Research Experiences and Teacher Retention, Persistence, and Practice: Triangulating Teacher Accounts with Observation and Student Data

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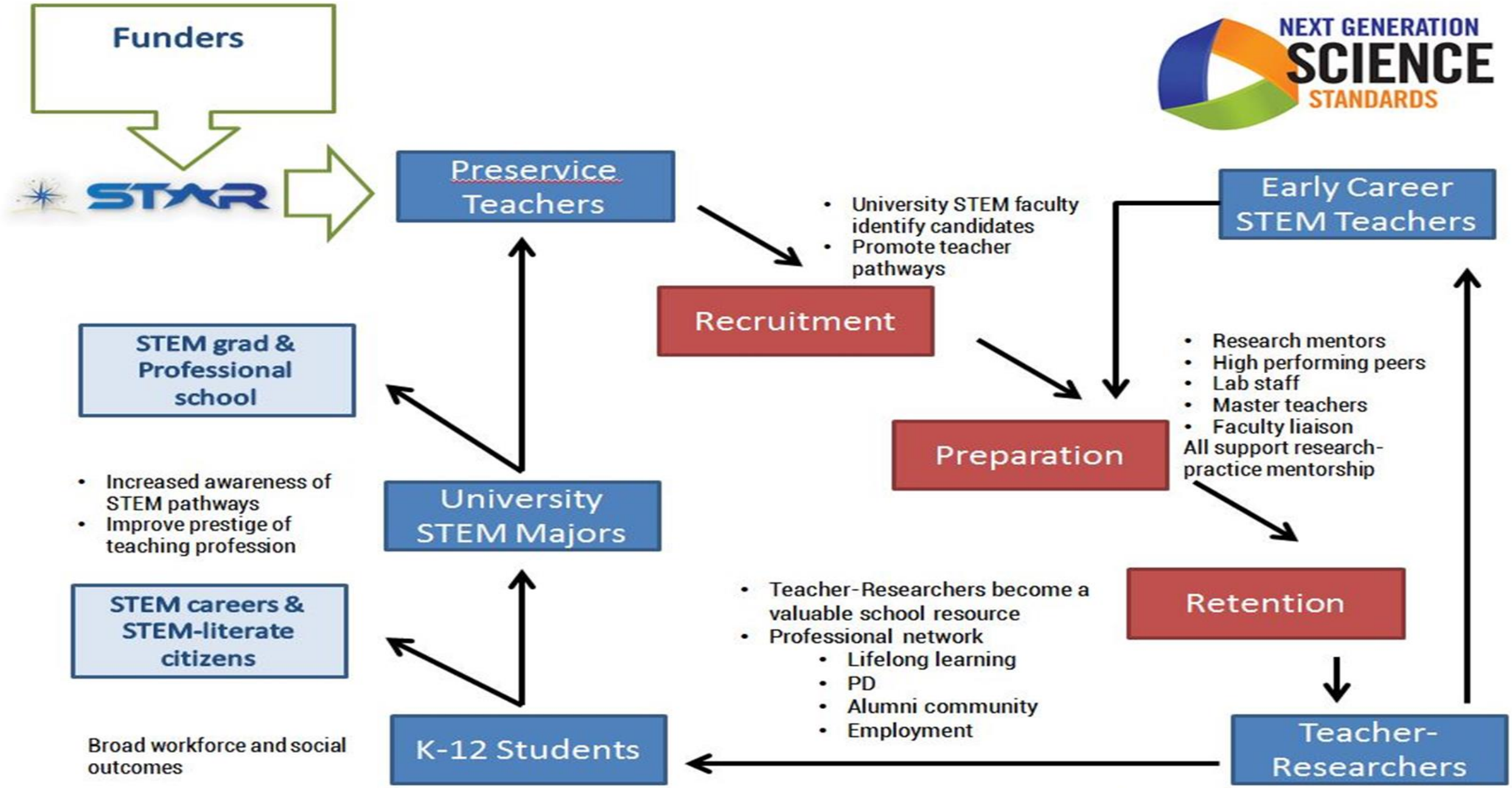
Problem: Impact of RETs and Self-Report Data

Research Experiences for Teachers (RETs)

- Authentic research experiences connected to teaching objectives
- Goals: Improved understanding of STEM content and practices by teachers → Improved STEM education for students → Improved STEM learning outcomes
- Becoming more popular nationwide at universities and national labs
- Almost all program evaluation relies on self-report data
- Limited corroboration or triangulation


