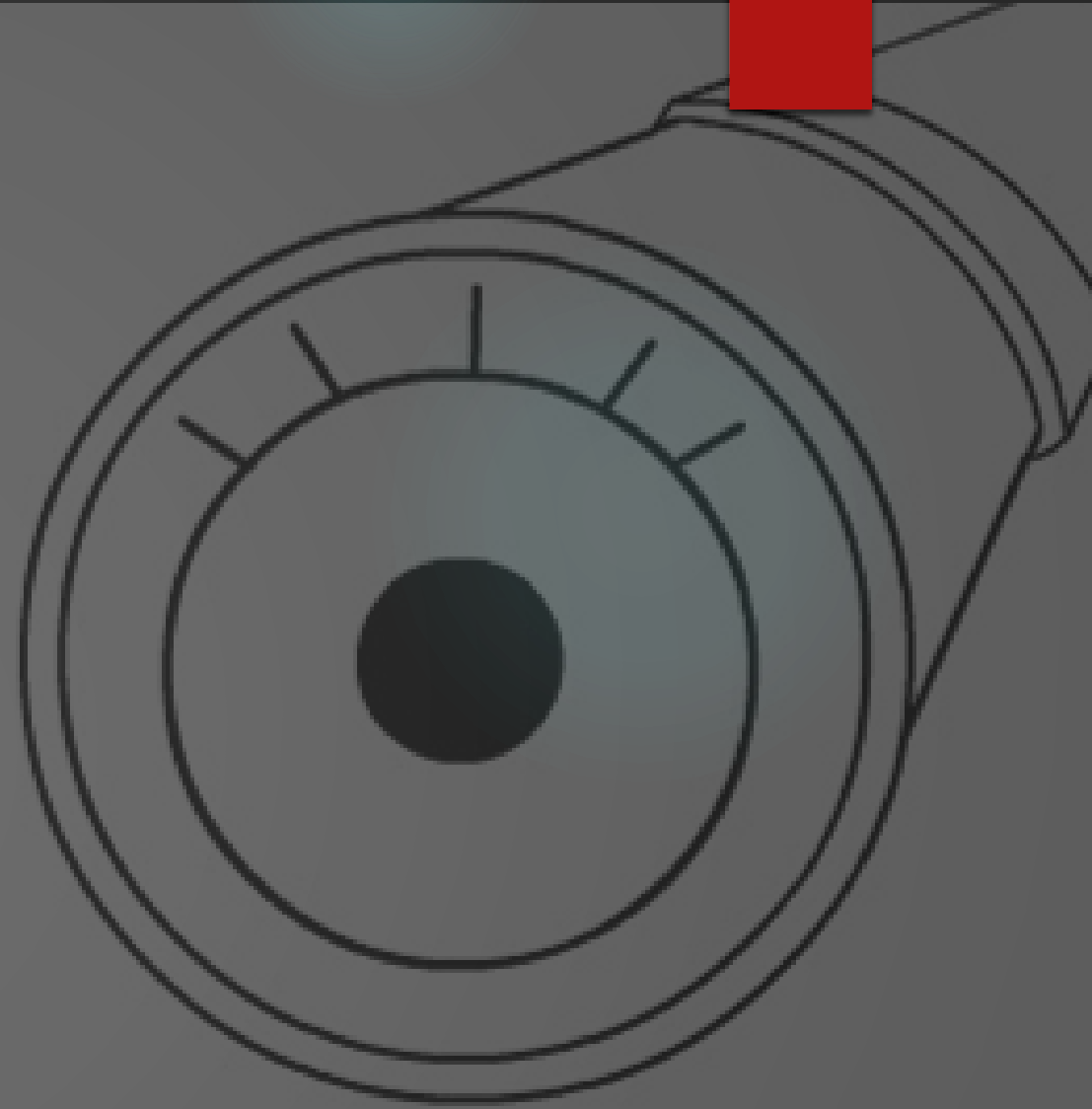
# Focus

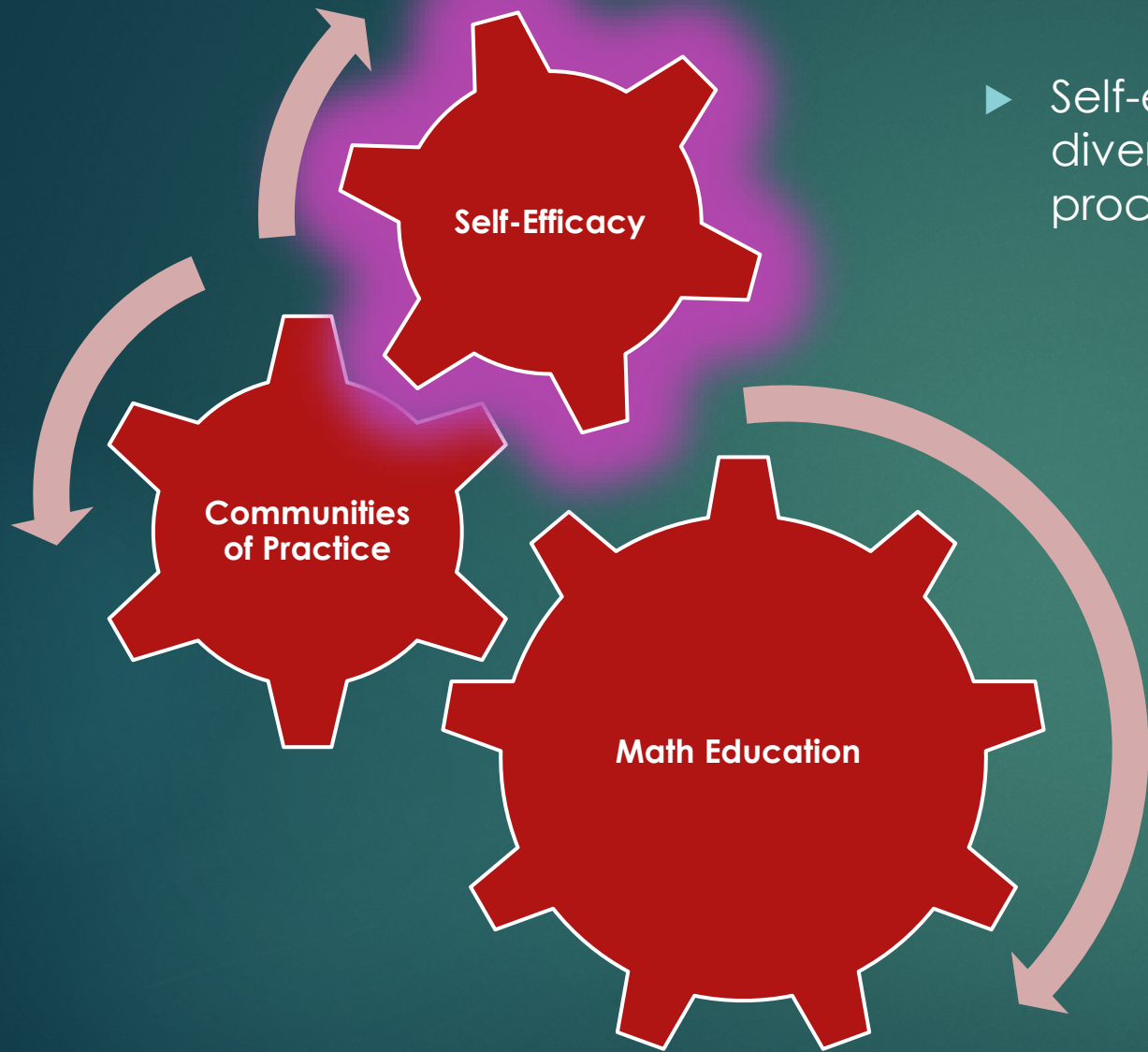
- ▶ People & Students form Communities of Practice
- ▶ Self-Efficacy is at the very root of how people integrate into communities of practice
- ▶ Specific Community of Practice: Mathematics



