

ADOPTING INNOVATIVE APPROACHES TO CARE: FACILITATORS &  
BARRIERS OF SCHOOL NURSING PRACTICE IN AN  
URBAN SCHOOL DISTRICT

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By  
Tamika Curry  
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Examining Committee Members:

Will Jordan, PhD, Advisory Chair, Urban Education

Maia Cucchiara, PhD, Urban Education

Annemarie Hindman, PhD, Educational Psychology and Early Childhood Education

Dominique G. Ruggieri, PhD, External Member, Public Health

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## ABSTRACT

As new approaches to practice become available for school nurses, urban school districts must address the need to provide facilitators for the dissemination and adoption of new evidenced based practice models. With instructional capacity, curriculum challenges, and school climate at the center of the decision making of educational leaders, the needs of school health become neglected. As new innovations become available, school nurses working in urban school districts often rely on individual continuing education to access new ideas due to barriers that exist in urban schools with limited funding and resources. This dissertation research had two primary aims: (1) expand current research regarding specific barriers and facilitators to practice, and (2) to better understand the school nurses' adoption of the *Framework for the 21st Century School Practicing Nurse* in an urban school district.

This framework addresses the specific needs of the school nurse working in an evolving educational health setting. Using a descriptive and inferential quantitative design with a convenience sample of school nurses in the School District of Philadelphia (SDP), participants completed an online survey designed to examine awareness, agreement, and alignment with the framework, as well as barriers and facilitators of adoption. The results revealed differences in level of awareness of the framework across various demographic groups within the SDP. After presenting the framework to participants, school nurses agreed with the importance of fully aligning practice. Further, there were variations in level of importance regarding specific practice components of the framework. Participants identified facilitators and barriers that impacted their ability to fully align school nursing practice with the framework.

**DEDICATION**

This dissertation is dedicated to the late Margie Rouse - Blumenthal.

You were here when I started this PhD program but sadly your time on earth was cut too short to witness my journey to the finish line. While it was difficult to continue in this program after you departed, I'm so proud to say that I finished. I know you're smiling down from heaven shouting, "Hey Dr. Curry! That's my niece!" I miss you dearly & love you always.

.....

To Bernie & Mr. Butch, family gatherings haven't been the same without you.

Missing you both! Love you. Rest in Peace

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*My only aim is to finish the race and complete the task the Lord has given me.*

*Acts 20:24*

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## CHAPTER 1

### INTRODUCTION

Health outcomes differ across communities and neighborhoods, and are particularly apparent in urban cities. These same health disparities also reflect similar inequities that exist in urban education as well. Urban health, urban education, and urban environments are inextricably linked as it relates to the poor outcomes produced for individuals and communities. Health goals address social forces that impact the overall quality of life and specifically highlight existing disparities. *Healthy People 2020* includes “ambitious yet achievable goals” (Office of Disease Prevention and Health Promotion [ODPHP], 2016) aimed at improving the health of individuals and communities within the United States. One key community setting that can address the goals of *Healthy People 2020* are schools serving K-12 students. School nurses are uniquely positioned to be the leaders in preventing disease and promoting healthy behaviors. The collaboration with educational leaders in urban school districts in which nurses’ work offers opportunities to target social determinants that directly impact health and wellbeing. School nursing practice plays a significant role in the overall academic success of a child in a wide variety of ways. The role of the school nurse in the United States can be categorized into four key areas of practice: health promotion and disease prevention, triage and management of acute issues such as injuries and infections, management of chronic health issues, and psychosocial support (Lineberry, Whitney, & Noland, 2017). While school nurses improve the health and wellbeing of the students within their school community, their effective practice and care delivery is often met with challenges and barriers to practice.

Current research highlights significant barriers to school nursing practice and effective school health management, such as role confusion within the school community, increasing complexity of the healthcare needs of students, reduced funding and resources, and staffing issues, among others. In addition to these challenges faced by school nurses within school districts, societal barriers such as social determinants, as well as health policies at the local, state, and federal levels place decision making pressure on school district leaders. These social determinants not only impact academic achievement and healthcare delivery of school nurses, but also undercut the implementation of innovative professional development programs, which are often restricted to teachers and other staff within schools, ignoring the needs of school nurses.

### **Problem Statement**

As new approaches to practice become available for school nurses, urban school districts find themselves with limited resources to drive adoption and dissemination for staff. With instructional capacity, curriculum challenges, and school climate at the center of the decision making of educational leaders, the needs of school health services receive little attention. As new innovations become available, school nurses working in urban school districts often must rely on individual continuing education to access new ideas due to barriers that exist for urban school districts with limited resources and funding. In 2015, the *Framework for the 21st Century School Practicing Nurse*, in alignment with the WSCC model, addresses the specific needs of the school nurse working in an evolving educational health setting. With the students, family, and community at the center, this framework directly targets major domains of a school nurse's practice: Care



Coordination, Leadership, Quality Improvement, Community/Public Health, and Standards of Practice (Maughan, Bobo, Butler, & Schantz, 2016).

This framework provides guiding principles for the school nurse to use in practice in an ever-changing educational landscape. However, the school nurses' abilities to practice and prioritize care in school districts within economically disadvantaged communities are challenged, given the constraints of limited school funding and understaffing. Urban school districts grapple with economic and political influences that can further impair already under performing schools.

This dissertation research had two primary aims: (1) to expand current research regarding specific barriers and facilitators to care, and (2) to better understand the school nurses' adoption and application of the NASN's *Framework for the 21st Century School Practicing Nurse* in an urban school district. The first objective of this study was to examine the perceptions regarding key principles of the school nurses' practice within an urban school district. Specifically, as identified through previous research, this study explored barriers to practice such as of funding, staffing, and social determinants. Second, this study was aimed at examining the school nurses' perceptions regarding the purposeful use of this framework in practice in an urban school district.

### **Purpose of the Study**

The first objective of this study was to examine the school nurses' perceptions regarding key principles of the framework in relation to practice within an urban school district.

1. To what degree are school nurses aware and in agreement with the *Framework for the 21st Century School Practicing Nurse*?

Further, this study also examined the school nurses' perceptions about how this framework is incorporated into everyday practice.

2. To what extent does the school nurse's awareness, agreement, and practice align with the framework?
3. To what extent does the school nurses' awareness, agreement, and aligned practice of the framework differ across nurse factors, including school type and experience?
4. Do school nurses endorse specific facilitators and barriers from the literature that impact the use of new approaches and innovations such as the framework?
5. To what degree do these facilitators and barriers predict the school nurses' practice of new approaches, specifically the *Framework for the 21st Century School Practicing Nurse*?

The long-term goal of this study is to disseminate the findings of this research for the benefit of school nurses and key school district administrators who work in low income urban school districts. In so doing, this study expands current research that addresses barriers and facilitators of school nursing practice in urban school districts. In addition, this research will serve as a catalyst for future conversations regarding the organizational and personal adoption of new conceptual frameworks and evidence-based practice approaches designed to enhance school nursing practice in school districts with limited resources.

A secondary aim of this study is to apply E.M. Roger's *Diffusion of Innovation Theory (DOI)* as a conceptual framework to understanding adoption. Roger's theory

helped to inform the development of survey questions to further elucidate how district level support for new innovations for school nurses can enhance practice and produce better educational outcomes for students. Roger's DOI Theory provides a model to understand the factors that influence the adoption of new products or guidelines not only at the individual level but at the organizational level. The *Framework for the 21st Century School Practicing Nurse* was chosen for this study due it's development as a new model to purposefully guide current school nursing practice.

### **Background**

Two key frameworks which have focused on improving childhood health include *The Whole Child Model*, a model for educators, and the *Coordinated School Health* approach, aimed at public health leaders. While both models address the emotional and physical needs of the child, neither offers a "unified approach supported by both health and education sectors" (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015. p. 730). Thus, the *Whole School, Whole Community, Whole Child (WSCC)* model was created to provide key stakeholders in the fields of education, health, and public health the leverage needed to increase educational achievement and promote healthy lifestyles (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). The WSCC model provided a foundation for the development of a new and unique framework designed to meet the unique and specific demands of practice for today's school nurses: *Framework for the 21st Century School Practicing Nurse* (Maughan, Bobo, Butler, Schantz, National Association of School Nurses, 2016).

The *Framework for the 21st Century School Practicing Nurse*, in alignment with the WSCC model, addresses the specific needs of the school nurse working in an

evolving educational health setting. With the students, family, and community at the center, this framework directly targets major domains of a school nurse's practice: Care Coordination, Leadership, Quality Improvement, Community/Public Health, and Standards of Practice (Maughan, Bobo, Butler, Schantz, National Association of School Nurses, 2016).

The National Association for School Nurses recommends the purposeful adoption of the framework by school nurses at the personal practice level, as well as at the organizational level throughout the school district. This shift from the more technical to the more professional, allows for newer school nurses to use the framework to improve the overall quality of their practice, while more experienced school nurses can use the framework to prioritize and expand care delivery (Maughan, Bobo, Butler, & Schantz, 2016). At the organizational level, school districts can utilize the framework to create effective professional development programs that enhance school nursing practice for nursing staff, as well as to guide evidence-based practice projects and research (Maughan, Bobo, Butler, & Schantz, 2016). Further, the various concepts of the framework are reflected in current research, however future research can be further expanded to test school nursing innovations of practice which will ultimately enhance the overall health and wellbeing of students (Cowell, 2015). Future research aimed at understanding the school nurses' ability to incorporate new evidence-based practice guidelines within urban school districts, can serve as an opportunity to create professional development programs within school districts aimed at combatting barriers, while also utilizing current efforts.

### **Significance of the Study**

Policymakers, school leaders, and professional health organizations agree on the critical role of school nurses in assisting students to reach their full academic potential. The findings from this study will benefit the School District of Philadelphia with firsthand knowledge and information from the school nurses that could drive future policies intended to support school nursing practice. In addition, the findings from this research will benefit school nurses working in school districts that have similar challenges, while providing key information about effective facilitators to improve practice.

### **Key Terminology**

- *Registered Nurse* – an individual who graduated from a school of nursing or a college’s nursing program, and has passed the NCLEX-RN exam administered by the National Council of State Boards of Nursing.
- *School Nurse* – The National Association of School Nurses define school nursing as a specialized practice of nursing, which protects and promotes student health, facilitates optimal development, and advances academic success.
- *School Nurse Certification* - represents a national standard of preparation, knowledge, and practice for school nurses. State requirements determine nursing licensure and certification requirements.

### **Summary**

Using Roger’s Diffusion of Innovation (DOI) Theory as a conceptual framework, this study expands current research regarding specific barriers and facilitators to school nursing practice. More specifically, this study addresses how these barriers and

facilitators influence dissemination and adoption of new care delivery approaches in a school district with a high number of students from vulnerable backgrounds and with limited availability of state and local funding and resources. By improving understanding about school nurses' perspectives, this study also highlights other issues related to the purposeful use of this framework in everyday practice.

## CHAPTER 2

### REVIEW OF THE LITERATURE

Health, educational, and political leaders recognize the important role nurses play in addressing the health care needs of students in the school setting. School nurses serve as key stakeholders in identifying and addressing student health issues that impact academic performance (Baisch, Lundeen, & Murphy, 2011; Maughan & Adams, 2011; Michael, Merlo, Basch, Wentzel, & Wechsler, 2015), causing many health organizations to recommend placement of a school nurse in every school. The achievement gap related to test scores between students from low income families compared to those from middle or upper income families remains a critical educational challenge. Given this achievement gap, there have been many approaches implemented with the aim to reform education with minimal improvement, with several scholars addressing the health-related barriers to learning as well (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). Further, while the impact of school nursing practice on producing positive academic outcomes has been well established, urban school districts often are met with educational and political challenges that negatively impact support for innovation for teachers and staff, including school nurses. Given the dichotomy of the school nurse's role within the fields of health and education, nurses must continue to strive to remain current in both fields to advance the success of students under their care (Allen-Johnson, 2017).

A review of the literature addressed the research questions in this study, while providing a historical lens of school nursing practice, as well as highlighting the educational and public health landscape in urban school districts. Further, this chapter will provide an overview of a new visual, conceptual framework (*Framework for the 21st*

*Century School Practicing Nurse*) created by school nurse leaders to address key principles of school nursing in the 21<sup>st</sup> century with the goal of providing structure and focus to current evidence-based nursing practice (Maughan, Bobo, Butler, & Schantz, 2016, p. 45). Lastly, this chapter provides an overview of the theoretical framework, Roger's Diffusion of Innovation Theory (DOI), that served as a guide to this research investigation.

