Collaborative Research: Exploring the Impact of Noyce MTF Programs on Teacher Retention: The Role of Motivation, Leadership, and School-Work Environment

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Overview

Share our research (design and results so far) and stimulate discussions. Each section 5-10 min present 5-10 min Qs feedback, 10-15 min overall discussion

1. Project overview and design
2. Results from the pilot study survey
3. Preliminary results from the main study survey
4. Interviews
1. Project Overview

Goal: To study the retention and persistence of MTFs beyond their teaching commitment in comparison with non-MTFs and in relation to their:

- self-efficacy for teaching,
- leadership skills,
- diversity dispositions,
- school-work environment, and
- social networks.
Research Questions

• How do MTFs and non-MTFs compare in terms of their self-efficacy for teaching, leadership skills, diversity dispositions, social networks, and school-work environment?

• To what extent do MTFs’ and non-MTFs’ self-efficacy for teaching, leadership skills, diversity dispositions, social networks, and school work-environment relate to their retention?
Research Questions (cont.)

• What social network characteristics (both teaching and teacher leadership networks) affect teacher retention and persistence?

• What social network characteristics (both teaching and teacher leadership networks) affect leadership activities?

• How do Noyce MTFs’ social networks differ from the networks of non-Noyce teachers?

• How do Noyce MTFs’ teaching related networks differ from their leadership related networks?
Project Activities

Year 1

Research Design & Recruitment
- Develop & refine research plan, timeline, and logistics
- Contact, reconnect with, and recruit former MTFs
- Identify and recruit comparable non-Noyce teachers
- Develop & refine instruments & data collection infrastructure

Year 2

Data Collection
- Survey – Fall 2021
- Interviews – Spring 2022

Data Analysis (Y2-Y3)
- Quantitative
- Qualitative
- Social network analysis

Year 3

Synthesis & Dissemination

- Virtual group meetings
- Reporting

Completed
- External feedback (AB)
- Consultation

Ongoing
- Virtual group meetings
- Reporting

Future
- External feedback (AB)
- Consultation
Recruitment for the Pilot Survey

• Rice University School Mathematics Project (RUSMP) teacher network
• Announced in May, closed mid-August
• Two-step: enrollment and survey
• Hiccup with spams due to incentives
Recruitment

• Collection of demographic and professional background data completed spring 2021
  o 89 of 102 potential MTFs (87% success)
  o 175 potential comparison teachers (about 200 invited)

• Matching MTFs with non-MTFs completed Aug-Sep 2021
  o Based on experience, school-level, degrees, and demographics

• 87 comparison teachers were invited initially
Survey

• Three main parts:
  1. Demographic and professional background
  2. Teaching and leadership
  3. Social networks

• Long survey! (45-min to 1 hour)
  • Encouraged multi-sessions

• Incentives:
  • Pilot - $15 for everyone and seven big prizes totaling to $1,000
  • Main study - $175 for everyone
Q&A and Discussion (Part I)

• Questions? Feedback?

• Share your experiences in survey studies with teachers
  • Challenges, tips, etc.

• Discuss advantages and challenges for open-to-public surveys vs. by-invitation surveys

• Discuss different types of questions in surveys (e.g., Likert-scale, open-ended, standardized-response)
2. Pilot Survey

- Revalidation of the survey questions and structure for the main study
- Math and science teachers from both elementary and secondary schools in the Greater Houston area
Demographics

- 73% Female
- 27% Male
- 65% White
- 17% African American
- 8% Asian/PI
- 10% Other
Professional Background

Degree in teaching
- YES: 139 (57%)
- NO: 106 (43%)

Standard certification
- YES: 89% (218)
- NO: 11% (28)
Retention

• Stayer: remaining in teaching
• Shifter: accepting a role in education outside of teaching
• Leaver: changing to a non-educational career
## Pilot Results

### Regression results
- Secondary teachers more likely to shift to a non-teaching position
- Higher levels of teacher leadership skills associated with shifting to a non-teaching position
- Lower degrees of professional fit within schools associated with shifting
- Higher levels of teaching self-efficacy observed in leavers compared to stayers

### Reasons for shifting
- Burnout
  
  "I was seeking positions outside of the classroom because of [demanding] teaching."
- Better pay
- Greater impact
  
  "I felt I could better support students by supporting teachers."