# Study Infrastructure

- ▶ 16-week research period
- ▶ Ten 45-minute lessons available
- ▶ Recruit undergraduate pre-service teachers in a large metropolitan area in the south-central part of the United States
- ▶ Pre and post-study quantitative data measuring self-efficacy & attitudes





► Self-efficacy beliefs produce these diverse effects through four major processes (A. Bandura, 1992).

► Processes:

- Cognitive
- Motivational
- Affective
- Selection



# Self-Efficacy Processes at Work





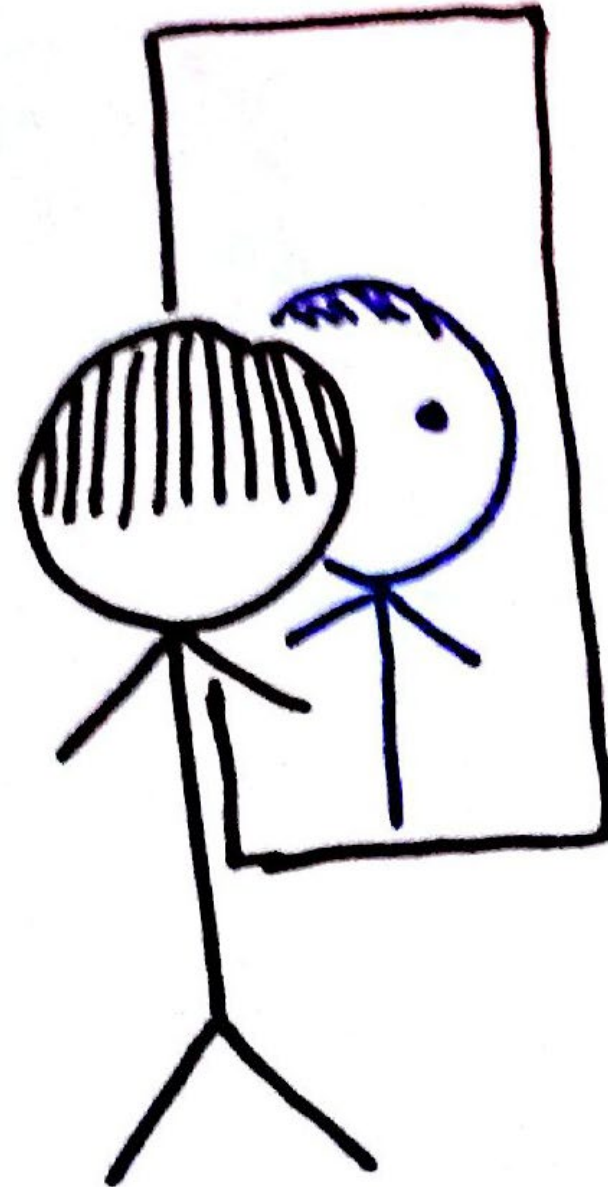
# COGNITIVE PROCESSES

- ▶ Conception of Ability
- ▶ Social Comparison Influences
- ▶ Framing of Feedback
- ▶ Perceived Controllability



# MOTIVATIONAL PROCESSES

- ▶ Cognized Goals
- ▶ Self-Reactive Influences
- ▶ Proactive Control of Motivation



# AFFECTIVE PROCESSES

- ▶ Thought Control Efficacy
- ▶ Coping Efficacy and Achievement Anxiety
- ▶ Self-Efficacy and Depression