### **Education and Health**

There have been considerable efforts over the years to eliminate the achievement gap through education reform in the United States, focusing on instructional practices and teacher preparation programs (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). Several key indicators have been shown in research to predict academic outcomes of K-12 students. These indicators include student academic achievement, instructional quality, student participation, and school climate. One element for example, that school nursing practice has been shown to influence is chronic absenteeism, a critical element of student participation. Chronic absenteeism is defined as missing 10 percent or more school days per year (Johnson, 2017). School nurses, as members of the educational community, can influence absenteeism rates that hinder academic achievement. The school nurse is in a position to provide care management of students with high rates of absenteeism by helping students and families to navigate health problems that impede attendance (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). Students in the early elementary grades who are chronically absent have reduced levels of reading proficiency in third grade, therefore increasing their risk of school dropout in high school (Balfanz & Byrnes, 2012; Johnson, 2017). Further, high school students who are chronically absent



for one year are seven times less likely to graduate, impacting their overall future health outcomes, as well as increasing the risk of premature dying at an earlier age compared to their adolescent counterparts who graduate (Johnson, 2017). Those individuals and adolescents who obtain an education practice health promoting behaviors, such as not smoking, they avoid risky sexual behavior, inactivity, as well as obtaining school health screenings, (Basch, 2011a; Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015).

For urban school districts, researchers recognize an important aspect of educating the “whole child”. Urban public schools frequently serve as important social welfare institutions, recognizing that it is impossible to serve the academic needs without addressing basic needs for health and safety (Noguera, 2003, p. 6). While two individual models existed in both the education and health sectors geared toward the success of school children, neither model offered a collaborative approach to address this overlapping need, hence the creation of an updated model intended for school districts.

*Educating the Whole Child.* The WSCC model is a comprehensive framework that combines two earlier models in education and health, *The Whole Child* and the *Coordinated School Health* models, respectively. The model highlights the critical need for health and educational leaders to work together where the school setting provides excellent opportunities. The WSCC model gives school leaders and public health leaders a purposeful guide to a “socioecological approach” (p. 734) directed at the whole school drawing on the school’s resources within the community, that addresses barriers to the child’s learning and overall wellbeing (Basch, 2011a; Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015). Using the model as a foundation, health and educational leaders are given a visual opportunity to work together leveraging limited resources for “more

effective and efficient programs and services to students” (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). The model incorporates 5 tenets of the *Whole Child* model and includes major components of the Coordinated School Health approach. With the child at the center, the model highlights the need for the child to be healthy, safe, engaged, supported, and challenged in the school environment. To successfully achieve these goals, the model utilizes a “systems-based” approach from the influence of the *Coordinated School Health* approach to address 8 additional components geared towards the overall health of the child. These health promotion and disease prevention tenets focus on health education, physical education, school health services, a healthy and safe environment, counseling, psychological, and social services, family and community engagement, health promotion of staff, and nutrition services (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015; Michael, Merlo, Basch, Wentzel, & Wechsler, 2015; Morse, 2015) Additionally, the WSCC presents a visual model for schools and communities to share in the collective responsibility of the overall health and education of children and youth. It allows for shared organizational decision making, thinking, and action for both sectors to collaborate and work together (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015).

With the WSCC model as the foundation for educational reform, and health promotion and disease prevention of children and youth, the school is the core setting for change and reform. School districts strive to create educational environments that have the essential components for student success. While wealthier school districts benefit from a wide variety of health and academic facilitators, urban school districts continue to

struggle with necessary resources thereby limiting the real intentions of this collaborative model.

*Challenges of Urban School Districts.* The widening gap between urban schools in impoverished communities compared to wealthier districts is often debated when discussing existing academic achievement gaps. A comparison of high achieving schools and under performing schools often reveals a variety of problems that exist in the latter of the two. Under-performing schools often situate in neighborhoods with high concentrations of poverty, crime, and violence. Surface discussions of the problems in these schools often focus on a lack of effective parenting, ineffective teaching, and an overall reduced value belief system on the importance of education. While these factors cannot be entirely excluded from the discussion, a warranted and meaningful discussion highlights a historical examination of Jim Crow laws, attempts at desegregation, and institutional racism. Education has always been the primary way toward upward social and economic mobility. Yet researchers continue to question the inequities that exist within an education system that provides great schools for rich kids and dangerous schools for inner-city children, thereby amplifying inequality instead of opportunity (Kristof, 2014). In addition, schools where poverty is the number one risk factor for poor educational growth, and ultimately poor health outcomes, are also schools that are occupied by greater numbers of children of color. African American and Latino youth are more likely to experience risk factors such as poverty (Evan et al, 2012), enhancing the educational and health divide. In addition, in affluent neighborhoods, issues such as chronic violent crimes and gang violence rarely exist. Neighborhood indicators of “social

disorganization” among adults, such as crime and violence, have a negative effect on children’s school behavior and academic performance. (Woolley & Bowen, 2007)

Further, school segregation continues to further the academic divide. In 2014, Brown vs. Board of Education marked its 60<sup>th</sup> anniversary, a celebratory occasion of the progress made in American education. Yet despite the progress and school reform efforts, Blacks and Latino American schools are more segregated today than ever before (Orfield, 2009; Dorsey 2013). While Jim Crow laws no longer exist, the continued segregation of schools perpetuates the problem of “separate but equal”. Racial segregation of schools is linked to unequal education, which further links racial and poverty composition to test scores, graduation rates, attracting and retaining talented and effective teachers, as well as other factors that influence educational opportunities (Orfield, Frankenburg, Lee, 2002). Decades of urban education research of urban school in cities throughout the United States hallmarks the systemic racism that exists. Institutional racism in segregated schools resulted in a wide variety of decisions and policies such as, assigning children of color to dilapidated buildings, and assigning teachers with low expectations for student achievement (Taylor & Clark, 2009). If school reform efforts are going to be successful in urban school districts given the challenges presented in this review, one researcher offered a “recipe” for change that some school districts have been able to successfully replicate.

*Essential Facilitators for Success.* The Consortium of Chicago School Research provided a comparative analysis of the success and failures of elementary schools in Chicago whose students were performing well in math and reading at some schools, while others were not. Through this seven-year longitudinal study of 200 schools,

researchers produced a theoretical framework aimed at providing educators and administrators with “five essential ingredients” needed for school success. Findings from this study noted two conclusions: 1) fundamental organizational change has two distinct periods, an initiation phase and a sustaining phase; and 2) systemic school improvement is “multi-stranded” and there is no “single silver bullet” that will produce the major improvements needed to produce better educational outcomes. Further, results from this study suggested school improvement largely depends on the base capacity of the school itself, the surrounding community, and the interests and concerns of school leadership. (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010). From this research, five essential facilitators for school improvement were argued as necessary: school leadership, strong parent-community-school ties, student-centered learning climate, professional capacity, and coherent instructional guidance system (Bryk, 2010). Given the current needs and facilitators argued here for the success of schools to produce better educational outcomes, thereby influencing school nursing practice, it is important to understand the historical nature of school health. The rate of chronic health conditions has increased by 400% between 1960 and 2010 (Johnson, 2017). A historical analysis will help to frame the understanding of current school nursing practice.

### **Public Health & School Nursing**

*Origins of Public Health Nursing.* According to historians, Lilian Wald is the first public health nurse dating back to the late 19<sup>th</sup> century in the Lower East side of New York City (Wald, 1902). She was also the first to use the term public health nursing. While teaching a class for immigrant families in March 1883, Lilian Wald together with Mary Brewster conducted home visits and provided care for a sick woman in the

dilapidated tenement house on the Lower East Side of New York (Wald, 1902; Frachel, 1988; Reed 2007; Bergren, 2017). Wald expanded her visits, which included housing inspections to other tenement houses, revealing a wide variety of social conditions. During these home visits, Wald's sensitivity, scientific knowledge of disease transmission, and early recognition of the social implications that impact health set the trajectory for future public health nursing in the United States. The conditions of the tenement houses of this time mimic many of challenges and complexities of the social conditions of today's impoverished urban communities. Immigrant residents of the Lower East Side, "endured abominable housing, neglected sanitation, lack of sufficient jobs, and poor working conditions in factories and tenement sweat shops" (Frachel, 1988, p.87). While many believed at the time that poverty was the result of moral failure, Wald understood the social and environmental conditions as the cause (Frachel, 1988), that resulted in crowded living conditions, homelessness, language barriers related to immigration, and lack of access to medical services (Hawkins, Hayes, & Corliss, 1994; Houlahan, 2018).

Using epidemiologic methods as a framework, Wald gathered data from her visits to lobby for funding to implement social programs to improve the overall health outcomes within the communities she served (Frachel, 1988). Because of her work in the tenement houses, and due to the influx of poor immigrants from southern and eastern Europe to Ellis Island, Wald founded The Henry Street Settlement in 1893 (Ruel, 2014). In addition to founding the Henry Street Settlement House, Wald is also credited for launching the Visiting Nurses Association of New York (VNANY), which is the largest nonprofit organization today that provides a home and community based health care in

the U.S, promoting health and well-being of the clients they serve and their families (<https://www.vnsny.org/who-we-are/about-us/>). Both the Henry Street Settlement and the VNANY worked together as one for decades providing poor immigrants of the Lower East Side of Manhattan with a wide variety of services such as the administration of immunizations and medications, to providing meals that included sterilization of milk (Ruel, 2014).

Public health nursing and home health nursing served as one specialty with the goal to address the holistic needs of individuals within their own communities and their homes. While Wald was the pioneer of public health nursing and home health nursing, both operated as one entity where these terms were often used interchangeably, however today the two represent two distinct specialties. Public health nursing focuses primarily on the incidence, distribution, and the control of disease as it relates to the well-being of a community (Reed, 2007). Historically, visiting or home health nursing provided care for “the sick poor in their own homes, when by reason of surrounding circumstances the patient may not be sent to a hospital” (Fulmer, 1901, p. 411). Today, regardless of socioeconomic status home health nursing focuses on returning sick individuals to a state of baseline or relative wellness if possible done in the home (Reed, 2007).

*History of the School Nurse.* The history of school nursing dates to the late 1800s in Drury Lane District of London because of the unhealthy conditions of one of the poorest schools in the area (Struthers, 1917; Hawkins, Hayes, & Corliss, 1994; Houlahan, 2018). The successful health outcomes of the school children in this district prompted the need for similar models of school nursing around the world. School medical inspections resulted in the exclusion of sick children from school with “little attention paid to them

after exclusion” (Struthers, 1917, p. 6) done by physicians and can be traced back to 1897 (Struthers, 1917; Frachel, 1988; Bergren, 2017; Houlahan, 2018). Exclusion ultimately left contagious children “unwashed and uncared for” (p.7) and able to play with non-contagious children, which resulted in the spread of disease (Struthers, 1917).

In 1902, Lilian Wald the first public health nurse in the US, during a discussion with the Health Commissioner of NY and the Chairmen of the Board of Education, agreed on a one month experiment of placing several of her nurses in schools to provide nursing interventions (Struthers, 1917; Hawkins, Hayes, & Corliss, 1994). In October of 1902, Lilian Wald assigned Lina Rogers, a Henry Street Settlement nurse, to care for 10,000 children treating those with communicable diseases and promoting health to four New York City schools (Struthers, 1917; Hawkins, Hayes, & Corliss, 1994; Bergren, 2017; Johnson, 2017; Houlahan, 2018). In addition, Lina Rogers Struthers (1917) described the educational consequences of excluding children from school due to medical inspections:

*During this enforced absence from school, the child not only lost his precious education, he also developed the vicious habits of the idle, and an innocent child became slothful, unclean, wasteful, criminal, and immoral. If fortunately, the child became cured, and was sent back to school, he soon discovered that other tastes had been formed and that school duties were irksome. Truancy was the only logical sequence.*

The placement of a school nurse in New York City schools was so successful that other cities recognized the need and implemented similar models. School nursing was introduced in Los Angeles in 1904, Boston in 1905, Seattle in 1907, and Philadelphia in 1908 (Bergren, 2017; Johnson, 2017). At the start of the 20<sup>th</sup> century, the primary focus of school nursing care centered around the management of communicable disease and health promotion of children. Today, while communicable disease is less of an issue,

