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Looking Through the Eyes of Mentors and Novice Teachers: Perceptions Regarding Mentoring Experiences

Gabriella Shwartz[a]*, Yehudit Judy Dori[a]

[a]Technion-Israel Institute of Technology, Faculty of Education in Technology and Science, Technion City, Haifa Israel

Abstract

Over the last decade, we have witnessed a declining trend in the teaching work force. The shortage of certified, STEM teachers is of concern throughout the world. Addressing the shortage of STEM teachers, STEM initiatives in Israel have emerged in order to ensure that excellent STEM teachers will provide excellence in STEM education. Our research focuses on a mentoring program that aims to: (1) facilitate the process of integrating new teachers, and (2) ensure high quality teaching to enhance students' achievements. The finding revealed that a teacher's mentoring job is muli-faceted; mentoring novice teachers addresses affective, discipline-based aspects of both pedagogical and content knowledge, and technical aspects on a daily basis. The findings can promote the improvement of mentoring programs that aim to further improve the integration and retention of novice STEM teachers within the educational school system.

1. Introduction

At present, the science, technology, engineering and mathematics (STEM) disciplines are the drivers of technological advancement and innovation, and they can secure a robust economic future (Watt, Richardson, & Pietsch, 2007). Therefore, countries around the world have stepped up efforts to strengthen science education (Huang, 2015). As part of these efforts, policymakers and educators have increasingly prioritized improving the

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* Corresponding author. Tel.: +972 4-824-0111
  E-mail address: gabby.shwartz@gmail.com

quality of the teacher work force (Goldhaber, Krieg, Theobald, & Brown, 2014). Unfortunately, over the last decade, we have witnessed a declining trend in the teaching work force. The shortage of certified, STEM teachers is of concern throughout the world (Fantilli, & McDougall, 2009). In our country, the number of science and technology teachers has decreased by 5.3% between the years 1998-2010.

Once a teacher is hired and begins the process of integrating into the school system to teach STEM, there is over 50% likelihood that she or he will leave teaching within their first five years (Hare & Heap, 2001). This evidence is troubling, because research has indicated that well-prepared and capable teachers have the largest impact on student achievement (Wilson, Flodent, & FerriniMundy, 2001).

Addressing the shortage of STEM teachers, STEM initiatives in Israel have emerged in order to ensure that excellent STEM teachers will provide excellence in STEM education. Our research focuses on a mentoring program that aims to: (1) facilitate the process of integrating new teachers, and (2) ensure high quality teaching to enhance the students' achievements. Previous studies have demonstrated that effective mentoring programs can help teachers gain more confidence in their professional capability, translate educational theory into practice more effectively and improve communication skills (Shapira-Lishchinsky, 2009). Given the need for new teachers to successfully meet challenges, our research aims to describe and characterize the perceptions of novice teachers and their mentors while both groups participate in the mentoring processes.

2. Design

2.1. Research Context

In the school system of our country, first year novice teachers are obliged to participate in an induction program. The main component of the induction program is the mentoring program, in which trained mentors help novice teachers plan lessons; assist them in gathering information about best practices and instruction pedagogies; observe the novice teachers' classes; and provide feedback and reflection. The present study examines the perceptions of mentors and novice teachers regarding their experiences participating in the mentoring program.

2.2. Research Participants

The study participants were 12 science and technology teachers, six of whom were mentors and six of whom were novice teachers. The mentors were experienced high-school STEM teachers responsible for preparing students for their matriculation exams. All the novice teachers were in their first year of teaching, teaching high-school STEM subjects. The participants were selected based on the diversity of their academic background, educational discipline, and their willingness to be interviewed and observed.

2.3. Research Tools and Methodology

The research goal was interpretive in nature (Strauss & Corbin, 1990); as such, semi-structured interviews, observations of meetings between mentors and novice teachers, and reflective writings of mentors and novice teachers, were collected. In the interviews, we used a self-designed guided-interview based on Patton (1990). The interview protocol included a pre-prepared set of questions for documenting teachers' perceptions. Selected guided-interview questions included the following: (1) what are your expectations from the mentor / novice teacher? (2) did you encounter challenges during the mentoring process? If so, describe how you coped with these challenges; (3) in which aspects did you feel the mentoring program contributed and/or helped your teaching abilities?

For data analysis, we employed the process of open coding, axial coding, and selective coding (Flick, 2006). Our intention was to search for integrated themes and relationships among mentors and novice teachers' understandings and experiences as part of the mentoring process.

Open coding was performed by two experts, both of whom individually coded the interviews, observations, and reflection documents. The experts looked for, and identified emergent themes throughout the collected data. For axial coding, both experts shared and revised their respectively found themes and discussed the possible