

IS THE FOURTH GENERATION OF SIX SIGMA AN EFFECTIVE PROFESSIONAL  
DEVELOPMENT MODEL IN K-12 EDUCATION?

by

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A Dissertation Presented in Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Educational Leadership

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PREVIEW

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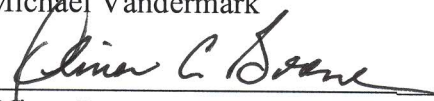
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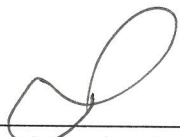
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## ABSTRACT

The purpose of this phenomenological qualitative retrospective program evaluation was to explore the efficacy of the fourth generation of Six Sigma (SS-GIV) as a professional development model through the lived experiences of administrators in a suburban K-12 public school district. The study has provided a descriptive account exploring the efficacy of SS-GIV as perceived by nine administrators in a suburban K-12 public school district. The data was generated via semi-structured interviews. Moustakas's (1994) modified van Kaam methodology was followed to analyze the data. Five themes were extracted from the data: (1) The use of SS-GIV for planning change initiatives; (2) structured communication is vital to initiate change; (3) leaders need to create buy-in from stakeholders; (4) SS-GIV can indirectly affect student-learning outcomes; and (5) time is an extremely valuable resource for administrators. The participants of this study expressed that SS-GIV provided them with tools that structured planning of change efforts. The data also suggest that using SS-GIV as a change mechanism may provide school leaders with a concrete framework to initiate change efforts with confidence.

## DEDICATION

The study is dedicated to my family. My mother instilled in me the value of perseverance and resiliency, and my father exemplified the virtue of patience, giving me the foundation I needed to pursue this exciting journey. My paternal grandfather always told me I should become a doctor—his belief in my abilities gave me the strength to pursue my dreams. My husband encouraged me at every step and helped me overcome all the negative obstacles that came my way with support and understanding. My two beautiful children who were my cheerleaders believed in me. I would like to dedicate my doctoral degree and the study to my family, because without them the journey would not have been possible.

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## CHAPTER 1: INTRODUCTION

School districts are constantly seeking ways to enhance student-learning outcomes (Guskey, 2000; Hunt, Wiseman, & Touzel, 2009; Reeves, 2010; Tomlinson & Imbeau, 2010; Voltz, Sims, & Nelson, 2010). Students with different needs, abilities, interests, cultural backgrounds, socioeconomic statuses, religious beliefs, and family responsibilities often learn in the same classroom (Hunt et al., 2009; Tomlinson & Imbeau, 2010; Voltz et al., 2010). School administrators and teachers need to help each of their students to become successful learners, regardless of the differences among them (Duncan-Howell, 2010). Often this goal requires educators to amend their professional practice or transform it completely (Tomlinson & Imbeau, 2010; Voltz et al., 2010). Researchers asserted that effective professional development models are vital for educators to improve their professional practice, and in turn student learning (Brownell, Adams, Sindelar, Waldron, & Vanhover, 2006; Chant, 2009; Latta & Kim, 2009; Mouzakis, 2008; Mullen & Hutinger, 2008; Reeves, 2010; Voltz et al., 2010).

Effective professional development models provide educators with strategies for high-quality equal education for all students so students will be successful in a globally competitive society (Fischer & Hamer, 2010; Wienclaw, 2009). Meeting mandates of federal laws such as the No Child Left Behind Act of 2001, providing students with 21st century skills, and meeting the needs of an “increasingly diverse society” (Wienclaw, 2009, p. 2) are some of the reasons necessitating change in school districts. Preparing students to “function in a society that will be represented by several career changes before retirement” (Hunt et al., 2009, p. v) require educators to teach their students to be independent learners and problem solvers. To execute these responsibilities successfully, school leaders seek to provide administrators and teachers with effective professional development activities (Reeves, 2010).

In the past, education has borrowed ideas from industry to improve its own practices (Basham, Israel, Graden, Poth, & Winston, 2010; McGuire, Scott, & Shaw, 2007; Meo, 2008). For instance, Universal Design for Learning (UDL) originated in architecture and was adopted by educators to improve the quality of education for students with disabilities (Basham et al. 2010; McGuire et al., 2007; Meo, 2008). Over the past 25 years, several corporations in many industries used Six Sigma successfully to achieve “higher levels of performance – in everything they [did]....leading to higher levels of profitability and customer satisfaction” (Harry & Lawson, 2010, Foreword). The fourth generation of Six Sigma “centered on the advancement of human achievement” (Harry & Lawson, 2010, Foreword) was created to guide “individuals and work teams to breakthrough improvements” (Harry, 2008, Abstract). The focus of this study was to explore the efficacy of the fourth generation of Six Sigma as a professional development model in K-12 education.