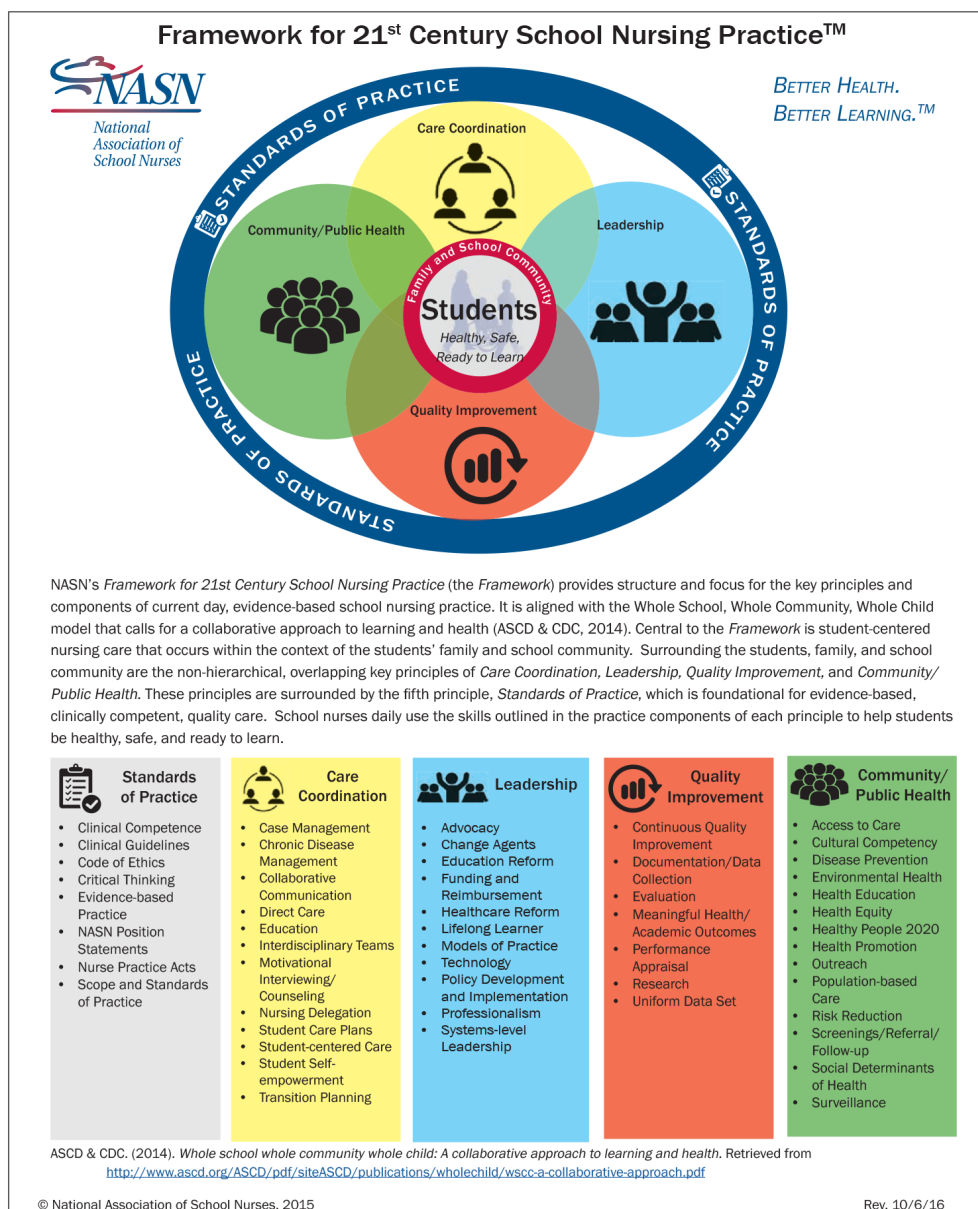


chronic disease management and health promotion is at the core of a school nurses' practice. However, there is still a commonality between the focus of school nursing in the early 20<sup>th</sup> century and the growing complexities of the health of school children today. School nursing utilizes a public health approach to not only resolve communicable diseases and chronic absenteeism (Bergren, 2017) of the past, but also continue to address the impact of chronic disease on current school attendance.

*Innovation & School Nursing Practice.* Many of the issues of early school nursing practice remain relevant in today's current educational climate. However, with a changing demographic, the continued historical effects of systemic oppression that plague schools and surrounding neighborhoods, and with health disparities, today's school nurses require a more comprehensive and innovative approach to care delivery. Today's students throughout the United States have evolving health needs, with an increase in the overall complexity of health issues (Maughan, Bobo, Butler, & Schantz, 2016). Given these 21<sup>st</sup> century challenges, a framework was created by school nurse leaders to provide a structure and focus to current school nursing practice (Maughan, Bobo, Butler, & Schantz, 2016), as well as to provide the larger educational community with a framework for contemporary school nursing practice (Cowell, 2015). The *Framework for the 21<sup>st</sup> Century School Nursing Practice*, developed in 2015 with the WSCC model in mind, is a visual and conceptual guide that provides structure and focus to current school nursing practice, ultimately separating technical practice to a more professional practice (Maughan, Bobo, Butler, Schantz, & Schessler, 2015; Maughan, Duff, & Wright, 2016; Maughan, Bobo, Butler, & Schantz, 2016). Like the WSCC model, the framework places the student at the center surrounded by the family and

school community. There are five overlapping key principles: Standards of Practice, Care Coordination, Leadership, Quality Improvement, and Community Public Health. Lastly, researchers acknowledge that some school nurses struggle to understand the model and offer ideas for future use (Maughan, Bobo, Butler, Schantz, & Schessler, 2015).

Figure 2.2



The research facilitates the need for school nurses to practice from an evidence-based model. In other words, nurses unable to practice from a model, potentially undermines the professional discipline, and threatens “the current scope and standards of nursing practice, evolving practice issues, and ethics” (Allen-Johnson, 2017, p. 160). While the individual principles of the framework are reflected in current research, future research can test school nursing innovations. This framework opens the door for varied opportunities for school nursing research (Cowell, 2015)

### **Perceptions & School Nursing Practice**

*Perceptions of School Nurses.* The school nurse’s role has evolved over the years, particularly as nurses find themselves working within schools that serve vulnerable students. The role of the school nurse involves a wide variety of responsibilities including nursing care, medication administration, health education, health screenings, case management, and public health (Whitman, Davis, & Terry, 2010, p. 209). With a changing educational landscape, little may be known to administrators, teachers, and parents about the exact role of a school nurse. Regardless of the geographic region in the U.S, educators and parents believe the major role of a school nurse involve the day to day administration of medication, providing for first aid, managing records, and immunizations (Green & Reffel, 2009; Maughan & Adams, 2011) and public health (Hoekstra, Young, Eley, Hawking, & McNulty, 2016). Some believed the major role of the school nurse is to pass out “band aids and ice” (Maughan, 2009b, p. 297). One study examined the perceptions of autonomy among school nurses and identified significant differences between experienced and novice school nurses. There was greater comfort and confidence reported among more experienced school nurses in their roles compared

to their novice counterparts, with the experienced nurses reporting higher job satisfaction and low turnover. (Green & Reffel, 2009, p. 64).

*Perceptions of the School Community.* The perceptions of school nurses regarding their role is congruent with the perceptions of what educators and parents believe school nurses do in some areas, however there are some important differences in other areas. For example, school nurses differed in their perceptions about delegation practices compared to the perceptions of administrators. Nurses believed they are more likely to delegate activities such as head lice inspection and administration of first aid, while superintendents, on the other hand, felt that health education, counseling and teaching, and performing risk assessments could be delegated (Green & Reffel, 2009). Nurses also believed schools are taking on the role of health education, a responsibility that was historically done by the school nurse. Some believed their role consisted more of supporting teachers in delivering health education, many of whom preferred delivering health education within schools themselves (Hoekstra, Young, Eley, Hawking, & McNulty, 2016). This difference in the overall understanding of the school nurses' role further causes confusion and lack of clarity for the entire school community. School administrators and school nurses difference in perceptions offer "insight into areas where school nurses may be performing functions and providing services of which administrators may not be aware" (p. 67), therefore allowing for opportunities for a full understanding of the role of the school nurse for the entire school community (Green & Reffel, 2009).

### **Barriers of School Nursing Practice**

Several key concepts reflected in the literature highlight major barriers to practice for school nurses. First, students cared for today have increasingly complex health conditions causing care delivery to be more challenging. Second, issues at the system level such as funding and resources, and nurse-to-student ratios influence how school nurses can practice. Lastly, at the societal level, social determinants that exist beyond the school building itself cause a direct and indirect effect as well.

*Health Complexity.* The increasing complexity of the health-related needs of students is an ongoing barrier for school nurses. School nurses are caring for more students whose needs are of greater complexity than ever before compared to years past. School nurses report an increase in the management of chronic illnesses such as asthma and diabetes, the identification and treatment of more accidents and injuries, while counseling more and more students with social and emotional needs (Baisch, Lundeen, & Murphy, 2011; Maughan & Adams, 2011; Maughan, Bobo, Butler, & Schantz, 2016). In addition to managing health related illnesses, school nurses also reported “undertaking multi-agency” work, providing increasingly case management services by referring children and families to appropriate services and community support (Hoekstra, Young, Eley, Hawking, & McNulty, 2016). Lastly, school nurses also reported an increase in complexity due to laws, such as special education laws, that allow for students with more medical and nursing procedures, and behavioral needs to be included in the mainstream classroom (Maughan & Adams, 2011, p. 358).

*Funding & Resources.* Although an increase in the overall needs of students have become more complex over the years, school nurses report funding and resources as key

barriers to care. Many believe they would be able to offer better services, expand their role within school districts, and have access to better technology if they had more resources such as funding, materials, and human resources (Hoekstra, Young, Eley, Hawking, & McNulty, 2016). Budget deficits have forced many school districts to reduce the number of school nurses and other health professionals (Biag, Srivastava, Landau, & Rodriguez, 2015) and is identified as a primary barrier for care, particularly as it relates to the school nurse-to-pupil ratios (Maughan, 2009b, p. 297). Surprisingly, researchers report that many educators and parents indicated budget constraints within their districts made it difficult for them to choose between a teacher and a school nurse. If a choice had to be made, many chose teachers and books over a school nurse because they felt academics came first (Maughan & Adams, 2011); many of these choices were also the result of confusion regarding the role of the school nurse (Tetuan, & Akagi, 2004; Croghan et al, 2004; Maughan, 2009b).

For example, the School District of Philadelphia, a Title I funded school urban school district, laid off 141 support staff due to budget cuts, of which 47 were registered nurses (Graham, 2011). By the end of 2011, additional layoffs and the retirement of nurses resulted in a net loss of 100 school nurses (Phillips, 2013) out of a potential total of 260 school nurses needed to fill every school in the district. These layoffs caused community leaders and district parents to question whether the absence of a school nurse resulted in the death of two students. In a well-publicized event, one 12-year-old student who attended a school without a nurse, died of an asthma attack while a second student died 8 months after due to a congenital heart defect (Superville, & Blad, 2014). William Hite, Superintendent of the School District of Philadelphia “drew a connection” between

the tragedy and the district's financial standing at that time by arguing that basic level guarantees of a school should not be enrollment-based, while other staff agreed that those basic guarantees of a school should include health care (Superville, & Blad, 2014).

Since the 2011 mass layoffs and retirement of nurses in Philadelphia, more nurses have been hired, resulting in less vacancies and more school nursing positions being filled. However, while the hiring of more school nurses was good news in this school district, in many states like Pennsylvania (one of eight states), the nurse to student ratio set more than 50 years ago (The Pennsylvania State Education Association, 2017) continues to be one nurse per 1,500 students. This is double the recommended 1:750 ratio by the Centers for Disease Control (CDC) and the National Association of School Nurses (NASN) (Camera, 2016). The layoffs of nurses in Philadelphia reflects similar funding constraints that forced many school districts across the nation to reduce funding allocated to support school nurses. Less than half of public schools have a full-time school nurse, and only 30% employ part time nurses who work at multiple sites within the district (Biag, Srivastava, Landau, & Rodriguez, 2015, p. 183). Despite current investments in school health programs, these dollar amounts are not enough to address the increased complexity and severity of health issues that urban minority students face today (Basch, 2011a) therefore issues of funding equity remain a central barrier for school nurses in urban schools.

*Staffing & Nurse-Student Ratios.* The school nurse to student ratios are regulated by state mandated laws and vary throughout the United States. In the 1970s, laws mandating the school nurse to student ratio were enacted to protect the rights of students in public schools, which included those with health needs. (NASN, 2015). Currently the

NASN and the American Nurses Association (ANA) recommend a 1:750 school nurse to student ratio that was further endorsed by the United States Department of Health and Human Services in Healthy People 2020 (NASN, 2015; McInerney, & McKlindon, 2013). Also in agreement with the NASN, the American Academy of Pediatrics, the American School Health Association recommended assigning a nurse to every school (Baisch, Lundeen, Murphy, 2011). In addition, the NASN and the ANA recommend adjusting or reducing school nurse-to-student ratios based on the complexity of the needs of students. Several states focus nurse to pupil ratios on the needs of the children (Maughan, 2009a; Maughan, 2009b), rather than on arbitrary numbers. For example, a 1:225 is recommended for students who require daily professional services; 1:125 for students with complex health needs; and 1:1 for individual students' who require daily continuous professional nursing care (Anonymous, 2015; McInerney, & McKlindon, 2013).

Further, the NASN and the ANA's recommended staffing ratios based on the complexity of needs of the children, is congruent with health care trends of children from a wide variety of backgrounds. Asthma is the leading chronic illness among children and the leading cause of school absenteeism (CDC, 2015), thus as stated previously attendance and academic achievement are linked. In addition, more than 190,000 children under the age of 20 have diabetes, with incidence rates of 1.93/1,000 for type I and 0.24/1,000 for type II (Cox, 2017). Further, with the growing rates of childhood obesity, type II diabetes among children continues to increase (Cox, 2017). With these statistics in mind, Pennsylvania law does not consider the "higher level of care for students with complex health needs" (McInerney, & McKlindon, 2013, p. 9). In accordance with the 28



PA Code, Chapter 23, Section 1402(a.1), the number of children under the care of a school nurse in Pennsylvania cannot exceed 1,500 (Public School Code of 1949, 2017), therefore it is not unusual in a large urban school district such as Philadelphia for a school nurse to have an assignment of 1:1500 school nurse to student ratio.