# SELECTION PROCESSES

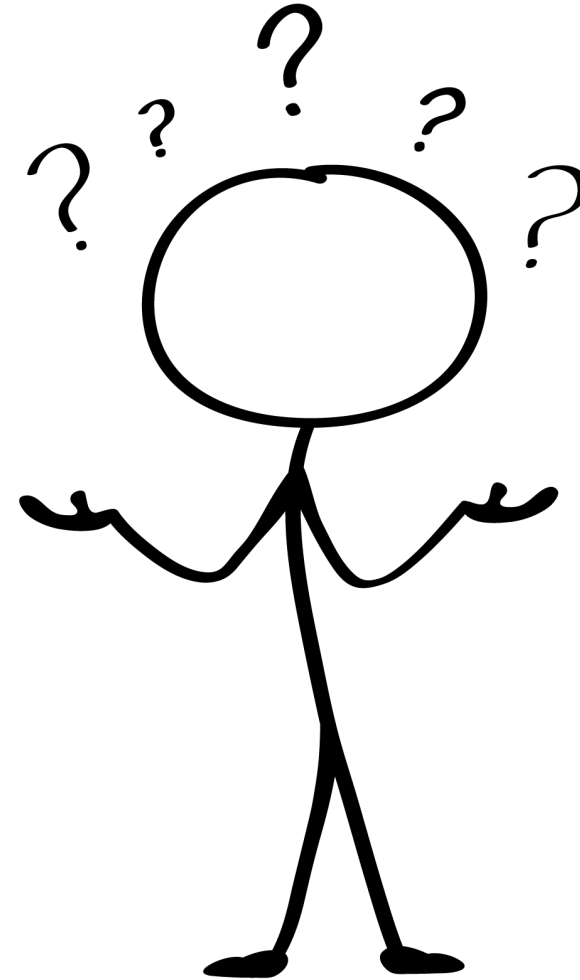
## STUDENTS' COGNITIVE SELF-EFFICACY

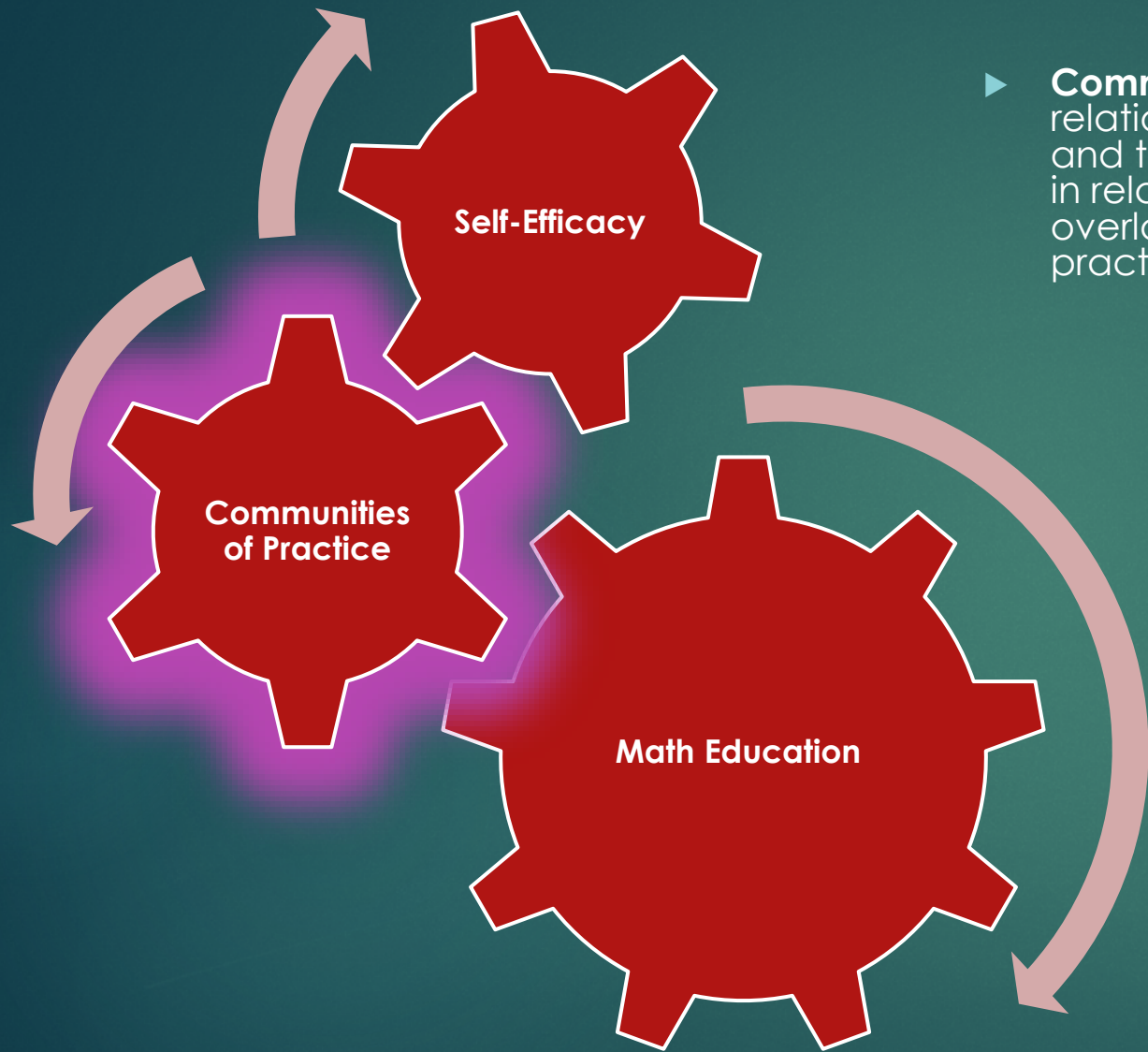
- ▶ Self-Efficacy in Self-Regulated Cognitive Development
- ▶ Impact of Cognitive Self-Efficacy on Developmental Trajectories
- ▶ Socio-cognitive Instructional Strategies