Chapter 1 includes an overview of the problem of the study stating the reasons necessary for educators to create change in their professional practice, and the reasons some professional development models have been ineffective in creating change. A brief overview of the history of Six Sigma and the creation of the fourth generation of Six Sigma, also known as The Great Discovery™ process in the commercial consumer market follow. The chapter includes the background of the study, significance of the problem, significance of the study to leadership, research questions related to the problem, nature of the study, and theoretical framework. The definitions of terms, assumptions, scope, limitations, and delimitations of the study conclude the first chapter.

## Background

The United States Department of Education defines school reform as “changes occurring in schools ...designed to improve educational programs...either provoked by social or political upheavals or [a need for] internal improvements that individuals or institutions undertake in response to changing circumstances” (Pechman, O’Brien, & Wodatch, 1997, p. 1). Strategic planning for school reform is a beginning point for schools to use innovative ideas to improve various aspects of the school district with an emphasis on improving students’ academic performance (“Planning to change,” 2009). Districts seek input from the community, the faculty in the district, high school seniors, school administrators, and the board of education to construct goals for school improvement (“Planning to change,” 2009). Professional development becomes an intrinsic part of the plan, as educators require opportunities to learn how to make changes within their practice to meet these goals (Reeves, 2010).

Educators must learn to cope with challenges presented by changes in student population because of increased immigration and numbers of students from dysfunctional families, and with varying special needs (Hunt et al., 2009; Pechman et al., 1997). The knowledge base has expanded in many subject areas requiring educators at all levels to develop new types of expertise (Guskey, 2000; Meirink, Meijer, & Verloop, 2007). “Like practitioners in other professional fields, educators must keep abreast of this emerging knowledge and must be prepared to continually refine their conceptual and craft skills” (Guskey, 2000, p. 3). As educators, administrators and teachers take on new roles and responsibilities in response to educational reform (Guskey, 2000). Educators at all levels need professional development opportunities to learn new roles and perform them successfully (Guskey, 2000).

The No Child Left Behind Act (NCLB) mandate “to close the achievement gap between White and minority students, which include English language learners, students with learning disabilities, and students from low-income families” (Shirvani, 2009, Abstract) influences the focus of topics on professional development activities in school districts (Latta & Kim, 2009). The International Center for Disability Information (1999) reported that 47.7% of students with any disability spend 80% or more of their school day in the regular education classroom. As the number of students in inclusive classrooms increases, teachers need to learn: co-teaching strategies; strategies to differentiate instruction; and strategies to integrate technology in their classrooms to address multiple learning needs, styles, and abilities in one classroom. Administrators need to learn how to support teachers in learning and implementing these strategies.

Historically, educators have often been passive consumers of research (Bryk, 2009; Reeves, 2010). They seldom engage in independent research to solve problems specific to their classrooms (Reeves, 2010). Instead they depend on workshop presenters to provide them with innovative strategies and programs (Bryk, 2009). Researchers found participation in occasional one-day workshops ineffective, as educators cannot effectively absorb all the information delivered in a short time span leading to a lack of change in their professional practice (Bryk, 2009; Duncan-Howell, 2010; Niesz, 2007; Nieto, 2009). Presenters are usually not available for review and feedback after delivering the workshops (Bryk, 2009; Howey & Joyce, 1978; Klein, 2007; Latta & Kim, 2009; Reeves, 2010). Traditional professional development models have proven ineffective in assisting educators to make recommended changes (Duncan-Howell, 2010; Latta & Kim, 2009; Reeves, 2010; Slepko, 2008).

Experts and consultants share externally developed professional development policies and activities to provide teachers with up-to-date strategies to address constantly changing social, economic, and legislative demands (Bryk, 2009; Duncan-Howell, 2010). Programs created outside the school setting may not pertain to the specific needs of the classroom (Bryk, 2009; Duncan-Howell, 2010; Nieto, 2009). Educators need professional development activities to help them understand the requirements for meeting federal mandates such as those of the No Child Left Behind Act of 2001 (Latta & Kim, 2009), and to address critical thinking skills requisite for the 21st century learner. The goal is for educators to learn and implement newly developed programs and strategies (Duncan-Howell, 2010), and to acquire strategies to integrate information and communication technology into their professional practice (Chant, 2009; Mouzakis, 2008).

Standard professional development practices as developed by ideological agendas are no longer feasible as educators address students' increasingly divergent and complex needs (Duncan-Howell, 2010; Latta & Kim, 2009; Reeves, 2010). Teachers need to have the flexibility to use expert knowledge along with local knowledge (Deemer, 2009; Martin & Kragler, 2009; Murphy, Smylie, Mayrowetz, & Louis, 2009) to inform and steer instruction. Traditionally, the focus of professional development has been on administrative mandates (Park & Datnow, 2009), promoting a "culture of professional compliance instead of professional learning" (Latta & Kim, 2009, p. 137). Administrators act as change agents as they encourage teachers to change their professional practice to implement new ideas and strategies in their classrooms (Hahs-Vaughn & Yanowitz, 2009; Leech & Fulton, 2008). However, when the topic choice for professional development activities does not address teachers' needs and practices (Duncan-Howell, 2010;

Gould, 2008; Klein, 2007; Martin & Kragler, 2009; Reeves, 2010), teachers resist change (Martin & Kragler, 2009; McKenzie & Scheurich, 2008).