School nurse-to-student ratios in many states are determined by a variety of methods, including the influence of political and social factors (Maughan & Adams, 2011; Maughan, 2009b). However, the community structure and makeup, geographic location, and regional needs are often not accounted for when determining school nursing numbers (Maughan, 2009b, p. 220). Overall, there are only 13 states in the US that have ratios that fall within the NASN and the ANA's recommendation of 1 nurse for 750 students. Therefore, in many states with higher ratios such as in Pennsylvania, nurses cover multiple schools, leaving buildings without coverage and nurses less visible (Maughan & Adams, 2011, p. 356).

*Social Determinants of Health.* Strategies to promote health promotion and disease prevention include a focus on the physical and mental health needs of individuals. Researchers, however, provide further arguments and evidence about the social influences that impact health as well. Social determinants of health include a range of personal, social, and economic factors that contribute to individual and population health and wellness (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015; Maughan, Bobo, Butler, & Schantz, 2016; CDC 2017; Johnson, 2017). Five determinants include: 1) economic stability, 2) education, 3) social and community context, 4) health and healthcare, and 5) neighborhood and built environment (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015; CDC 2017).

Therefore, socioeconomic status, housing, transportation, neighborhood effects and the physical environment, employment and working conditions, social capital, education and literacy, access to health services, and culture all impact the overall health of individuals. In addition, other societal challenges such as divorce, immigration, and language barriers pose additional challenges that create the need for school health services (Whitman, Davis, & Terry, 2010, p. 209). Researchers recognize the strong association between social class and health throughout the lifespan and that education is a social determinant that predicts a person's future success (Basch, 2011a; Johnson, 2017). Further, significant changes in demographics of a community impact school nursing practice. “[One must] look at the complexity of ethnicity, refugees, socioeconomics, and transitory issues. There are huge needs.” (Maughan & Adams, 2011, p. 358). While the number of uninsured children have decreased over the years, there are still an estimated 3.1 million (5.1%) school aged children in the U.S. without access to health care (Clarke, Norris, & Schiller, 2017), with immigration posing a particularly unique set of challenges for nurses (Whitman, Davis, & Terry, 2010). These factors are important to consider, since they are known to cause 80% of health concerns (Maughan, Bobo, Butler, & Schantz, 2016).

Social issues such as poverty, as well as racial and ethnic health disparities, add to the complexity of care that further challenge school nursing practice. In one study of 15,112 school nursing visits among poor ethnic minorities, low income Black children accounted for the most frequent visits to the school nurse, with White children ranking second, Hispanic children third, and Asian children ranked last. All racial groups saw the school nurse more often if they were poor compared to more affluent children (Fleming,

2011). Also, asthma disproportionately affects more U.S. children of color more than non-Hispanic White children (Basch, 2011b; Engelke, Swanson, and Guttu, 2014; Johnson, 2017). Students with asthma often have high rates of absenteeism, resulting in problems with behavior and reading, as well as grade repetition and learning disabilities (Rodriguez, 2013). In addition, 20% of children live in poverty and lack access to adequate daily food intake, with many children relying on the nurse as their primary source of healthcare services (Johnson, 2017). Lastly, mental health issues in children and teens related to social factors pose another barrier to care for school nurses. One in five teens experience a serious mental health related challenge, and 50% of these issues start during the childhood years (Johnson, 2017). Mental health programs within schools are beneficial to improving attendance, student behavior, and test scores (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015), ultimately influencing the overall goals of school nursing practice.

### **Facilitators of School Nursing Practice**

A critical element of successful school nursing practice is the removal of existing barriers that impede the ability of school nurses to operate fully in their roles within the school community. In addition, key facilitators have added value in enhancing the overall quality of care of school nursing, while influencing better educational and health outcomes for students. The kinds of support needed for successful school nursing practice in many ways align with the “five essential facilitators” of school success discussed earlier in this review. Several key facilitators of school nursing practice include: family and community partnerships, equitable funding, and ongoing district-level and individual-level professional development.

*Family & Community Engagement.* Decades of research support the need for school principals and leaders to encourage new relations with parents and local communities. In *Organizing Schools for School Improvement*, the authors argue that there has been a long-standing disconnect between urban schools, and the children and families they're intended to serve (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010, p. 46). The overall quality of these ties directly impact the motivation of students, school participation, and necessary resources (Bryk, 2010). Children with engaged parents graduate from high school with lower dropout rates, have improved classroom behavior and fewer detentions, higher grades and test scores, higher levels of social skills (Smith, Wohlstetter, Kuzin, & De Pedro, 2011; Michael, Merlo, Basch, Wentzel, & Wechsler, 2015; Morse, 2015), fewer special education placements, and improved overall behavior community (Smith, Wohlstetter, Kuzin, & De Pedro, 2011). Parent engagement is a necessary partnership needed by schools that cannot be substituted. From a health perspective, parents engaged in the school community have children less likely to engage in risky health behaviors such as cigarette smoking, alcohol use, becoming pregnant, or have signs of emotional distress. Frequent health education activities available to parents increase parent engagement (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). Further, family centered care in the health setting produces significant improvements in the physical and psychosocial health of a child, and enhanced learning, reduced stress, and increased satisfaction with care of parents (Concepcion, Murphy, & Canham, 2007).

In addition to the challenges faced related to engaging families within the school environment, school districts within vulnerable communities face additional barriers related to neighborhoods effects and overall trust. Communities that have witnessed an

unending decline for decades in adequate schools, housing, businesses, employment, and family structure due to high rates of crime and mass incarceration have developed little trust for professionals who are not from those communities. School administrators create meaningful community partnerships and relationships to build *relational trust* “grounded in social respect” with not only families’ members, but the extended community as well (Bryk, p. 68), therefore school nurses are uniquely positioned to do the same.

*Equitable Funding.* The lack of adequate funding as discussed previously, is a tremendous barrier to the success of schools, particularly urban schools where equitable funding is a primary facilitator. With equitable funding, school nurses can practice with the recommended school nurse to pupil ratios (Maughan, 2009b), help eliminate health disparities as a strategy to close the achievement gap, and give school nurses access to quality resources that serve low income minority youth (Basch, 2011a). Equitable funding is also a driver of the creation of meaningful professional development of teachers and staff.

*Professional Development.* Limited resources and time is a barrier highlighted in research for successful school nursing practice. In many states across the United States, registered nurses must obtain the minimum hours required by the state for continuing education for license renewal. While school nurses maintain individual-level continuing education, school district level professional development support, ensures the adoption of high quality evidence-based models for practice across the district. Various modes of processes exist within education on how to successfully disseminate new models of practice within school districts. The traditional methods of leadership and development within schools typically involves high ranking school officials such as principals and

superintendents (Glendie & Robinson, 2017). However, other researchers challenge these traditions and argue for newer approaches to the successful implementation of newer ideas and practices. Leadership and innovation must be distributed more widely across the school community. Shared inclusive leadership and innovation must be a collective process (Hargreaves, 2009; Glendie & Robinson, 2017) with a “bottom up” (p. 5) approach that empowers staff to take responsibility and ownership (Roberts, McLeod, Montemurro, Veugelers, Gleddie, & Storey, 2016).

Further, professional development of school nurses must be high quality. Often due to a variety of reasons including funding, school districts are not able to offer high level sustainable continuing education. Programs often are not high quality, strategically planned, or effectively coordinated to “capitalize on potential linkages between efforts” (Basch, 2011a, p. 594). Therefore, in addition to nurse leaders within school districts, multi-level stakeholders (school nurses, teachers, and administrators) can provide professional development of the overall framework in action. In addition, school districts have an opportunity to create meaningful professional development programs for school nurse staff that allow them to achieve the goal of advancing the best academic and health outcomes for students (Allen-Johnson, 2017).

Therefore, purposeful professional development targeted for school nurses supported by school districts enhances the full adoption of strategic models of practice. The Framework for 21<sup>st</sup> Century School Nursing Practice provides a model of evidence-based standards of practice that allows for the design of professional development programs for school nurses within school districts (Maughan, Bobo, Butler, & Schantz, 2016; Allen-Johnson, 2017).

## Conceptual Framework

Roger's Diffusion of Innovation (DOI) Theory provides a lens for understanding the school nurse's perceived awareness and purposeful utilization of the *Framework for the 21st Century School Practicing Nurse*, while examining perceived barriers and facilitators of adoption. A significant challenge for professionals working in public health and health promotion is the diffusion of effective programs and ideas (Glanz & Oldenburg, 2008). The DOI Theory has been used widely over the years to further understand the necessary steps needed to achieve dissemination and diffusion of public health interventions, protocols, and practices (Glanz & Oldenburg, 2008). Both terms dissemination and diffusion are often used to describe the spread and use of new practices, however both terms are distinctly different and important in understanding how innovations become adopted. Rogers DOI Theory provides a foundational understanding of the factors that influence the decision of individuals to adopt a new idea or product. This theory provides the argument for how adoption takes place (Straub, 2009). In addition, other ideas emerged from DOI Theory. In his book *The Tipping Point: How Little Things Can Make a Difference*, Malcolm Gladwell argues that there are several patterns and factors that influence a trend. He posits that three key factors influence whether an individual will adopt an innovation: (1) the presence and influence of "early adopters", (2) the compelling nature of the innovation and the degree to which it offers some improvement over the status quo, and (3) the degree to which one's physical and social environment or system is congruent with and supportive of innovation adoption (Gladwell, 2000; Glanz & Oldenburg, 2008).

*Foundational Concepts.* Innovation is defined as a new idea or product.

According to Rogers, an innovation is “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Straub, 2017). Within public health, an innovation could be a new technique, program, process, or framework (Cory, Wiley, & Centers for Disease Control and Prevention, 2013, p. 174). Dissemination of health information is the active and targeted distribution of information or interventions using planned and specific strategies to a targeted audience within the public health or clinical arena (McCormack et al, 2013). Dissemination is the process of communicating an innovation through “certain channels over time among the members of a social system” (Glanz & Oldenburg, 2008, p. 314). If dissemination involves the process of how information is made *accessible* to the greatest number of people within a target population, than diffusion involves the process by which information is *integrated* within a target population.

*Stages of Diffusion.* Individuals evaluating whether to adopt an innovation may proceed through five stages of the diffusion process: knowledge, persuasion, decision, implementation, and confirmation. During the first stage, an individual becomes aware of the innovation (Rogers, 2003). The awareness of an innovation is influenced by several factors such as socioeconomic status, access to “change agents” such as the media (Straub, 2009, p. 630), and other personality traits. The decision to adopt an innovation is based on three types of knowledge: (1) awareness that the innovation exists; (2) procedural knowledge about how to use the innovations, and (3) knowledge or understanding about how the innovation works (Glanz & Oldenburg, p. 318, 2008). Further, the decision to adopt is not based entirely on knowledge, but also on changing



exists mental models. For example, if school nurses in a low income urban school district are already aware of the Framework for the 21st Century School Practicing Nurse, but are not purposefully utilizing the framework to guide practice, it is possible that the decision to adopt the framework stems from existing attitudes about school nursing practice.

During the persuasion phase, individuals gain more information about the innovation to decide about whether to adopt the innovation, which leads to the third or decision phase (Straub, 2009). After making the decision to either accept or reject an innovation, individuals act on their decision in the fourth stage by implementing the innovation into practice. Finally, during the fifth and final stage, individuals evaluate the results of the innovation implemented and decide whether to continue or discontinue with the adoption (Straub, 2009).

*Determinants of Diffusion.* There are many innovations that are adopted right away or over time, while others never become adopted. Key determinants of innovation include the adopter and the social environment. Five core attributes of innovation which affect diffusion include: (1) relative advantage (is the innovation better than what existed previously?), (2) compatibility (does the innovation fit with the intended audience?) (3) complexity (Is the innovation easy to use?), (4) trialability (can the innovation be tried before deciding to adopt?) (5) and observability (are the results of the innovation visible and easily measurable?) (Glanz & Oldenburg, 2008).

While social determinants play an important role in diffusion, individuals targeted to adopt a new product or idea can be placed into five categories and are reflected on a normal bell shaped curve. Presented in the order of their adoption speed, these

individuals have been termed “innovators”, “early adopters”, “early majority adopters”, “late majority adopters”, and “laggards”. Innovators account for about 2.5% of the target population and represent individuals who are the first to adopt and are often considered opinion leaders within the social system (Cory, Wiley, & Centers for Disease Control and Prevention, 2013, p. 175). Early adopters account for roughly 13.5% of the target population representing individuals who engage in the process of early adoption and are also often deemed to be opinion leaders (Cory, Wiley, & Centers for Disease Control and Prevention, 2013, p. 175). Early majority adopters represent 34% of the population are more willing to accept an innovation once those they respect have adopted the innovation as well. Late adopters represent 34% of the target population and are often skeptical about change, holding off on adoption until most of the social system has done so. Lastly, laggards represent 16% of the target population who are slow to accept change, if at all, and have limited communication channels (Cory, Wiley, & Centers for Disease Control and Prevention, 2013, p. 175).