### Reasons for leaving
- Pandemic, retirement, family, stress, burnout, "caustic atmosphere" of school districts

<table>
<thead>
<tr>
<th>Retention</th>
<th>B</th>
<th>S.E</th>
<th>Exp(B)</th>
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<tbody>
<tr>
<td><strong>Shifter</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Intercept</td>
<td>-5.27</td>
<td>5.80</td>
<td></td>
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<tr>
<td>Male</td>
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<td>URM</td>
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<td>1.29</td>
<td>2.58</td>
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<tr>
<td>Degree in teaching subject</td>
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<td>0.76</td>
<td>0.41</td>
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<tr>
<td><strong>Secondary</strong></td>
<td>1.80</td>
<td>0.87</td>
<td>6.02*</td>
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<td>Teaching self-efficacy</td>
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<td>0.76</td>
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<td><strong>Teacher leadership skills</strong></td>
<td>2.30</td>
<td>0.77</td>
<td>10.02**</td>
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<td>Person-organization fit</td>
<td>-1.38</td>
<td>0.62</td>
<td>0.25*</td>
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<tr>
<td>Principal autonomy support</td>
<td>0.06</td>
<td>0.38</td>
<td>1.06</td>
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<tr>
<td>Diversity dispositions</td>
<td>-0.78</td>
<td>1.33</td>
<td>0.46</td>
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<tr>
<td>Community connectedness</td>
<td>0.09</td>
<td>0.50</td>
<td>1.09</td>
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<tr>
<td>Social network</td>
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<tr>
<td><strong>Size</strong></td>
<td>0.01</td>
<td>0.09</td>
<td>1.01</td>
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| Leaver |     |     |        |
| Intercept | -5.90 | 5.44 |        |
| Male      | -0.12 | 0.68 | 0.89   |
| URM       | -1.03 | 0.90 | 0.36   |
| Standard certification | -0.68 | 1.01 | 0.51   |
| Degree in teaching subject | -0.79 | 0.62 | 0.46   |
| Secondary | 0.96  | 0.74 | 2.62   |
| **Teaching self-efficacy** | 2.52  | 0.78 | 12.37** |
| Teaching leadeship skills | -0.44 | 0.59 | 0.65   |
| Person-organization fit | -0.38 | 0.46 | 0.68   |
| Principal autonomy support | -0.26 | 0.32 | 0.77   |
| Diversity dispositions | -0.75 | 1.21 | 0.47   |
| Community connectedness | 0.15  | 0.40 | 1.17   |
| Social network |     |     |        |
| **Size** | 0.02  | 0.09 | 1.02   |

\* The reference category is: Stayer or Mover.
Q&A and Discussion (Part II)

- Shifting to a non-teaching position
  - Secondary teachers
  - Leadership skills
  - Teacher-school fit
- Reasons for shifting
- Reasons for leaving
- Questions? Feedback?
3. Main Survey

- Background questionnaire administered early spring 2021
- Main survey administered October-December, 2021
  - Follow-up background questionnaires
  - Scales for teaching and leadership
  - Social networks
    - Teaching network
    - Teacher leadership network
Survey Completion

• Administered October-December
• 84 out of 87 MTFs completed (out of 102 original sample; 82% success rate)
• 83 out of 107 total invited comparison teachers completed (78% success rate)

Role * retention Crosstabulation

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<thead>
<tr>
<th>Count</th>
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<tr>
<td></td>
<td>stayer</td>
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<tr>
<td>Role</td>
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<tr>
<td></td>
<td>Comparison</td>
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<tr>
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Demographics

70% Female

30% Male

88% White

5% African Americans

3% Other

4% Asian
Professional Background

Total number of years taught

- Mean = 18.86
- Std. Dev = 7.81
- N = 167

Years

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<th>6</th>
<th>9</th>
<th>12</th>
<th>15</th>
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<td>30</td>
<td>33</td>
<td>36</td>
<td>39</td>
<td>42</td>
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</tbody>
</table>

Degree in Teaching
- 28% No
- 72% Yes

Standard Certification
- 10% No
- 90% Yes
Retention

• Stayer: remaining in teaching
• Mover: changed schools recently
• Shifter: accepting a role in education outside of teaching
• Leaver: changing to a non-educational career
Main Study Results

**Regression results**

- Movers did not differ from stayers
- Higher levels of teacher leadership skills associated with shifting to a non-teaching position^  
- Lower degrees of professional fit within schools associated with shifting^  
- Leavers did not differ from stayers

**Reasons for shifting**

- Support other teachers  
  “To support teachers in reference to curriculum and materials to utilize for instructional purposes.”
- Greater impact^  
- Evaluations and challenges in teaching  
  “Tired of the evaluation procedure as an educator; took too much time from actual teaching.”
- Professional growth

**Reasons for leaving**

- Family^, retirement^, pursuing graduate degrees, budget cut, broadening scope of their work “curriculum developer for a non-profit textbook publisher”

^ similar to pilot results
Q&A and Discussion (Part III)

• Shifting to a non-teaching position
  • Leadership skills
  • Teacher-school fit
• Reasons for shifting
• Reasons for leaving
• Questions? Feedback?
4. Interviews

• Protocols developed in Fall 2021
• Four versions based on retention status
  • Protocol A – Stayer
  • Protocol B – Mover
  • Protocol C – Shifter
  • Protocol D – Leaver
• Two sets of questions based on MTF status
  • Protocol M – MTF
  • Protocol N – Non-MTF
Pilot Interviews

• Eight pilot interviews conducted in December and January for each possible scenario (4x2, retention-status by MTF-status) with Houston-area teachers except for an MTF-leaver

• Interviews took more than 1 hour

• Protocols revised
  • Some redundant questions eliminated
  • Some questions did not directly relate to research questions
  • Re-ordering of questions (smoother intro and flow)
Main Interviews

• Interview training completed in early February
• Interviewee selection completed
  o About 40% of survey takers (66 teachers)
  o Selected considering retention-status and MTF-status
• Interviews ongoing: March through May
Q&A and Discussion (Part IV)

• After the interviews:
  • Transcription (software etc.)
  • Coding
• Future studies
• What do you do after the Noyce MTF grant? (e.g., keeping connections, MTF network, supporting retention)
Session Feedback

Please take a minute to give us feedback on this session! All presenters will be getting feedback from their session

https://tinyurl.com/wrna22

Please leave your name at the end to be included in the raffle.

Raffle prizes include Amazon gift cards, STEM Education books, t-shirts, and more