## TEACHERS' SELF-EFFICACY

## COLLECTIVE SCHOOL EFFICACY

Parental Self-Efficacy and School Involvement





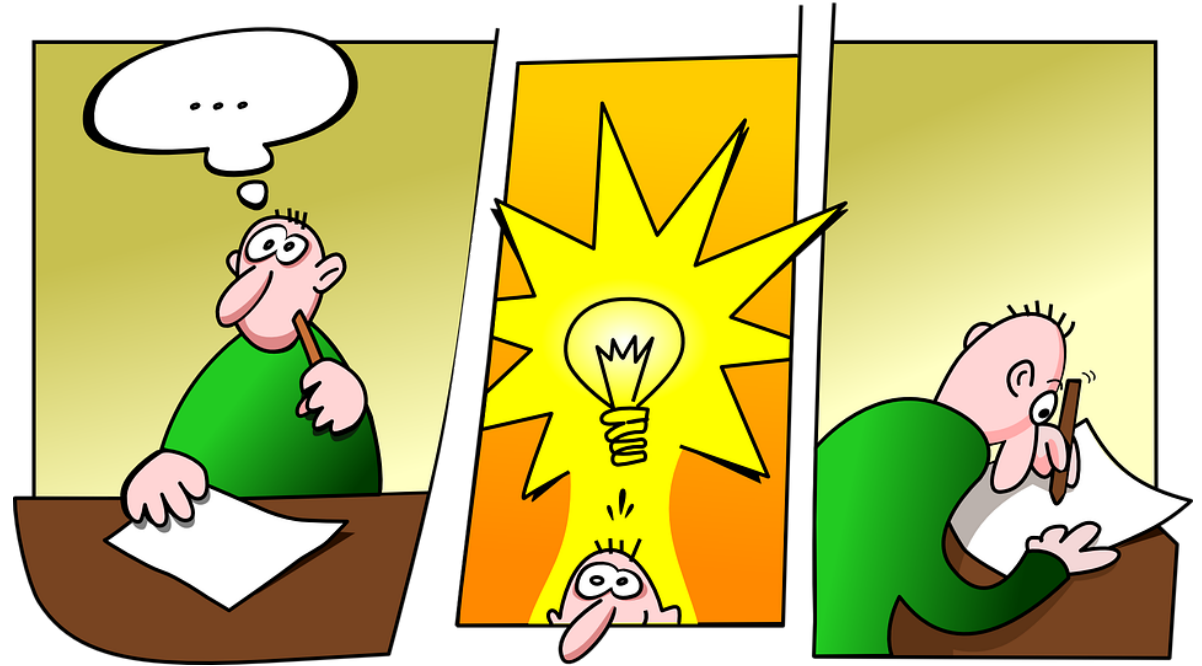
► **Community of Practice:** “a system of relationships between people, activities, and the world; developing with time, and in relation to other tangential and overlapping communities of practice” (Lave & Wenger, 1991).