Lastly, Roger’s DOI Theory also highlights the influence of the social system on whether an innovation can be successfully adopted. There are a variety of factors that influence the diffusion process and according to Rogers can be categorized as follows: (1) geographical settings, (2) societal culture, (3) political conditions, and (4) globalization and uniformity. This study may uncover the influence of the systemic factors that serve as a facilitator or barrier in the adoption of an innovation within the School District of Philadelphia, a large urban school district.

### **Summary**

The interplay between education and health is evident in the research. School health services primarily managed by school nurses are an essential element in eliminating the achievement gap in urban minority youth living in impoverished communities. Educational policies must consider school nursing practice as a critical component to influencing the reduction of health disparities that impact school children which in turn provides a better level of readiness for students to produce better academic outcomes. By acknowledging the role school nurses play on the education, health, and wellbeing of children and youth, school districts and community leaders can drive the decision making by removing barriers to school nursing practice and implementing facilitators needed for academic and health success.

## CHAPTER 3

### METHODOLOGY

The purpose of this chapter is to present the methodology used to examine the two primary aims of this study: (1) to expand current research regarding specific barriers and facilitators to the school nurse's care, and (2) to better understand their adoption and application of new innovations. This study utilized a descriptive and inferential quantitative design using survey research to further understand how district level support for new innovations for school nurses can enhance practice and produce better educational outcomes for students. This chapter will highlight the research design, data collection, data procedures, data analysis, and instrumentation.

#### **Research Design**

This study examined the adoption and application of innovations, as well as expanded on current research regarding barriers and facilitators to school nursing practice within an urban school district. The primary methodology of this study used a cross-sectional survey design to further understand these two primary aims centered around five research questions:

1. To what degree are school nurses aware and in agreement with the *Framework for the 21st Century School Practicing Nurse*?
2. To what extent does the school nurse's awareness, agreement, and practice align with the framework?
3. To what extent does the school nurses' awareness, agreement, and aligned practice of the framework differ across nurse factors, including school type and experience?

4. Do school nurses endorse specific facilitators and barriers from the literature that impact the use of new approaches and innovations such as the framework?
5. To what degree do these facilitators and barriers predict the school nurses' practice of new approaches, specifically the *Framework for the 21st Century School Practicing Nurse*?

A survey research design was chosen to study the school nurse's beliefs and perceptions regarding barriers and facilitators to practice related to awareness and adoption of new ideas within a school district with significant challenges. Survey research can provide the researcher with a descriptive quantitative lens into the attitudes, trends, and opinions of a sample population (Creswell, 2014; Fowler, 2009) to draw inferences about the sample population.

Survey design was the preferred method of data collection due to several key advantages such as cost, convenience, scalability, and the potential to examine trends quickly. The School District of Philadelphia (SDP) is the 8<sup>th</sup> largest school district in the US by enrollment (<https://www.philasd.org/about/>) with approximately 128K students. There are 341 schools in the SDP with 262 school nurses assigned to schools across the district. Survey research allowed for the most cost effective, convenient method to reach a large sample population within a large organization, where the ability to connect with participants would have been a challenge due to size and other system-wide barriers. In addition, survey research allowed for the ability to identify attributes within a large population. To reach the specific aims of the study, there were 3 phases of this study as highlighted in Table 3.1.

Table 3.1: Three Phase Study Design

<b>Study Aims</b>
<ol style="list-style-type: none"> <li>1. Expand current research regarding specific barriers and facilitators to practice.</li> <li>2. Understand the school nurses' adoption and application of innovations, particularly the <i>Framework for the 21st Century School Practicing Nurse</i>, in an urban school district.</li> </ol>
<b>Phase I</b> Administer survey to school nurses online by email.
<b>Phase II</b> Analyze the survey data.
<b>Phase III</b> Disseminate findings.

Table 3.2: Study Timeline

	<b>May 2018</b>	<b>June 2018</b>	<b>Sept. 2018</b>	<b>Oct. 2018</b>	<b>Nov. 2018</b>	<b>Dec. 2018</b>	<b>June 2019</b>
<b>Phase I</b>							
<b>Phase II</b>							
<b>Phase III</b>							

### Setting

The site for this study took place within the School District of Philadelphia (SDP). The SDP is in the city of Philadelphia, the 6<sup>th</sup> most populous city in the United States with a population of over 1.5 million residents (U.S. Census Bureau, 2018). As the 6<sup>th</sup> largest city, according to the Pew Research Center, residents represent diverse backgrounds highlighted in Table 3.3. In addition, Table 3.4 presents education and socioeconomic status (SES) information of Philadelphia residents (Pew Charitable Trusts, 2018). In examining the SES and education levels of the residents of Philadelphia, it is

also important to note the median rent and the unemployment rate. In 2017, the median rent was reported at \$976 with the unemployment rates at 6.2% for residents living within Philadelphia, and 4.4% for the metro Philadelphia area. The U.S unemployment rate was 4.4% at the time of the study. Lastly, Philadelphia has the highest poverty rate of the 10 largest cities in the U.S. with a 26% poverty rate in 2017; higher than the U.S. national poverty rate of 12%. Further, Philadelphia also has the largest percentage of residents living in deep poverty at a rate of 12.3% (Pew Charitable Trusts, 2018).

*Table 3.3: Resident Demographics*

Male	44%
Female	53%
Younger than 20	25%
Age 20-34	26%
Age 35-54	24%
Age 55 and older	24%
Black or AA	41%
White	35%
Hispanic	14%
Asian	7%
Other	3%

*Table 3.4: Socioeconomics & Education*

Median Household Income	\$41,499
Less than \$35,000	44%
\$35,000 - \$74,999	29%
\$75,000 - \$99,999	10%
\$100,000 or more	17%
Have a bachelor's degree	29%
Have an associate's degree	5%
Attended college but no degree	17%
Graduated from high school	32%
Did not graduate from high	17%
Percentage below poverty level	26%

The School District of Philadelphia is the 8<sup>th</sup> largest school district in the United States (<https://www.philasd.org/about/>). In 2017, there were 128,102 students enrolled in district-run schools (a steady decrease over the last 10 years), with 64,999 enrolled in charter schools (a steady increase over the last 10 years) and 20,289 enrolled in parochial schools (Pew Research Center, 2017). There are 341 schools in the SDP with a total enrollment of 203,255 (SDP School Profiles, 2018). Out of the total number of schools run by the SDP, 87 are brick and mortar charter schools with an approximate enrollment of 70,000 students (SDP Charter Schools Office, 2019). Further, highlighted in table 3.5, 53% of the students enrolled are Black or African American, 20% Hispanic, 14% White,

and 7% Multi-Racial or Other. Table 3.6 presents enrollment data per grade in the SDP. Lastly, per table 3.7, 12% of the students enrolled are English language learners, and 16% receive special education services (SDP School Profiles, 2018).

*Table 3.5: Racial/Ethnicity of Students*

Black or African American	53%
Hispanic/Latino	20%
White	14%
Asian	7 %
Multi-Racial/Other	6 %
American Indian/Alaskan Native	0 %
Native Hawaiian/Pacific Islander	0 %

*Table 3.7: Other Demographic Info.*

English Language Learners	12%
Special Education	16%

*Table 3.6: SDP Enrollment*

K	15,185
1	16,296
2	16,382
3	16,384
4	16,326
5	16,577
6	16,184
7	15,341
8	15,090
9	15,884
10	15,603
11	14,292
12	13,717

The academic outcomes remain a challenge for the SDP. Per the Pew Research Institute, 18% percent of the students scored proficient in math on the Pennsylvania System of School Assessment (PSSA), and 31.5% scored proficient on the reading component of the PSSA. High school graduation rates lag the national rate. The 4-year graduation rate of Philadelphia students was 66% in 2016, while the national 4-year graduation rate was 82%. Lastly, 32% of students in the SDP have missed at least 10 days of school, with rates higher for high school students: 46% of 9<sup>th</sup> graders; 47% of 10<sup>th</sup> graders; 44% of 11<sup>th</sup> graders; 51% of 12<sup>th</sup> graders (Pew Research Center, 2016).

### **Study Participants**

The sample for this study was drawn from a population of school nurses employed by the SDP. Inclusion criteria for the school nurses necessitated employment and placement under the supervision of the School Health Coordinators, with practice



within public, parochial, and charter schools. More specifically, active employment for the purposes of this study in the SDP was defined as working full or part-time as a school nurse, and holding a registered nursing license. School nurses hired by a contracted agency and not employed by the SDP were not included in this study. In addition, licensed practical nurses (LPNs) were excluded. Study participants worked in district-run and parochial K-12 schools. Study participants were not required to hold school nurse certification to be included in this study.

Participant recruitment occurred using the school health services email listserv with the approval of the SDP. A sampling pool of 262 school nurses (all school nurses actively employed by the SDP) were sent a recruitment by email (See Appendix B) and were asked to respond to a questionnaire. Informed consent was included for those who agreed to participate (See Appendix C).

### **Data Collection & Instrument**

The survey instrument was a 50-item forced choice questionnaire created by the researcher, and reviewed by experts within the fields of nursing and public health. The survey instrument measured three core constructs: (1) School nurses' endorsement and agreement of the *Framework for the 21st Century School Practicing Nurse*; (2) *School nurses' barriers to using the framework*; (3) *School nurses' facilitators to using the framework*. In addition to the three core constructs, the survey included 5 subscales: The participant's knowledge of the framework, agreement with the framework, practice alignment with the framework, facilitators of practice alignment, and barriers of practice alignment. Further, the survey also collected demographic data such as age, years in school nursing practice, years practicing within the Philadelphia, primary location of

practice (public, private, parochial, or charter school), type of school (elementary, middle, or high school), and socioeconomic related information of the primary school of practice.

A pilot survey was conducted over two weeks and was completed by 5 registered nurses, 2 public health professionals, and 2 education researchers. The researcher administered the instrument to the participants electronically by email using Qualtrics online survey software. Qualtrics stored the data for later analysis. Participants completed an online survey sent by email. The survey was estimated to take approximately 20 minutes to complete, and four respondents were offered an opportunity to be randomly selected to receive an incentive.

### **Data Procedures**

Upon approval from the Research Review Committee (RRC) at the SDP, and the Institutional Review Board (IRB) at Temple University, the researcher electronically sent the recruitment letter and survey link (to include the survey and informed consent) to the School Health Services Coordinator for dissemination of the School Health Services general email listserv. The researcher was denied permission to access sampling pool email addresses, and was assured that all past and current research surveys intended for school nurses were administered through the school health services listserv. School nurses within the sampling pool were asked in the recruitment email to complete the anonymous survey by clicking on a link provided by Qualtrics. No identifying information was collected unless the participant elected to be eligible for the incentive. Consent forms were provided with the survey instrument. Participants were required to sign the online consent form prior to progressing to the questionnaire. To be eligible for

the incentive and to preserve participant anonymity, two electronic surveys were administered: the study survey, and the incentive survey. Upon completion of the study survey, participants were asked if they wished to receive the incentive. Participants who responded yes, were taken to a second survey where they were asked to enter their name and email address.

Two reminders emails were sent to the sampling pool to help increase survey responses rates. After each email reminder, response rates reflected higher participation rates for about 2-3 days. At the end of the data analysis period, four participants who completed a survey were randomly selected to receive an Amazon gift card for the purchase of needed supplies for practice. Winners were contacted by email.

### **Data Analysis**

At the end of the data collection period, data from the surveys were uploaded into IBM's Statistical Package for the Social Sciences (SPSS) for further descriptive and inferential analyses. After running frequency tests to obtain descriptive data, Pearson correlations and regression analyses were performed to address research questions 3 and 5. A visual representation of the data analyses for each research question is presented in Table 3.8.

Table 3.8: Data Analyses

<i>Research Questions</i>	<i>Data Analyses</i>
<i>RQ1</i> - Are school nurses in the SDP familiar and in agreement with the NASN's Framework?	Descriptive Statistics
<i>RQ2</i> - To what extent does the school nurse's familiarity, agreement, and practice align with the NASN's Framework?	Descriptive Statistics
<i>RQ3</i> - To what extent does the school nurses' familiarity, agreement, and aligned practice differ across nurse factors, including school type and experience?	Pearson Correlation Regression Analysis
<i>RQ4</i> - Do school nurses endorse specific facilitators and barriers from the literature that impact the use of the NASN's Framework?	Descriptive Statistics
<i>RQ5</i> - To what degree do these facilitators and barriers predict the school nurses' practice of the NASN's Framework, accounting for nurse factors such as school type and experience?	Pearson Correlation Regression Analysis

### Summary

Policymakers, school leaders, and professional health organizations agree on the critical role of school nurses in assisting students to reach their full academic potential. The findings from this study will benefit the Philadelphia with firsthand knowledge and information from the school nurses that could drive future policies intended to support school nursing practice. In addition, the findings from this research will benefit school nurses working in school districts that have similar challenges, providing key information about effective facilitators to improve practice.