Professional development activities must be designed to help educators adjust their professional practice to prepare students for the future (Fletcher, 2009; Reeves, 2010; Spillane et al., 2009). To bring 21st century learning skills into classrooms, teachers and administrators need to engage in a professional development model that responds to their personal and professional needs in learning how to incorporate change in their professional practice (Frye, Trathen, & Koppenhaver, 2010). Despite school districts using several types of professional development models, such as workshops, conferences, and study groups among others, educators do not consistently and effectively implement change in their schools (Reeves, 2010).

Whereas K-12 school districts have had difficulty finding effective professional development models as change mechanisms over the past two decades, Six Sigma as a change mechanism has a proven track record of creating change successfully in corporate settings (Harry, 2010). The first generation of Six Sigma originated in manufacturing with Motorola in the 1980s by reducing products' defects (Gras & Philippe, 2007; Harry, 2010; Kumar, Antony, Antony, & Madu, 2007; Kai, Abdul-Razzak, Elkassabgi, Hong, & Herrera, 2009; Moosa & Sajid, 2010; Proudlove, Moxham, & Boaden, 2008). In the 1990s, the second generation of Six Sigma proved successful with General Electric by reducing costs and increasing profits (Harry, 2010). The third generation in the 2000s provided DuPont and the service industry with a successful change mechanism by increasing value to customers and shareholders (Harry, 2010; Harry & Lawson, 2010).

The fourth generation of Six Sigma (SS-GIV), also known as The Great Discovery™ process in the commercial consumer market, resulted from a filtration of the essential effective

steps from successful Six Sigma projects from the past 25 years (Harry, 2010). The discovered process provided a “proven way of thinking that empowers ordinary people to reach out and achieve the extraordinary” (Harry, 2010, p. 25). Historically, school districts have not experienced much success in creating change using traditional professional development models, and they need an innovative professional development model to encourage change. The purpose of this phenomenological qualitative retrospective program evaluation was to explore the efficacy of the fourth generation of Six Sigma (SS-GIV) as a professional development model through the lived experiences of administrators in a suburban K-12 public school district.

### **Problem Statement**

To address the continual challenges stemming from students’ multiple needs, abilities, and interests, integration of technology in classroom instruction, adherence to federal and state mandates, and teaching students the skills required for success in a globally competitive society in the 21st century, school leaders provide educators with opportunities to change their professional practice (Fischer & Hamer, 2010; Wienclaw, 2009). However, conventional professional development activities result in educators passively receiving knowledge (Klein, 2007; Reeves, 2010) and not participating actively in learning new strategies. Professional development activities do not necessarily address the needs of educators, align with educator’s values, allow time for educators to engage in meaningful dialogues with colleagues, or provide opportunities for follow-up conversations with workshop presenters (Collinson & Ono, 2001; Duncan-Howell, 2010; Marsh & Willis, 2007; Martin & Kragler, 2009; Reeves, 2010; Slepko, 2008). Without ongoing, embedded support, the application of innovative strategies in the classroom will be difficult (Fletcher, 2009; Mullen & Hutinger, 2008; Reeves, 2010). The

general problem is that conventional professional development models do not serve as effective change mechanisms in education (Reeves, 2010; Slepko, 2008).

Akin to K-12 school districts, business corporations strive to facilitate the growth of their employees through professional development practices (Jones, 2010; Nikandrou, Apospori, Panayotopoulou, Stavrou, & Papalexandris, 2008; Van de Wiele, 2010). Several corporations believe that “continuous education and training of workers and employees is no longer an option but a must for most firms” (Van de Wiele, 2010, p. 582). Employee training that focuses on lifelong learning to improve employees’ career development (Van de Wiele, 2010), and integrates “work related learning experiences with formal (management) education” (Jones, 2010, p. 310) leads to professional growth of employees. Corporations that integrate training with strategic planning formalize the training process by beginning “with a training needs assessment and [ending] with training evaluations” (Nikandrou et al., 2008, p. 2058). Corporations that provide on-the-job training with mentors help new employees develop professional skills and also provide guidance for career development (Rita, 2008, Abstract). The specific problem is that the usefulness of professional development models drawn from the corporate arena in education is unknown.

This study used a phenomenological qualitative research method to explore the efficacy of SS-GIV as a professional development model based on the lived experiences of administrators in a suburban K-12 public school district. The qualitative retrospective program evaluation design included the use of face-to-face, individual, in-depth, semi-structured interviews with the participants in the study. A nonrandom purposive sample consisting of nine administrators in a suburban school district on the northeastern coast of the United States participated in the study.