- Meaning:
- Participation
  - Reification
  - Social Cognitive Theory



# Reification

- ▶ Create
- ▶ Meanings can evolve





# Participation

- ▶ Mutual Engagement
- ▶ Joint Enterprise
- ▶ Shared Repertoire

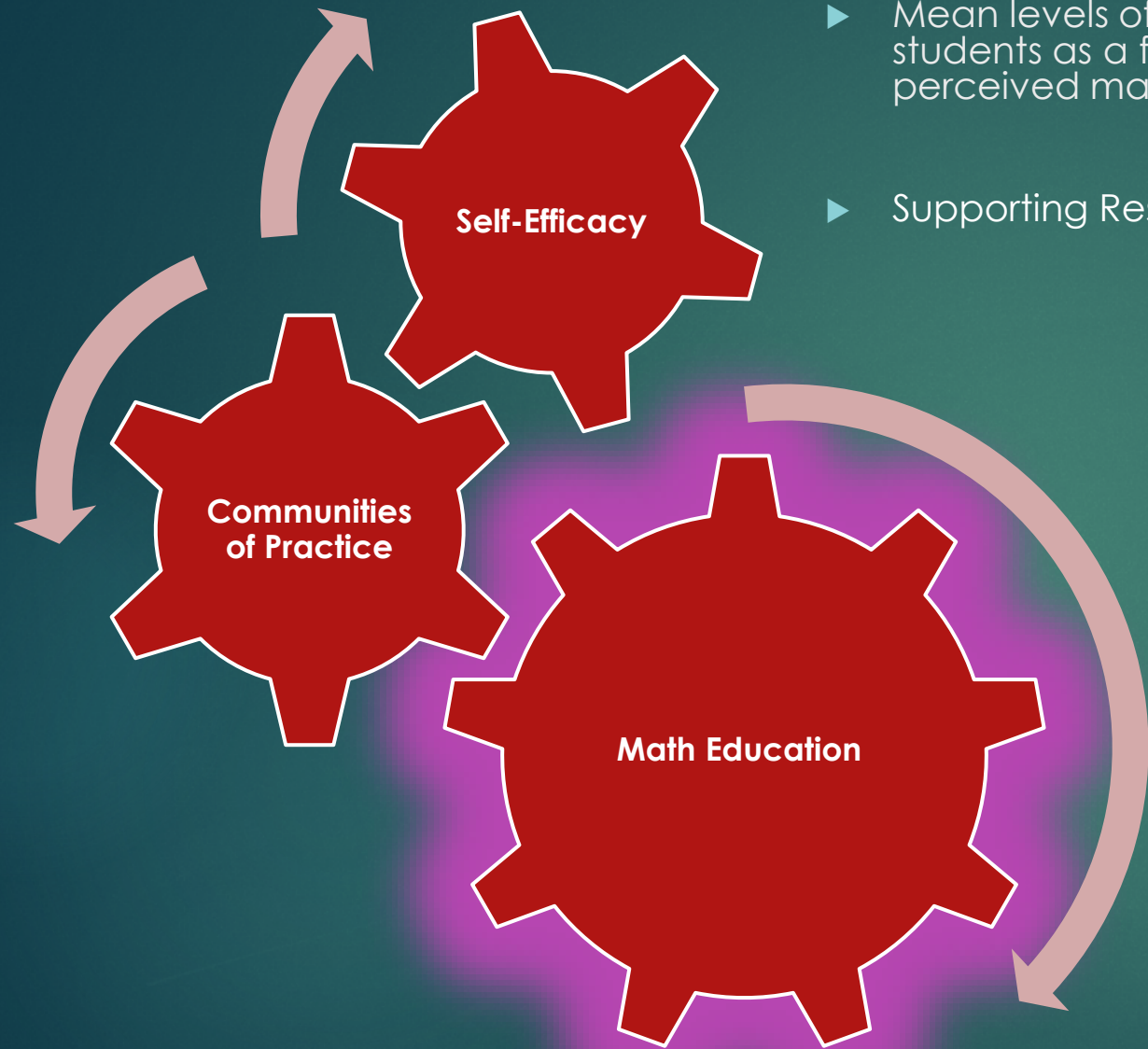




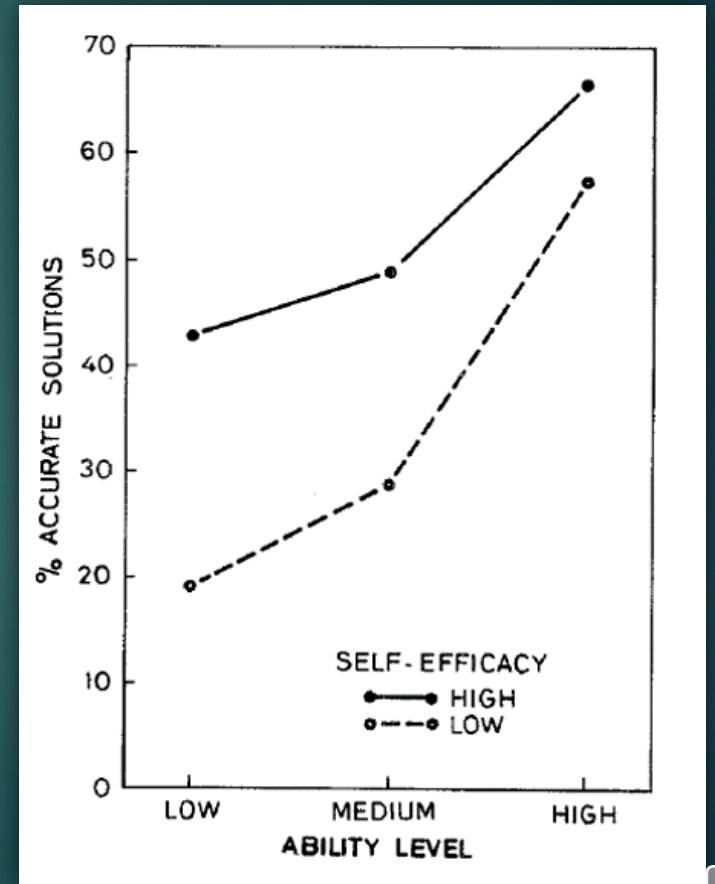
# Social Cognitive Theory

- ▶ Self- Observation