## CHAPTER 4

### RESULTS

The primary purpose of this study was to better understand the school nurses' adoption and application of new approaches to improve practice, specifically the adoption and utilization of the *Framework for the 21st Century School Practicing Nurse*, as well as to expand current research regarding specific facilitators and barriers to practice that impact adoption in an urban school district. First, this study examined the perceptions regarding key principles of the school nurses' practice within an urban school district. Second, this study examined the school nurses' perceptions regarding barriers and facilitators to practice, and the purposeful use of the framework in practice. Consistent with its purpose, this study addressed the following research questions:

*RQ1.* To what degree are school nurses aware and in agreement with the Framework for the 21st Century School Practicing Nurse?

*RQ2.* To what extent does the school nurse's awareness, agreement, and practice align with the framework?

*RQ3.* To what extent does the school nurses' awareness, agreement, and aligned practice of the framework differ across nurse factors, including school type and experience?

*RQ4.* Do school nurses endorse specific facilitators and barriers from the literature that impact the use of new approaches and innovations such as the framework?

*RQ5.* To what degree do these facilitators and barriers predict the school nurses' practice of new approaches, specifically the Framework for the 21st Century School Practicing Nurse?

The results revealed that participants were aware of the *Framework for the 21st Century School Practicing Nurse*. However, several groups (independent variables) were more aware than others. In addition, school nurses who participated in this study agreed with the framework and its purposeful adoption. Regarding aligned practice, school nurses who participated in this study were asked to identify which domains of the framework were components of everyday practice. Several activities were considered regular practice, while other components of the framework were practiced less frequently. Chronic disease management, advocacy, meaningful health/academic outcomes as a driver of day to day practice, and health promotion and disease prevention were the top ranked activities of the school nurses' day to day practice. Further, participants identified barriers and facilitators that impacted their ability to fully align practice with the framework. In this chapter, description of the school nurses who participated in the study will be presented, as well as the results of descriptive and inferential analyses of each research question.

### **Descriptive Analysis**

As described in the methodology chapter, the survey instrument was emailed to 260 school nurses in the School District of Philadelphia (SDP) in the spring of 2018. A response rate of 42% was achieved with 108 school nurses who participated in the study. The demographic variables measured in this study included: gender, age, race and ethnicity, highest academic degree in nursing, school nurse certification attainment, number of schools assigned to work, type of school, percentage of the student population eligible for free or reduced lunch, and number of years in the profession. Per Table 4.1,

95% of the participants identified themselves as female, 1% identified themselves as male, and 1% selected “other” as a description of gender. The age of the participants ranged from 18 to 74 years. The largest age group represented was between the ages of 55-64 (37%), with the second largest between the ages of 45-54 (25%), and the third largest 35-44 (20%). Race and ethnicity characteristics were represented using the following categories: American Indian or Alaskan Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, White, and Two or more races. White participants represented 64% of the sample, while 28% identified themselves as Black or African American, 3% identified themselves as Hispanic, and the remaining 3% identified themselves as Two or More Races.

The educational background of the participants was also collected. For the highest academic degree attained, 55% of the participants reported having a Bachelor of Science in Nursing (BSN), 40% reported attainment of a Master of Science in Nursing (MSN), while 3% reported having attained less than a BSN. Regarding Pennsylvania state school nurse certification attainment, 71% reported “yes” to having a school nurse certification regulated by the Pennsylvania Department of Education (PDE), while 26% reported “no”. The PDE issues emergency school nurse certifications to school districts unable to meet school nurse staffing requirements. Therefore, the 26% of the school nurses who selected “no” to having a PA school nurse certification in the SDP, in fact, hold emergency school nurse certifications (Joint State Government Commission, 2004).

Table 4.1  
Participant Characteristics of the Sample (N=108)

	N	Percent
<b><u>Gender</u></b>		
Male	1	1
Female	103	95
Other – Transgendered or Genderless	1	1
<b><u>Race</u></b>		
White	69	64
Black	30	28
Latino	3	3
Asian	0	0
Native American	0	0
Two or more Races	3	3
<b><u>Age</u></b>		
18 - 24	1	1
25 - 34	10	9
35 - 44	22	20
45 - 54	27	25
55 - 64	40	37
65 - 74	5	5
<b><u>Highest Academic Degree in Nursing</u></b>		
Less than BSN	3	3
BSN	59	56
MSN	43	41
<b><u>School Nurse Certification Attainment</u></b>		
Yes	77	71
No	28	26

*Missing excluded, columns might not sum to 108*

Work related data within the SDP was also collected (Table 4.2). Participants were asked to report the number of school buildings worked within a given week, the type of school worked more than 50% of the time, and the socioeconomic status of their student population. Participants who reported working in 1 building represented 77% of



the sample, 10% reported working in 2-3 buildings, 9% reported working in 4-5 buildings, while 1% reported working in 6 or more school buildings within a given week. Second, 58% of the school nurses included in this study work at neighborhood-based public elementary schools, 8% reported working in neighborhood-based public middle schools, 14% of the participants work in neighborhood-based public high schools, while 7% of school nurses in this study work in neighborhood-based special admit public high schools. Parochial school data related to type of school was also captured in this study. Participants working in an elementary parochial school represented 7% of the sample, while 3% worked primarily in parochial high schools.

Further, while all children in the SDP are provided with free lunch due to the U.S. Department of Agriculture's Community Eligibility Program for high poverty school districts, participants were asked to identify the socioeconomic status of the student population by indicating the percentage of students who would be eligible for free and reduced lunch under the federal guidelines. Thus, 82% of the participants work in schools where 81 - 100% of the students within the school building are eligible for free or reduced lunch. In addition, 7% reported 61 - 80% of the students were eligible, 2% reported eligibility for free or reduced lunch at 41- 60%, 4% reported 21-40% of the students were eligible, while 3% of the participants reported only 0 - 20% were eligible.

Lastly, school nurses were asked to identify the number of years they have been employed as a school nurse within the SDP, and their number of years as a registered nurse (RN) overall. The largest category of years employed as a school nurse within the SDP was 2 - 5 years with 40% of the participants reporting. Working within the SDP for 21 or more years represented the second largest group at 18% of the sample, while 16%

of the participants were in their first year of work. Another 16% of the respondents reported working for 16 - 20 years within the SDP as a school nurse, 8% worked as a school nurse within the district for 11 - 15 years, while another 5% reported working in the district for 6 - 10 years. Lastly, 53% of the school nurses in this study have been a registered nurse (RN) for 21 or more years, 14% for 16-20 years, 13% for 6-10 years, 9% selected 11-15 years, and 8% were RNs for 2-5 years.

Table 4.2  
Participant Work Environment Characteristics for the Sample (N=108)

	N	Percent
<b><u>Number of Schools Assigned</u></b>		
1 school	83	77
2-3	11	10
4-5	10	9
6 or more	1	1
<b><u>Type of School Assigned (More Than 50% Time)</u></b>		
Elementary (public – neighborhood based)	63	58
Middle (public – neighborhood based)	9	8
High School (public – neighborhood based)	15	14
High School (public – special admission)	7	7
Elementary (parochial)	8	7
High School (parochial)	3	3
<b><u>% of Students Eligible for Free or Reduced Lunch</u></b>		
0 – 20%	3	3
21 – 40%	4	4
41 – 60%	2	2
61 – 80%	7	7
81 – 100%	89	82
<b><u>Years Worked as a School Nurse within the SDP</u></b>		
This is my first year	17	16
2-5 years	42	39
6-10 years	5	5
11-15 years	9	8
16-20 years	13	12

21 years or more	19	18
<b><u>Years Worked as a Registered Nurse Overall</u></b>		
2-5 years	9	8
6-10 years	14	13
11-15 years	10	9
16-20 years	15	14
21 years or more	57	53

*Missing excluded, columns might not sum to 108*

### **Key Findings**

At the end of the survey period, five research questions were answered. The questions addressed the following: awareness, agreement, aligned practice, and barriers and facilitators to school nursing practice. Each research question was analyzed using descriptive and inferential statistical analyses. The findings are presented below.

#### *Research Question 1: School Nurses' Knowledge & Agreement*

To address the first research question (RQ1), descriptive statistics were computed to address awareness and agreement with new approaches to practice. School nurses in the SDP were asked to respond to a series of questions addressing awareness of the framework, as well as their agreement with the framework related to utilization within practice. See Appendix C for the full questionnaire.

Regarding overall awareness of the framework, participants were asked to select their knowledge of the framework on a 5 point Likert scale (Table 4.3). Participants were asked to respond by selecting from the following: 1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree. Variables were recoded as 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree. The results revealed that overall participants overall were neutral to agreeable regarding their general knowledge of the framework ( $M = 3.56, SD = 1.283$ ). In addition, participants were asked to identify

awareness of the individual components of the framework using the same 5 point Likert scale. The mean scores and standard deviations are presented in Table 4.3: standards of practice (M=3.76, SD=1.352), care coordination (M=3.60, SD=1.366), leadership (M=3.65, SD 1.332), quality improvement (M=3.66, SD=1.295), and community health (M=3.82, SD=1.287) are five target domains of the framework. To evaluate overall awareness, the questionnaire consisted of 7 items ( $\alpha=.971$ ). Based on the overall findings, the participants were neutral and somewhat knowledgeable about the individual components of the framework.

Table 4.3  
School Nurses' Awareness of the Framework

For each of the following, please indicate how knowledgeable you are about the NASN framework overall, as well as the key principles of the framework.	<b>N</b>	<b>Mean</b>	<b>SD</b>
In general, I am aware of the NASN's Framework for the 21st Century School Practicing Nurse.	107	3.56	1.283
I am aware that Standards of Practice is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.	107	3.76	1.352
I am aware that Care Coordination is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.	107	3.60	1.366
I am aware that Leadership is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.	107	3.65	1.332
I am aware that Quality Improvement is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.	107	3.66	1.295
I am aware that Community/Public Health is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.	107	3.82	1.287
Cronbach's alpha =	.971/6 items		

*Recoded response categories: 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree*

Lastly, 6 items on the survey instrument addressed awareness of the framework, therefore a composite variable mean was created and used as the dependent variable. The new variable created was labeled Awareness Mean (one word) in SPSS. Table 4.4

highlights the means and standard deviations for the composite variable awareness for each participant. Overall, Black (M = 4.26, SD = .804) and Hispanic (M = 4.61, SD = .673) participants were more aware of the framework than White (M = 3.40, SD = 1.274) participants. School nurses who primarily work in parochial elementary schools (M = 4.39, SD = .678) and neighborhood-based public high schools (M = 4.02, SD = 1.070) were more aware of the framework than school nurses working in neighborhood-based public elementary schools (M = 3.55, SD = 1.266). School nurses who work in schools with higher concentrations of poverty (81-100% student population) were less aware of the framework than school nurses working in school with lower levels of poverty. Lastly, mean awareness was approximately neutral for all other categories (see Table 4.4).