Funders
STAR
NEXT GENERATION SCIENCE STANDARDS
Preservice Teachers
University STEM faculty identify candidates
Promote teacher pathways
Recruitment
Early Career STEM Teachers
Research mentors
High performing peers
Lab staff
Master teachers
Faculty liaison
All support research-practice mentorship
Preparation
STEM grad & Professional school
Increased awareness of STEM pathways
Improve prestige of teaching profession
University STEM Majors
STEM careers & STEM-literate citizens
Teacher-Researchers become a valuable school resource
Professional network
Lifelong learning
PD
Alumni community
Employment
Retention
Broad workforce and social outcomes
K-12 Students
Teacher-Researchers
Training & personal experiences support NGSS & CC objectives

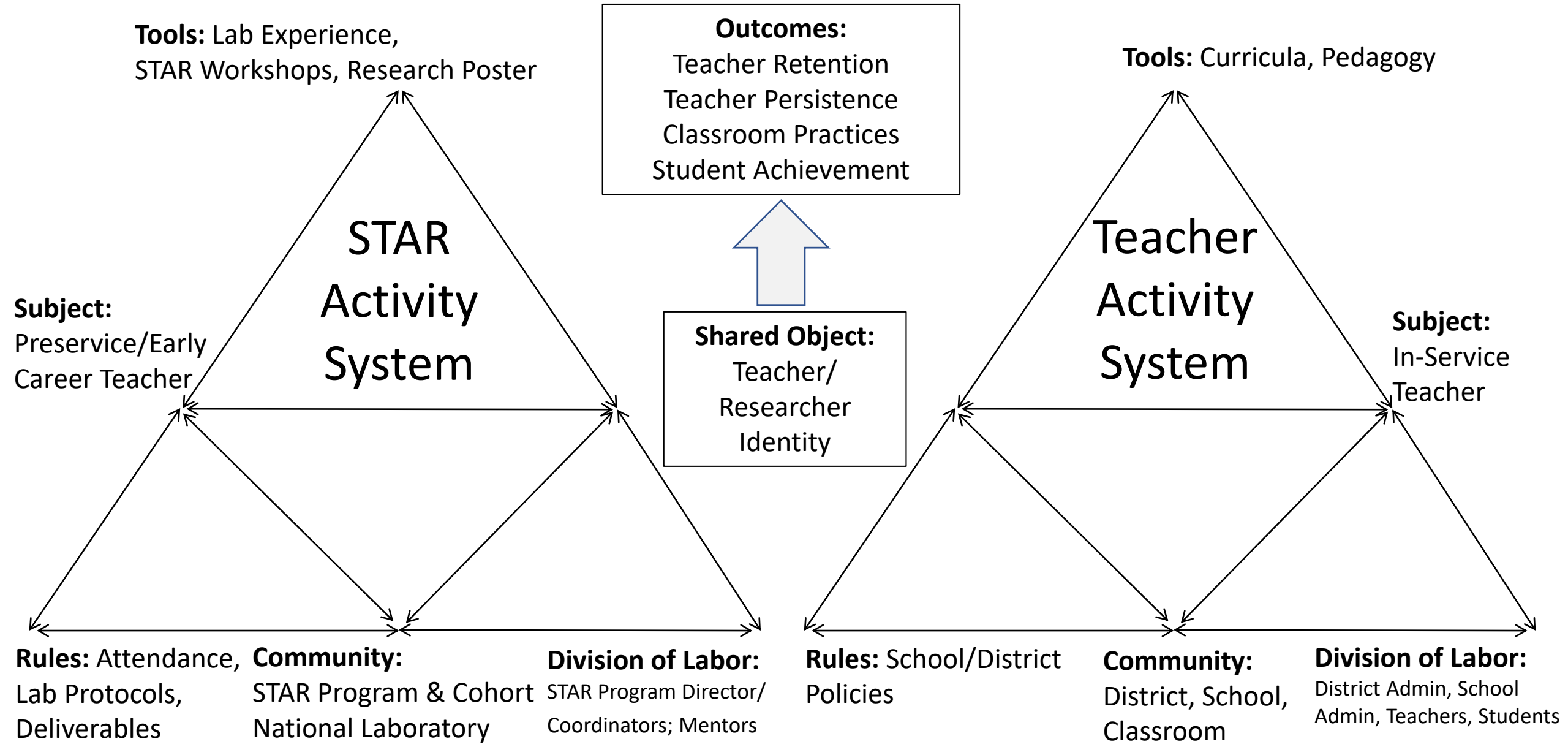
Research Questions:

Are STAR Fellows (Noyce or non-Noyce) more likely to *persist* and/or be *retained* in high-need settings?