- ▶ Self- Evaluation
- ▶ Self- Reaction



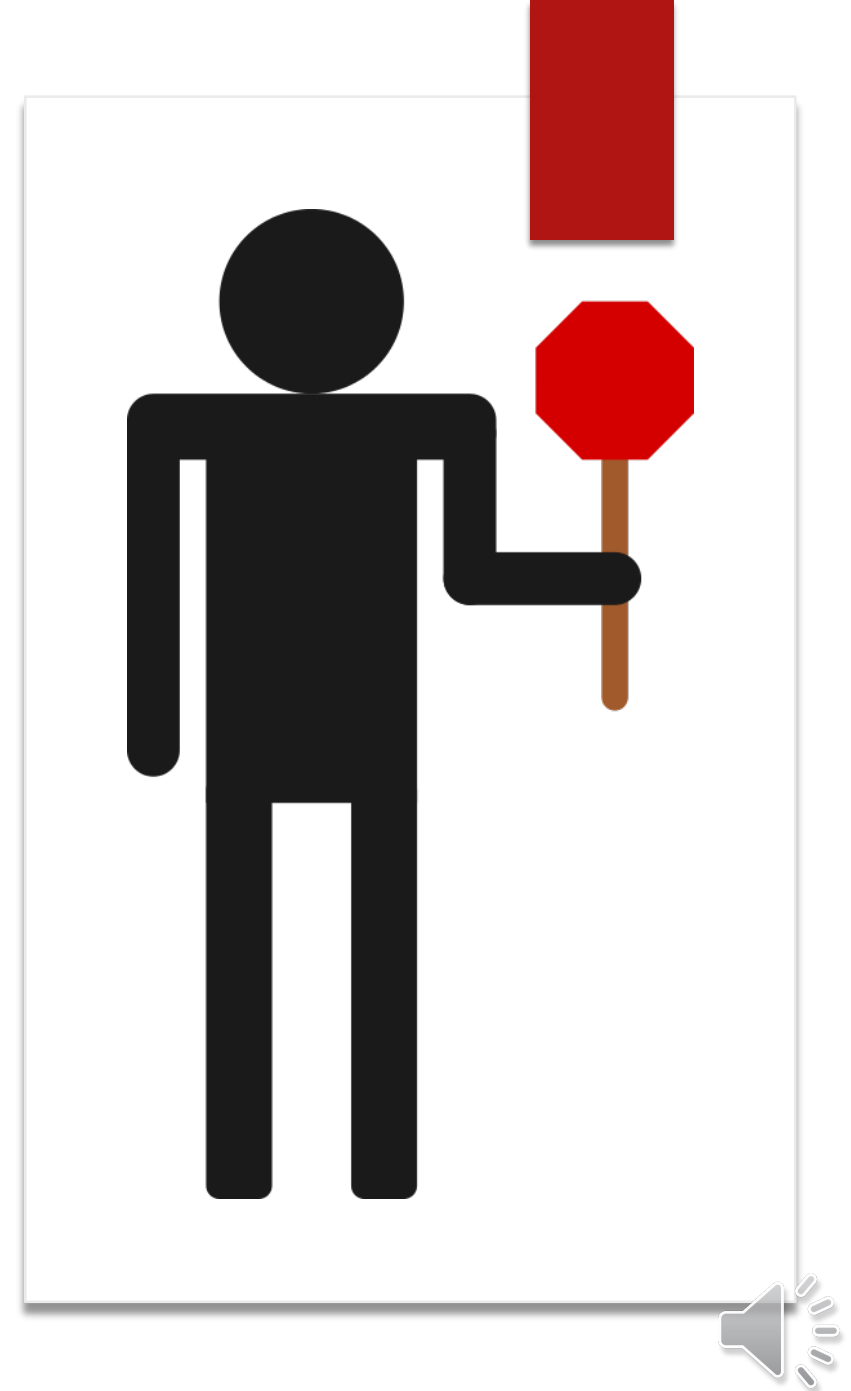


- ▶ Mean levels of mathematics solutions achieved by students as a function of mathematical ability and perceived mathematical self-efficiency (Collins, 1982).
- ▶ Supporting Research



# Negative Impact

- ▶ Psychological phenomena
- ▶ 34-point lower score in mathematics
- ▶ In Iceland and Portugal higher self-efficacy was correlated with lower anxiety





# Long term Effects

- ▶ Teacher self-efficacy to positively influence student learning

## **Future Hopes:**

- ▶ Validating if these methods serve other professional development opportunities and potentially using this as a template







**The end**