Table 4.4  
Means: Awareness Composite Variable Per Participant Demographic (N=108)

	N	Mean	SD
<b><u>Race</u></b>			
White	69	3.40	1.274
Black	30	4.26	.804
Hispanic	3	4.61	.673
<b><u>Type of School Assigned (More Than 50% Time)</u></b>			
Elementary (public – neighborhood based)	63	3.55	1.266
Middle (public – neighborhood based)	9	3.44	1.190
High School (public – neighborhood based)	15	4.02	1.070
High School (public – special admission)	7	3.78	1.373
Elementary (parochial)	8	4.39	.678
High School (parochial)	3	3.27	2.057
<b><u>Age</u></b>			
18 - 24	1	3.66	.
25 - 34	10	3.76	.916
35 - 44	22	3.50	1.485
45 - 54	27	3.87	1.165
55 - 64	40	3.61	1.199
65 - 74	5	3.86	1.596

<b><u>Highest Academic Degree in Nursing</u></b>			
Less than BSN	3	4.11	.419
BSN	59	3.63	1.196
MSN	43	3.72	1.322
<b><u>School Nurse Certification</u></b>			
Yes	77	3.81	1.172
No	28	3.32	1.333
<b><u># of Schools Worked Per Week</u></b>			
1	83	4.70	.512
2-3	11	4.55	.522
4-5	10	4.60	.516
6 or more	1	5.00	.
<b><u>% of Students Eligible for Free or Reduced Lunch</u></b>			
0 – 20%	3	4.55	.630
21 – 40%	4	3.95	1.423
41 – 60%	2	4.91	.117
61 – 80%	7	4.54	.458
81 – 100%	89	3.54	.630
<b><u>Years Worked as a School Nurse within the SDP</u></b>			
This is my first year	17	3.35	1.428
2-5 years	42	3.87	1.184
6-10 years	5	3.86	.767
11-15 years	9	3.01	1.292
16-20 years	13	3.71	1.373
21 years or more	19	3.81	1.087
<b><u>Years Worked as a Registered Nurse Overall</u></b>			
2-5 years	9	4.09	.755
6-10 years	14	2.82	1.387
11-15 years	10	3.90	1.210
16-20 years	15	4.52	.449
21 years or more	57	3.57	1.256

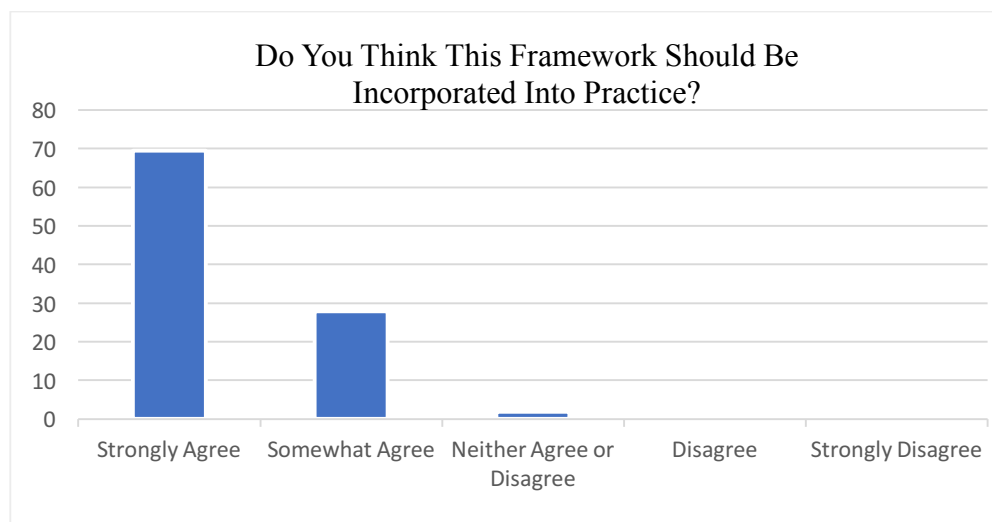
*Missing excluded, columns might not sum to 108*

*Response categories: 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree*

Lastly regarding agreement, participants were asked if they believed the framework should be incorporated into practice. Using the same 5 point Likert scale

previously presented, 69% of the participants strongly agreed, while 28% somewhat agreed ( $M = 4.68$ ,  $SD = .507$ )

Figure 4.1: Agreement with Incorporation into Practice



In addition, considering the target domains of the framework as a component of the school nurses' day to day practice, participants were asked to rank key areas of practice for each domain in order of importance. Table 4.5 represents selected practice activities highlighted by the National Association of School Nurses as important to school nursing practice. For *Care Coordination*, 50% of the participants ranked chronic disease management as the most important component of their day to day practice. Education/teaching was ranked 2<sup>nd</sup> by the participants, case management ranked 3<sup>rd</sup>, collaborative communication ranked 4<sup>th</sup>, and interdisciplinary teamwork ranked 5<sup>th</sup> as least important. Regarding *Leadership*, 62% of the school nurses believed advocacy was the most important day to day activity. Health reform ranked 2<sup>nd</sup>, being a lifelong learner ranked 3<sup>rd</sup>, while education reform and system level leadership as a component of practice were both tied and ranked 4<sup>th</sup>.

Next, research facilitators the need for effective *Quality Improvement* as a part of the school nurses' daily practice. Participants ranked meaningful health/academic outcomes as the most important driver of their day to day practice. Documentation and data collection ranked the second most important element, while continuous quality improvement ranked 3<sup>rd</sup>, evaluation ranked 4<sup>th</sup>, and performance appraisal was ranked the least important component of practice. Lastly, *Community Based Care & Public Health* are the heart of school nursing practice. Health promotion and disease prevention was ranked as the most important community based care element of the school nurses' day, with 45% of the participants who agreed. Providing access to care was ranked 2<sup>nd</sup>, while health equity and population based care activities were tied and ranked 3<sup>rd</sup>. Participants ranked cultural competency as the least important component of care.

Table 4.5  
Ranked Elements of Each Target Domain (N=108)  
(1 to 5 most to least important)

	N	Percent	Rank
<b><u>Care Coordination</u></b>			
Chronic Disease Management	54	50	1
Education/Teaching	22	20	2
Case Management	20	19	3
Collaborative Communication	8	7	4
Interdisciplinary Teamwork	3	3	5
<b><u>Leadership</u></b>			
Advocacy	67	62	1
Healthcare Reform	17	16	2
Lifelong Learner	15	14	3
Education Reform	4	4	4
System Level Leadership	4	4	4
<b><u>Quality Improvement (QI)</u></b>			
Meaningful Health/Academic Outcomes	39	36	1
Documentation/Data Collection	32	30	2
Continuous Quality Improvement	25	23	3



Evaluation	10	9	4
Performance Appraisal	1	1	5
<b><u>Community Based Care/Public Health</u></b>			
Health Promotion/Disease Prevention	49	45	1
Providing Access to Care	38	35	2
Health Equity	7	7	3
Population Based Care	7	7	3
Cultural Competency	6	6	4

*Missing excluded, N columns might not sum to 108*

### *Research Question 2: School Nurses' Practice & Alignment*

To address RQ2, regarding the school nurses' awareness, agreement, and aligned practice of the framework, participants were asked to identify key components of the framework that highlight everyday practice. Table 4.6 represent 8 items used on the survey ( $\alpha = .638$ ) to measure the participants aligned practice with key elements of the framework (See appendix 1 for the full questionnaire). A composite variable was created for aligned practice as a dependent variable. This new variable was labeled Alignment Mean in SPSS. The questions reflect key actions from four of the five domains (*care coordination, leadership, quality improvement, and community health*) of the framework. Participants selected from the following response categories: 0=never; 1=once per week; 3=2-3 times per week; 4=4-6 times per week; 5=daily. Mean responses ranged from 1.72 to 4.67, with standard deviations of .810 to 1.897. Overall, participants identified some elements of the framework as a component of their everyday practice, while other areas were practiced less frequently, such as strategic collaboration with district level administrators. *Standards of practice*, represents minimum and foundational standards of registered nursing practice regardless of specialty. Thus, questions related to this domain were omitted.

Table 4.6  
School Nurses' Aligned Practice with the Framework  
Composite Variable Construction

For each of the following, please indicate to what extent the framework relates to your practice as a school nurse in the SDP.	<b>N</b>	<b>Mean</b>	<b>SD</b>
I engage in the overall coordination of care of the students within my school.	107	4.67	.949
I am actively involved in the chronic disease management of students in my school.	107	4.72	.810
I collaborate with other health and social disciplines as it relates to the care of the students in my school.	107	3.91	1.398
I partner with families and caregivers to ensure that decisions include my students' needs.	107	4.26	1.276
I participate in strategic collaborations with district level administrators to inform.	107	1.72	1.897
I regularly participate in professional development activities within my school district to improve my practice as a nurse.	107	3.84	1.561
I participate in continuing education activities outside of my school district to improve my practice.	107	3.01	1.783
I utilize technology (collect data, web based resources, etc.).	107	4.36	1.284
Cronbach's alpha =			.638/8 items

*Response categories:* 0=never; 1=once per week; 3=2-3 times per week; 4=4-6 times per week; 5=daily

Regarding mean scores for aligned practice per participant category (Table 4.7), increase in participant age showed a reported decrease in aligned practice, while advanced degree and school nurse certification attainment showed an increase in aligned practice. Lastly, school nurses who worked 6-10 years as a school nurse within the SDP had the highest aligned practice mean within this category ( $M = 4.1750$ ,  $SD = .55621$ ), and school nurses who worked 16 – 20 years overall as a registered nurse had the highest aligned mean ( $M = 4.1833$ ,  $SD = .53841$ ).

Table 4.7  
Means: Aligned Practice Composite Variable Per Participant Category (N=108)

	N	Mean	SD
<b><u>Race</u></b>			
White	69	3.81	.634
Black	30	3.73	.986
Hispanic	3	3.66	.970
<b><u>Type of School Assigned</u></b>			
Elementary (public – neighborhood based)	63	3.92	.691
Middle (public – neighborhood based)	9	3.98	.884
High School (public – neighborhood based)	15	3.59	.825
High School (public – special admission)	7	3.21	1.108
Elementary (parochial)	8	3.73	.515
High School (parochial)	3	3.66	.710
<b><u>Age</u></b>			
18 - 24	1	4.25	.
25 - 34	10	4.05	.612
35 - 44	22	3.71	.820
45 - 54	27	3.87	.920
55 - 64	40	3.83	.634
65 - 74	5	3.12	.579
<b><u>Highest Academic Degree in Nursing</u></b>			
Less than BSN	3	2.95	1.154
BSN	59	3.72	.811
MSN	43	3.98	.603
<b><u>School Nurse Certification</u></b>			
Yes	77	3.86	.738
No	28	3.66	.813
<b><u>% of Students Eligible for Free or Reduced Lunch</u></b>			
0 – 20%	3	3.37	.572
21 – 40%	4	4.09	.679
41 – 60%	2	4.00	.883
61 – 80%	7	4.12	.750
81 – 100%	89	3.78	.769
<b><u># of Schools Assigned Per Week</u></b>			
1	83	3.85	.717

2-3	11	3.89	.753
4-5	10	3.56	.852
6 or more	1	1.62	.
<b><u>Years Worked as a School Nurse within the SDP</u></b>			
This is my first year	17	3.94	.751
2-5 years	42	3.82	.767
6-10 years	5	4.17	.556
11-15 years	9	3.36	1.068
16-20 years	13	3.75	.590
21 years or more	19	3.82	.725
<b><u>Years Worked as a Registered Nurse Overall</u></b>			
2-5 years	9	3.87	.640
6-10 years	14	3.36	1.001
11-15 years	10	4.05	.586
16-20 years	15	4.18	.538
21 years or more	57	3.76	.743

*Response categories:* 0=never; 1=once per week; 3=2-3 times per week; 4=4-6 times per week; 5=daily

### *Research Question 3: Awareness, Agreement, and Aligned Practice*

To address research question 3 (RQ3), school nurses' familiarity, agreement, and aligned practice with the framework and the difference across nurse factors, correlational analyses were performed. Correlations were examined among all independent variables (nurse factors) and each dependent variable (awareness mean, agreement, and alignment mean). Table 4.8 show the correlation between the school nurses' awareness, agreement, and aligned practice with the framework across nurse factors. The results suggest Pearson's  $r$  data analysis revealed a negative correlation for White participants and awareness ( $r = -.300, p = .02$ ), and a positive correlation for Black participants and awareness ( $r = .301, p = .02$ ). In addition, there was a small negative correlation between awareness and socioeconomic status of the student population where participants

practiced ( $r = -.242, p = .013$ ), as well as a small negative correlation between agreement with the framework and the socioeconomic status of the student population ( $r = -.223, p = .022$ ). The results also suggest a correlation between other variables. For school nurses who work in a special admission high school, there was a negative correlation with participants aligned practice ( $r = -.211, p = .029$ ). In addition, there was a positive correlation between highest nursing degree attainment and aligned practice ( $r = .234, p = .016$ ). Lastly, there was a negative correlation between the number of buildings the school nurse worked within a given week and aligned practice with the framework ( $r = -.195, p = .046$ ).

Table 4.8 Partial Correlation Matrix

Variables	Awareness	Agreement	Alignment
Awareness	1		
Agreement	.153	1	
Alignment	-.105	.068	1
White	-.300**	-.119	.012
Black	.301**	.022	-.065
Hispanic	.130	.107	-.033
Elem: Public	-.115	-.188	.174
Middle: Public	-.057	.057	.070
HS: Public	.114	.094	-.119
HS: SA	.024	.017	-.211*
Elem: Parochial	.167	.038	-.029
HS: Parochial	-.055	.107	-.033
Age	.009	.010	-.112
Highest Degree	.003	.137	.234*
SN Certification	-.179	-.040	-.113
# Buildings	.006	-.055	-.195*
SES of Students	-.242*	-.223*	-.047
Yrs as SN in SDP	.025	-.123	-.070
Yrs as RN	-.006	-.012	.025

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Next, a multiple regression (Table 4.9) was conducted using SPSS to predict the relationship between awareness, agreement, and aligned practice with various nurse factors. It should be noted, years as a school nurse within the SDP and years as a registered nurse, were highly correlated with each other and therefore only one variable was included in the regression analysis.

*Awareness.* The results of the model for awareness saw school nurses' who identified themselves as Black ( $\beta = .272, p = .008$ ) as a significant predictor. Controlling for everything else in the model, Black participants' agreement with the framework was .739 SDs higher than White participants. In the awareness model,  $R^2$  is .213, or 21.3%. Therefore, 21.3% of the variation is explained by the independent variables.

