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Effective Teacher Characteristics: Future Teachers' Voices

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Effective Teacher Characteristics: Future Teachers' Voices

Abstract

Pre-service teacher candidates (n=688) voluntarily responded to the open-ended question: *List the characteristics that you think are important for a mathematics teacher [in elementary school] to have.*

The most frequently-cited characteristic was 'patience' with 'knowledge of mathematics content' next, followed (in alphabetical order) by creative, enthusiastic, effective instruction, flexible instruction, and understanding (that not all students learn the same way). These data suggest that candidates are developing a sense of themselves as professionals with a growing understanding that content knowledge as well as relationships with students are needed for effective teaching.

Differences in teacher effectiveness have a profound impact on student learning (Darling-Hammond, 2000; Rivers & Sanders, 2002) and have been shown to effect student performance for several years (Rivers, 1999). Teacher credentials, including post-graduate education and scores on licensing examinations, are not sufficient measures of teacher effectiveness (Hanushek and Rivkin, 2010), despite the current wave of national and state-designed teacher effectiveness correlational studies purporting their value (Danielson, 2014). Lists of qualities that characterize effective teachers are available on the internet and appear to be written by teachers, people who

know teachers, and educational associations, such as ASCD. A sample of these lists includes a range of characteristics, such as strict discipline skills, engaging personality, ability to form good relationships with adults, as well as knowledge of subject matter, curriculum and standards, passion for teaching, and strong rapport with students (Goldberg, 2003; Meador, 2017; Meer, 2016; Lancaster, 2015). Many of these characteristics are also introduced and supported in schools of education with the intention to develop effective teachers.

In addition to current teachers, school administrators, and the parents of students, the group most concerned about identifying those qualities associated with effective teachers is teacher candidates. This group of future teachers has chosen to study material that will support their success in the classroom. Their beliefs identifying which qualities contribute to being an effective teacher are the result of a complex web of education, experience as both student and teacher, personality, and environment and will contribute to their professional development.

The purpose of this study is to identify changes in teacher candidates' beliefs about those qualities important for an effective teacher to possess. In particular, future elementary school teachers describe those characteristics important for a mathematics teacher to hold and exhibit.

Theoretical framework

The relationship between teacher beliefs and behaviors has been well-documented theoretically (Fishbein, 1967) and through studies in content areas including ELL, literacy, and mathematics instruction (Aguirre & Speer, 1999; Johnson, 1992; Richardson, Anders, Tidwell & Lloyd, 1991; Schoenfeld, 1989). The current study extends this scholarship to examine the beliefs of teacher

candidates. Candidates' beliefs have been shown to correlate with their classroom behaviors (Fosnot, 1989; Millsaps, 2000; Skott, 2001). However, their aspirations are sometimes not realized in the classroom due to unanticipated challenges facing novice teachers (Cooney, 1985; Karaagac & Threlfall, 2004; Liljedhal, 2008; Noyes, 2004; Skott, 2001; Wilson & Cooney, 2002).

Candidates' beliefs identifying characteristics of mathematics teachers may be the result of past experiences or future aspirations. They may reflect a desire to repeat positive experiences or not repeat negative experiences. Alternatively, these characteristics may represent the candidate's future 'ideal' aspirations and self-image in the classroom. Regardless of the source, beliefs guide instructional decisions and behaviors.

Methodology

Pre-service teacher candidates (n=688) voluntarily completed surveys during the first session (PRE), and the last session (POST), of a course teaching theory and strategies of mathematics instruction in the elementary school classroom. This course is required as part of the program in Childhood Education leading to teacher certification. Surveys were collected for 15 semesters; candidates who completed surveys also completed consent forms granting permission to use their responses anonymously.

Teacher candidates responded to the open-ended question:

List the characteristics that you think are important for a mathematics teacher [in elementary school] to have.

Responses were categorized using a coding scheme based on a modified version of *The Framework for Teaching* (Danielson 2014). This model reflects both a constructivist perspective and the INTASC Standards (Council of Chief State School Officers, 2011) which were developed to identify those competencies important for beginning teachers.

Since there was variability in the number of responses made by each candidate to the open-ended question, the first three responses of each candidate were coded. A pair of researchers coded a subset of candidates' responses (n= 120) and found strong inter-rater reliability (PRE: .867, POST: .976) using Krippendorff Alpha (Hayes and Krippendorff, 2007). These researchers coded the remainder of the data using the same coding scheme.

Changes in candidates' responses from the beginning to the completion of the semester were analyzed.

Results

The mean number of teacher candidates' pre-course responses coded was 2.166 (SD=.940) and ranged from zero to three. The mean number of post-course responses coded was 2.025 (SD=1.124) and ranged from zero to three.

Candidates' responses were grouped into three broader categories: Teaching Skills, Teacher Knowledge, Teacher Classroom Personality – Student-related. The number of responses in each category was computed with a value ranging from zero to three for each of the broader categories. Mean pre- and post-scores for each category were compared using paired sample *t*-tests.

As shown in Table 1, the mean number of mentions of Teaching Skills in the first three responses of each teacher candidate did not change significantly from the beginning to the end of the semester. However, the mean number of mentions of Teacher Knowledge increased significantly and the mean number of Student-Related Teacher Classroom Personality characteristics decreased significantly from the beginning to the end of the semester. The mean number of 'Teacher Knowledge' mentions rose from .353 to .459 which was significant at the $p < .001$ level. In contrast, mean number of 'Student-Related Teacher Classroom Personality' mentions decreased from 1.145 to .904 which was significant at the $p < .001$ level.

Table 1: Comparisons of mean PRE and POST scores by category (N=688)

<u>Category</u>	<u>PRE (SD)</u>	<u>POST(SD)</u>	<u>t-score (df)</u>	<u>Significance level</u>
Teaching Skills	5.730 (.761)	.663 (.728)	1.827 (.687)	ns
Teacher Knowledge	.353 (.544)	.469 (.599)	-3.746 (687)	$p < .001$
Teacher Classroom Personality – Student-Related	1.145 (.825)	.904 (.820)	6.148 (687)	$p < .001$

The two most frequently-reported characteristics were the same at the beginning and the end of the semester. At both times 'patience' was the most frequently-cited characteristic (pre: 57.3%, post: 43.8%), with 'knowledge of mathematics content' next (pre: 24.3%, post:29.7%). While the rankings of the next five most frequently reported characteristics changed from pre- to post-course, the same characteristics were reported at the beginning and end of the semesters. The five characteristics (in alphabetical order) were: Creative, Enthusiastic, Effective Instruction, Flexible Instruction, and Understanding (that not all students learn the same way).

Conclusions and Discussion

This study reports the shift over the course of one semester of characteristics that elementary school teacher candidates report as important for a mathematics teacher to have. These data suggest that over the course of the semester, candidates are developing a sense of themselves as professionals. Their increased attention to knowledge-related characteristics and simultaneous decreased attention to relationship characteristics reflect a growing understanding that while effective teachers need to be well-related to their students, teaching requires far more than being able to build a relationship with students.

The qualities that candidates reported in this study are consistent with those categories of qualities identified in the literature as important for effective teachers to possess. Many of these characteristics fall into the category of Teacher Classroom Personality: Student-Related as evidenced by the most frequently-cited quality: 'patience.' Certain characteristics are noteworthy

for their absence. Classroom management was cited by fewer than two percent of the candidates in each of the pre- and post-course samples.

This study demonstrates that elementary school teacher candidates have ideas regarding those qualities that are important for a teacher to have when teaching mathematics. These characteristics are likely to guide their instructional decisions in the future.

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