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 $\rightarrow$ Improved STEM education for students $\rightarrow$ 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
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

**Tools:** Lab Experience, STAR Workshops, Research Poster

**Subject:** Preservice/Early Career Teacher

**Rules:** Attendance, Lab Protocols, Deliverables

**Community:** STAR Program & Cohort National Laboratory

**Division of Labor:** STAR Program Director/Coordinators; Mentors

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**Shared Object:** Teacher/Researcher Identity

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**Tools:** Curricula, Pedagogy

**Subject:** In-Service Teacher

**Rules:** School/District Policies

**Community:** District, School, Classroom

**Division of Labor:** District Admin, School Admin, Teachers, Students

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**Outcomes:**
Teacher Retention
Teacher Persistence
Classroom Practices
Student Achievement
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

Teacher Account

Classroom Practices

Student Account

Supervisor Account
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!

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This research may be followed at academia.edu and researchgate.org.

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