

Chapter 68

Elementary Teachers' Math Instructional Practices, Receptivity to Change, Instructional Leadership, and Academic Optimism

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ABSTRACT

This study sought to identify the relationships among elementary teachers' instructional practices in mathematics pre- and post-Common Core Learning Standards (CCLS) implementation in relation to technological and pedagogical content knowledge (TPACK), formative assessment, reflective practice, receptivity to change, academic optimism, and instructional leadership across age, years of experience, grade level taught, and college math credits taken in high and low needs schools. Teacher responses from low and high need schools across age, years of teaching experience, grade level taught, and college math credits taken were examined with the dimensions of mathematics instructional practices to see if any relationships exist among the variables. The implementation of CCLS mathematics had an influence on elementary-school teachers' instructional practices and attitudes in both high and low needs schools. Teacher academic optimism was reported as overall higher in high needs districts, whereas teachers in low needs districts reported an increase in instructional motivation practices after the implementation of CCLS mathematics.

INTRODUCTION

The recently mandated education changes in New York State including high stakes testing linked to teacher and administrator performance or the Annual Professional Performance Review (APPR) and the introduction of Common Core Learning Standards (CCLS) in 2010 continue to increase the necessity to push our students to be global intellectual competitors, especially in the areas of science, technology, and math. The introduction of the CCLS has also brought under review many long-standing teaching practices.

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In May of 2010, the Governor of New York signed Chapter 103 of the Laws of 2010, creating the Education Law subsection 3012-c. This legislation requires all school districts and Boards of Cooperative Educational Services (BOCES) to conduct annual, professional performance reviews of classroom teachers and building principals.

The nearly concurrent adoption of the CCLS has emphasized the incorporation of critical thinking and problem solving into all content areas. In elementary schools, the instruction of English Language Arts (ELA) and mathematical skills are no longer reserved solely for the classroom teacher. All teachers covering all subjects, from the arts to physical education, are now required to embed these concepts within their curricula and teaching practices.

State standards for education are not a new concept; since the early 1990s, many states have implemented them. By the early 2000s however, the lack of standardization and subsequent variations in the definition of student proficiency caused educational standards to become increasingly dissimilar from state to state. Between 2007 and 2009, as a result of a series of discussions by various states' education chiefs and educational researchers, the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) made a recommendation to, "upgrade state standards by adopting a common core of internationally benchmarked standards in math and language arts for grades K-12 to ensure that all students are equipped with the necessary knowledge and skills to be globally competitive" (corestandards.org). Between 2010 and 2012, state education departments and independent reviewers examined the standards and provided feedback to the NGA and CCSSO. Once the development process had concluded in 2012, states began voluntarily adopting the CCLS, "based on their existing process for education standard adoption" (corestandards.org). The NGA and the CCSSO provide the following definition of the CCLS,

The Common Core is a set of high-quality academic standards in mathematics and English language arts/literacy (ELA). These learning goals outline what a student should know and be able to do at the end of each grade. The standards were created to ensure that all students graduate from high school with the skills and knowledge necessary to succeed in college, career, and life, regardless of where they live (ccsso.org). According to the developers, CCLS guidelines prepare students to enter a world in which colleges and businesses are demanding more than ever.

A student's elementary school experiences, both social and academic, are the foundation for their educational success. A major problem faced by university-level mathematics educators, both in content and pedagogy, is that the majority of elementary education majors have well-established attitudes towards mathematics and their ability to perform mathematical tasks, and their self-efficacy beliefs. These attitudes and beliefs may be passed on to elementary students and may act as a filter, preventing preparation for technical careers and preventing many adults from reaching economic maturity.

In light of the increasing number of transient students, the CCLS provide teachers with a consistent set of expectations for students who move into their districts and classrooms from other states. The CCLS compel teacher preparation programs to better prepare pre-service teachers for the new generation of students and the challenges they face in a global economy. In local school districts, professional development programs for veteran teachers are in place to assist in the transition to CCLS protocols (corestandards.org).

The CCLS also pose new challenges also exist for both school building and school-district leaders. As they guide their staff, students, and community members through this change, leaders face passionate arguments from both supporters and opponents of the CCLS.

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