Compared with other teachers at their schools and in their districts, are STAR Fellows (Noyce or non-Noyce) more *effective* at engaging students in STEM learning and increasing student achievement gains, particularly in high-need settings?

What are the aspects of the STAR Program and selected Noyce Programs that most strongly influence the above findings with regards to persistence, retention, and effectiveness?

Framework: 3rd Generation Activity Theory



Methodology: Context & Participants

7 STAR program alumni

8 Comparison teachers

Supervisors for each pair of teachers

Students from selected classes for each teacher

7 high schools from 6 school districts

- All districts identified as high need according to Noyce program

Methodology: Methods: Data Collection

Teacher Data

- Survey
- Semi-structured interviews

Supervisor Data

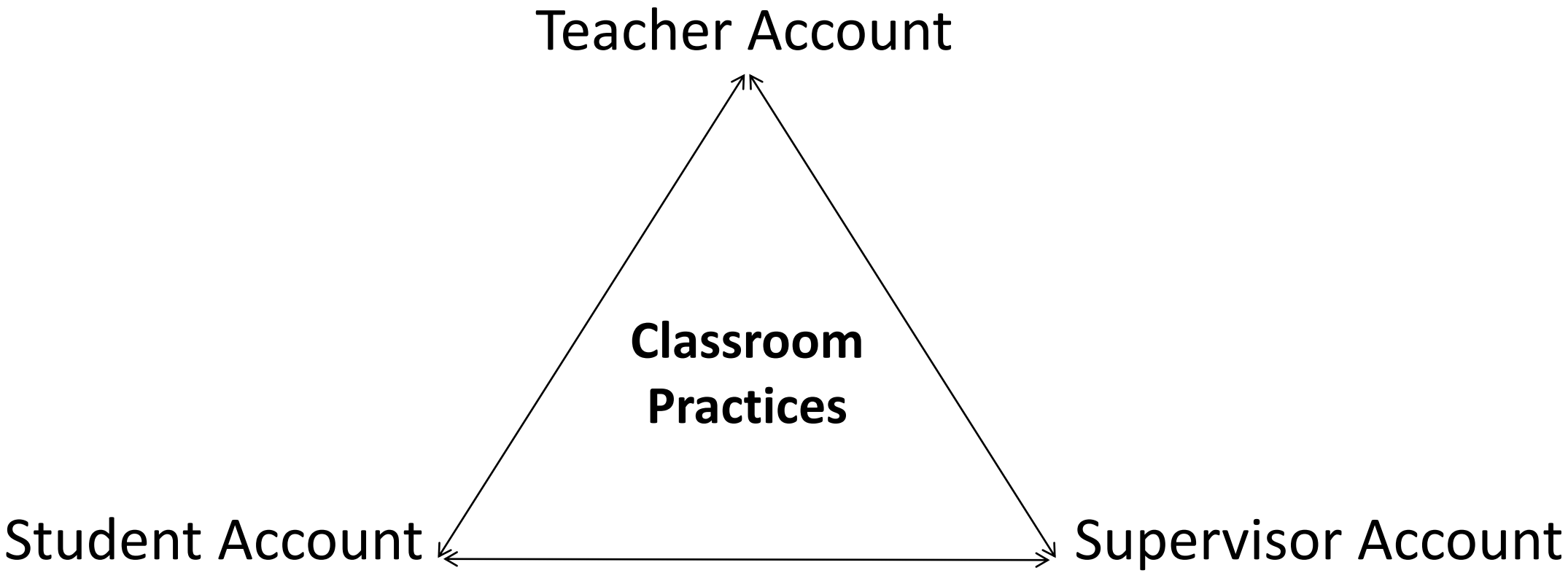
- Semi-structured interviews

Student Data

- Pre/Post Surveys
- CCSSM: Smarter Balanced
- NGSS: CA Assessment of Science Teaching (CAST)

Methodology: Methods: Data Analysis

Triangulation of Teacher Self-Report Data



Discussion: Implications for Broader Impacts

Impacts of the STAR program:

- Full participation of women, persons with disabilities, and underrepresented minorities in STEM
- Improved STEM education and educator development at any level
- Increased partnerships between academia, industry, and others
- Enhanced infrastructure for research and education

Impacts of Improved STEM Teaching:

- Increased public scientific literacy and public engagement with science and technology
- Improved well-being of individuals in society
- Development of a diverse, globally competitive STEM workforce
- Improved national security
- Increased economic competitiveness of the United States

Thank you!

Questions may be directed to Dan Moreno at
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This research may be followed at academia.edu and researchgate.org.

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