



Quality Elementary Science Teaching

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Ambient Positional Instability as a Source of Attrition in Grade-Level Specific PD Programs

QuEST is a practicum-based science PD program for elementary teachers. Participants experience instruction and learn science content that is aligned to the NGSS standards for their specific grade level. Teachers register to participate in the spring, attend a summer institute that includes a teaching practicum, and engage in follow-up activities as they implement what they learn the following year with their students.

By working with grade 3-4-5 teachers in the same schools, we hoped to enhance the experience of students in learning science in a consistent manner leading up to the statewide science assessment. As we engaged in this work, we became aware of the impacts of **ambient positional instability (API)** on our work and that of our teachers. API refers to teachers' shifts from one grade to another, from one course to another, from one position to another, etc. within a school, across schools, or out of schools, and within each year, and across years.

In this poster, we highlight the impact of API in the conduct of both the professional development and our research.

API and Recruitment

Teachers register to participate in the PD, but subsequently find themselves reassigned to a different grade level or position prior to the summer institute. This process resulted in a 29% loss of participants across all three years of our program.

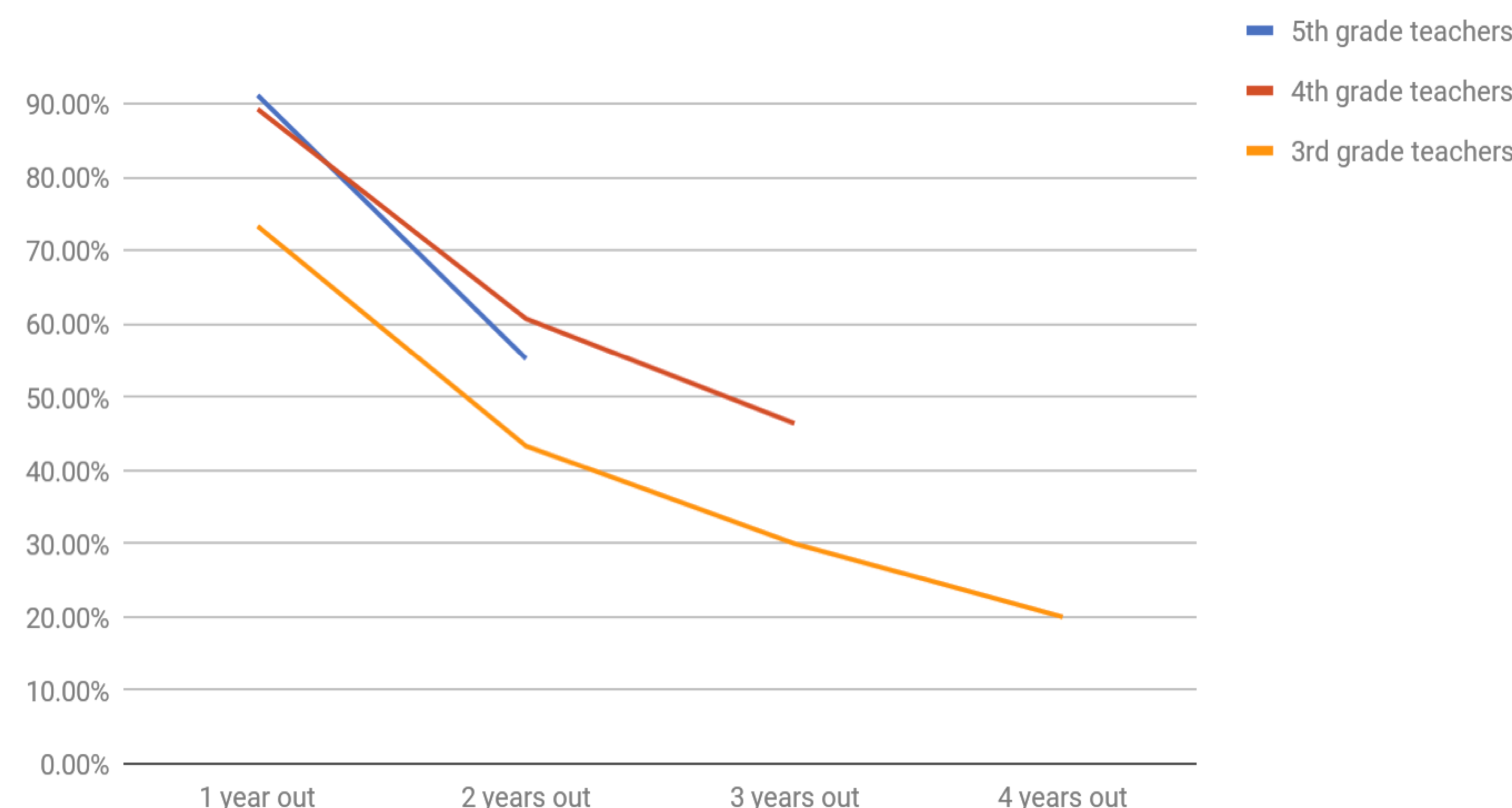
Our final sample size was smaller than desired, and we devoted a great amount of manpower to collecting initial data that was subsequently not used in the research.

