

## **Pre-Service and Cooperating Teacher Relationships in Public School Science Education**

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#### Introduction:

In order for cooperating teachers to assist pre-service (student) teachers in the education field, they first need an instructional and informational arsenal to effectively serve in their respective mentor roles. One literature review analyzed forty-six studies that examined cooperating teacher and pre-service teacher relationships. The findings suggested that ‘cooperating teachers are mostly unprepared for the coaching role they take on’ and, consequently, are ‘unsure of the role as coach’ (Hoffman et. al. 2015). Science mentor teachers must help guide pre-service teachers into a constantly changing and deeply conceptual area of study and practice that is most effectively taught with inquiry-based models (Bradbury 2010). In a political climate where science and fact are under attack, new science educators need to be especially prepared. In “Educative Mentoring: Promoting Reform-Based Science Teaching through Mentoring Relationships”, the best mentoring relationships are said to succeed through ‘the promotion of egalitarian relationships in which veterans and novices collaborate as partners to solve problems of practice’ (Bradbury 2010). When there exists both a healthy personal and professional relationship (Hobson et. al. 2008) between the science pre-service teacher and cooperating teacher, not only does the novice learn from the expert, but the expert also begins to learn from the novice. This mutually beneficial relationship of learning and understanding between the pre-service teacher and mentor teacher is an ideal result.

#### Methods:

In order to ensure effective mentoring and to create successful professional development programs for science cooperating teachers, we need to understand what cooperating teachers need to become good mentors and what qualities effective cooperating teachers have. To begin to answer these questions, I blinded thirty-two pre and post interview transcripts from eight pre-service science teachers and eight cooperating science teachers from Arizona and Maine. These interviews were conducted from January 2017 to June 2017 by Alison Riley Miller and another collaborator. Once the transcripts were blinded, NVivo 11 software was used to help find emerging themes within the interviews including: Teaching Experience, Comfort Level with Next Generation Science Standards, Purpose of Models, and Reflection. These themes from the transcripts are called “nodes” in NVivo 11. The interviews were parsed and fragments were dragged into corresponding nodes and sub-nodes. Once all pre and post interviews were analyzed and coded into nodes, the nodes with the most references included Modeling PCK (Pedagogical Content Knowledge) and NGSS (Next Generation Science Standards) Self-Efficacy. The relationship pairs were also classified as positive, neutral, or negative, depending on their reflection and perception of their experiences with the cooperating teacher / pre-service teacher that they worked with. The pairs were profiled and their responses were cross-examined. This qualitative analyses allowed us to narrow our focus and formulate a research question.

#### Research Question:

On what basis are pre-service and cooperating teachers reporting positive and negative experiences? How does this correlate with their understanding of and comfort level with the Next Generation Science Standards and Modeling? Are there conflicts in pairs? Do the participants know what they need and/or are they getting what they need?

#### Findings:

- Most pre-service and cooperating teachers report positive experiences
- Out of 8 pairs,
  - o 1 pair both reported negative experiences
  - o 1 pair both reported neutral experiences
  - o 5 pairs both reported positive experience
    - Some were reflective

**Faculty Member: Alison Riley Miller**  
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