	Year 1	Year 2	Year 3
# Registered	55	74	61
# Participated	45	45	45

API and Implementation

Teachers who participated in the summer institute found themselves subsequently **reassigned to a new grade level and unable to apply what they learned** the following academic years. As shown in the graph below, the percentage of teachers still teaching the grade level for which they received professional development steadily declined across all three cohorts.

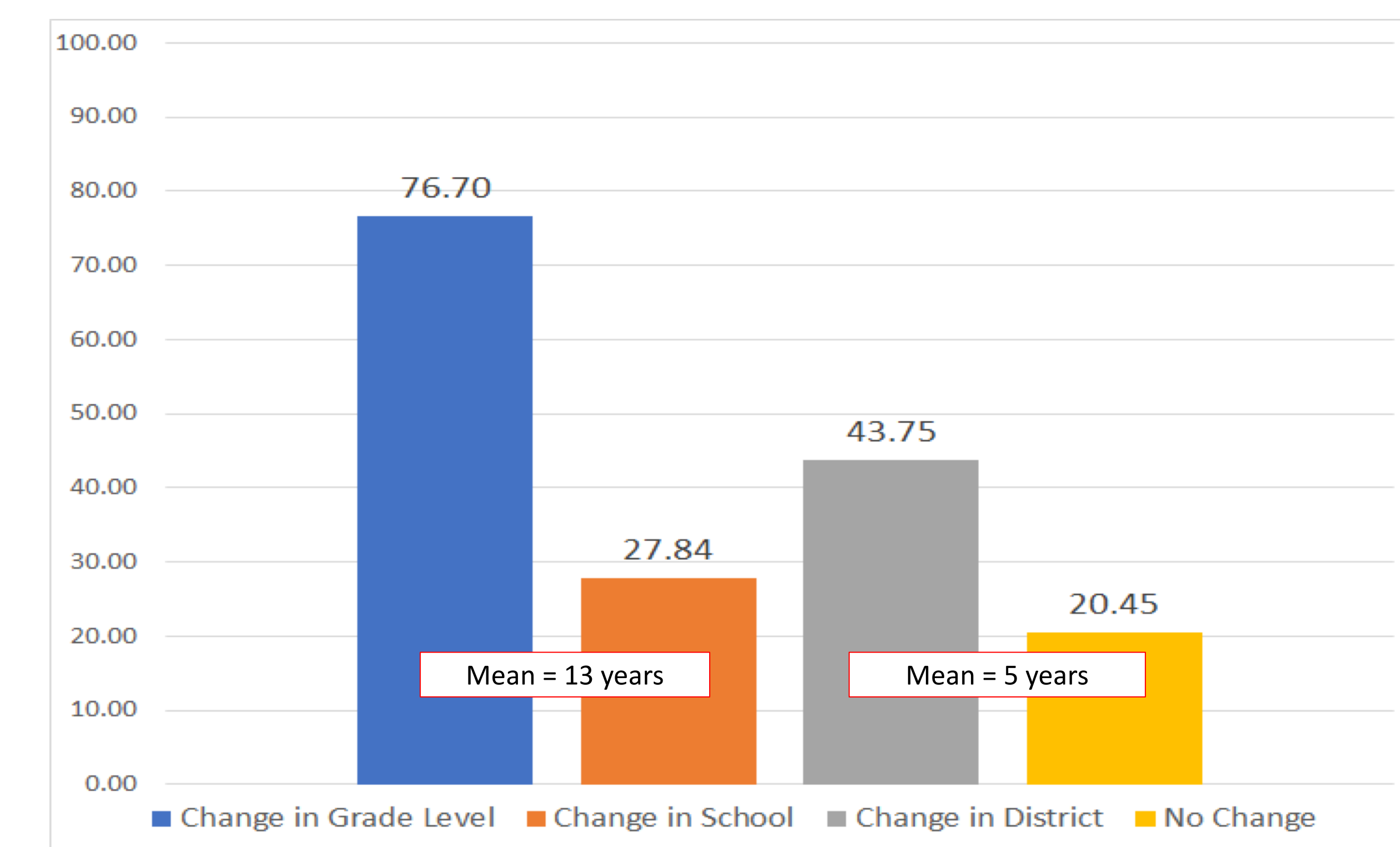
This further **reduced our sample size, and** — given the grade-level specificity of science content — **squandered the investment in PD** for these teachers.



API and Teacher Learning

Our data indicate teachers who were experienced, but new to grade level, on average, had lower levels of confidence, lower levels of content knowledge, and less-developed PCK than similarly experienced peers. We consider this a form of 're-novicing' in that these teachers more closely resembled their novice colleagues (those with 0-3 years of teaching experience). While API was lower for some teachers, they tended to be earlier in their careers, suggesting they will eventually experience API.

This challenges us to re-consider how we classify 'novice' and 'experienced' teachers in our research, and how we address the needs of these teachers in our professional development programs.



API as a 'Re-Novicing' of the Elementary Workforce

API sets up a vicious cycle and exacerbates an already well-documented problem regarding the under-preparation of elementary teachers to teach science (Trygstad, Smith, Banilower, & Nelson, 2013).