*Aligned practice.* The results of the model for aligned practice saw special admission high schools ( $\beta = -.196, p = .047$ ), age ( $\beta = -.438, p = .011$ ), and highest academic degree ( $\beta = .275, p = .012$ ) as significant predictors. On average, school nurses working in special admission high schools reported alignment with the framework .595 SDs lower ( $B = -.595$ ) than school nurses who work in neighborhood-based elementary schools. In addition, school nurses aligned practice decreased .297 SDs for each increase in age range on the survey, while aligned practice increased .385 SDs for each higher academic degree attained.

*Agreement.* Lastly, for the agreement models, none of the independent variables were statistically significant predictors.

**Table 4.9**  
Standardized Regression Coefficients Depicting Effect on Awareness, Agreement, &  
Aligned Practice Across Nurse Factors

Variable	Awareness Mean		Agreement		Alignment Mean	
	$\beta$	t	$\beta$	t	$\beta$	t
<i>Constant</i>		.449		10.594		7.296
Black or AA	.272	2.692 **	-.020	-.185	-.056	-.576
Hispanic or Latino	.168	1.567	.054	.485	.014	.132
Middle: Neighborhood	-.051	-.514	.043	.420	.011	.119
HS: Neighborhood	.064	.625	.158	1.482	-.181	-1.831
HS: Special Admit	-.046	-.461	.027	.225	-.196	-2.017 **
Elementary: Parochial	.149	1.191	-.032	-.249	-.050	-.415
HS: Parochial	-.106	-1.005	.039	.358	-.094	-.917
Age	.052	.296	.081	.444	-.438	-2.585 **
Highest Degree	-.045	-.407	.181	1.567	.275	2.571 **
SN Certification	-.200	-1.663	.014	.109	-.170	-1.456
# Buildings	-.108	-.983	-.093	-.813	-.177	-1.659 ~
SES of Students	-.138	-1.080	-.261	-1.956	-.118	-.950
Yrs as SN in SDP	-.017	-.122	-.210	-1.446	-.125	-.928
Yrs as RN	-.113	-.670	-.036	-.202	.304	1.853
R <sup>2</sup>	.213		.142		.260	
Standard Error of the estimate	1.174		.507		.702	
Degrees of freedom	104		104		104	

Significant levels of  $P$   $p < .10$ ~;  $p < .05$ \*\*;  $p < .01$ \*\*~;  $p < .001$ \*\*\*

#### *Research Question 4: Facilitators & Barriers to Practice*

The literature highlights key facilitators and barriers to practice for school nurses, as discussed in Chapter 2. Current research identifies facilitators that have the potential to add value and enhance school nursing practice to aid in producing better educational and health outcomes for students. The facilitators needed for successful school nursing practice often align with the “five essential facilitators” of school success described by

Bryk and his colleagues (Bryk, 2010). Several key facilitators of school nursing practice include: family and community partnerships, equitable funding, and ongoing professional development.

However, school nurses also indicated that they face barriers when providing care. Increased complexity of health conditions cause care delivery to be more challenging for school nurses. In addition, issues such as funding and resources, high nurse to student ratios and social determinants of health influence school nursing practice. Removing existing barriers that impede the ability of school nurses to operate fully in their roles within the school community is critical. Given the research present on the barriers and facilitators to school nursing practice, the 4<sup>th</sup> research question (RQ4), addresses whether these same barriers and facilitators impact adoption of newer approaches to practice.

*Facilitators of Practice.* To address research question 4, participants were asked to respond to several questions by indicating level of support using a 5 point Likert scale (Table 4.10). Response categories consisted of the following: 1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree. Variables were recoded as 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree. The results highlight the following: supportive school environments helped to facilitate school nursing practice (M=4.05, SD 1.076), and participants reported alignment with the framework (M=3.94, SD .930). Participants were more neutral regarding support from teachers and staff as a facilitator that allow for the ability to incorporate the framework (M=3.54, SD=1.143). Further, participants were less than neutral as it related to school funding (M=2.63, SD 1.095), parental support (M = 2.63, SD = 1.186), adequate nurse to



staffing ratios overall (M=3.09, SD=1.551), and a slightly lower mean for adequate nurse to staffing ratios when incorporating the framework (M=2.83, SD=1.470). Lastly, participants leaned more neutral when asked about professional development within the school district as a facilitator to adopting the framework. (M=3.26, SD=1.152).

Table 4.10  
Facilitators of Adopting New Innovations

For each of the following, please indicate the level of support you receive to promote your ability to practice using the key domains of the NASN framework.	<b>N</b>	<b>Mean</b>	<b>SD</b>
In general, I practice in a supportive school environment.	107	4.05	1.076
My nursing practice fully aligns with the NASN's framework.	107	3.94	.930
The teachers and staff are supportive of my ability to incorporate all the NASN's Framework into my practice.	107	3.54	1.143
School funding for my position allows my practice to fully align with the NASN's Framework.	107	2.63	1.095
Professional development within my school district allows for my practice to fully align with the NASN's Framework.	107	3.26	1.152
Parental support helps me to align my practice fully with the NASN's framework.	107	2.63	1.186
I have an adequate nurse to student staffing ratio.	107	3.09	1.551
I have an adequate nurse to student staffing ratio that allows for my practice to align with the NASN's framework.	107	2.83	1.470
Cronbach's alpha = .835/8 items			
Recoded response categories: 5=SA, 4=A, 3=N, 2=DA, 1=SD			

*Barriers to Practice.* Participants also responded to several questions addressing barriers to practice using the same recoded 5 point Likert scale as previously described (Table 4.11). Response categories consisted of the following: 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree. While participants were neutral in their previous response to funding as a facilitator for school nursing aligned practice of the framework, participants identified limited funding (M=3.95, SD=.930) and limited resources (M=3.91, SD=.951) as barriers to the aligning school nursing practice with the

framework. In addition, social factors such as adequate housing and food available to students ( $M=3.71$ ,  $SD=1.179$ ) and the challenges of the school's neighborhood ( $M=3.49$ ,  $SD = 1.229$ ) made it difficult for the framework to fully align with practice. Further, participants were more neutral in their responses regarding the nurse to student staffing ratio as a barrier to incorporating the framework into practice ( $M=3.36$ ,  $SD=1.381$ ). Lastly, school nurses were also neutral in their responses to changes in the school nurses' role ( $M=3.11$ ,  $SD=.989$ ), and communication within their school ( $M=2.98$ ,  $SD=1.163$ ) as a barrier to incorporating the framework.

Table 4.11  
Barriers to Adopting New Innovations

For each of the following, please indicate the level of impact key barriers have on your ability to practice using the NASN framework.			
	<b>N</b>	<b>Mean</b>	<b>SD</b>
The complexity of the students' health-related needs make it difficult for my practice to fully align with the NASN's framework.	106	2.97	1.222
The needs and challenges of my school's neighborhood where I spend most of my time, make it difficult for my practice to fully align with the NASN's framework.	106	3.49	1.229
Education funding limits my ability to align my practice fully with the NASN's framework.	106	3.95	.930
Available resources limit my ability to align my practice fully with the NASN's framework.	106	3.91	.951
My current nurse to student ratio makes it difficult for my practice to fully align with the NASN's framework.	106	3.36	1.381
Communication within my school makes it difficult for my practice to fully align with the NASN's framework.	106	2.98	1.163
Social factors (access to adequate housing, neighborhood, food access, etc.) effecting my students make it difficult for my practice to fully align with the NASN's framework.	106	3.71	1.179
Changes to my role as a school nurse within my school make it difficult for my practice to fully align with the NASN's framework.	106	3.11	.989
Cronbach's alpha =			.857/8 items

Recoded Response categories: 5=SA, 4=A, 3=N, 2=DA, 1=SD

*Research Question 5: Facilitators & Barriers to Adoption*

The final research question (RQ5) addressed in this study explored whether the facilitators and barriers identified by school nurses predict their utilization and incorporation of the framework within practice. While the research is clear in highlighting key barriers and facilitators to school nursing practice, the literature is unclear if these same barriers and facilitators influence the adoption of new approaches to practice accounting for various school nurse demographics. Correlations were examined among all independent variables (nurse factors) and each dependent variable (facilitators and barriers).

*Facilitators of Practice.* Tables 4.13 present correlations between key facilitators to school nursing practice across school nursing demographics (See appendix A). First, the results suggest Pearson's  $r$  data analysis revealed a small correlation between race of the participants and several variables: there was a negative relationship between White participants and full alignment of the framework ( $r = -.277, p = .004$ ), teacher and staff support ( $r = -.196, p = .043$ ), school funding ( $r = -.219, p = .024$ ), available professional development within the school district ( $r = -.239, p = 0.013$ ), and adequate nurse to staffing ratio ( $r = -.221, p = .022$ ). For Black participants, there was a positive relationship between professional development within the school district ( $r = .202, p = 0.037$ ), and adequate nurse to staffing ratio ( $r = .218, p = .024$ ).

Second, there were several positive correlations revealed. There was a small correlation between working in a special admission high school and working in a supportive school environment ( $r = .200, p = .039$ ). In addition, the nurse-to-student staffing ratio revealed a small positive relationship with several variables: age ( $r = .202, p$

= .038), highest academic degree attainment ( $r = .244, p = .012$ ), and the number of years' school nurses were employed by the SDP ( $r = .234, p = .016$ ).

Pearson's  $r$  data analysis revealed negative correlations as well. There was a small negative relationship between working in a neighborhood-based elementary school and a supportive school environment overall ( $r = -.247, p = .010$ ). In addition, holding a PA school nurse certification showed a negative relationship with school funding ( $r = -.199, p = .042$ ), and parental support ( $r = -.199, p = .042$ ). The number of schools assigned negatively correlated with having adequate nurse to student staffing ratio ( $r = -.295, p = .002$ ). Lastly, socioeconomic status of the school where participants practiced also showed a negative relationship with several variables: working in a supportive school environment ( $r = -.266, p = .006$ ), support of teachers and staff ( $r = -.288, p = .019$ ), school funding ( $r = -.212, p = .030$ ), and parental support ( $r = -.232, p = .017$ ).

Finally, a multiple regression was calculated to predict the school nurse's practice of the framework as a newer approach given the selected facilitators available in the SDP. The results of the model (Table 4.14) revealed parental facilitators ( $\beta = .300, p = .009$ ) as a significant predictor. Controlling for all other variables in the model, parental support as a facilitator for aligned practice of the framework was .300 SDs higher than other facilitators. No other facilitator was a significant predictor of practice alignment with the framework.

Table 4.14  
Standardized Regression Coefficients Depicting Effect on Aligned  
Practice Accounting for Facilitators.

Variable		Aligned Practice	
		$\beta$	t
<i>Constant</i>			8.225
Q5.1Rev	I practice in a supportive school environment.	-.008	-.068
Q5.2Rev	My nursing practice fully aligns with the framework.	.099	.805
Q5.3Rev	The teachers and staff are supportive of my ability to incorporate the framework into my practice.	.092	.710
Q5.4Rev	School funding for my position allows my practice to fully align with the framework.	-.160	-1.232
Q5.5Rev	Professional development within my school district allows for my practice to align with the framework.	.088	.760
Q5.6Rev	Parental support helps me to align my practice fully with the framework.	.300	2.652 **
Q5.7Rev	I have an adequate nurse to student staffing ratio.	-.413	-1.557
Q5.8Rev	I have an adequate nurse to student ratio to align practice with framework.	.355	1.313
R <sup>2</sup>			.184
Standard Error of the estimate			.706
Degrees of freedom			106

*Barriers to Practice.* Table 4.16 highlights the correlational relationship between barriers to practice and specific nursing variables (See appendix B). The results suggest Pearson's  $r$  data analyses revealed a correlation between several variables. There was a small positive relationship between difficulty aligning practice due to the complexity of the surrounding neighborhood and working in a neighborhood-based elementary school ( $r = .269, p = .005$ ). In addition, there was a small positive relationship between White participants and reported difficulty aligning practice due to nurse to student staffing ratios ( $r = .191, p = .050$ ). In addition, there was a positive relationship between holding a school nurse certification and difficulty aligning practice with the framework due to

social determinants impacting students ( $r = .224, p = .022$ ). Pearson  $r$  data analyses also showed a positive relationship between the number of schools assigned to the school nurse and difficulty aligning practice due to current nurse to student staffing ratio ( $r = .249, p = .010$ ), as well as communication within the school as a barrier ( $r = .224, p = .022$ ). Lastly, the socioeconomic status of the school where participants worked had a small correlation with several variables as well. The complexity of the surrounding neighborhood ( $r = .2332, p = .017$ ), social determinants impacting students ( $r = .289, p = .003$ ), and changes to the school nurses' role ( $r = .243, p = .013$ ) positively correlate to the socioeconomic status of the students under their care as it relates to barriers to align practice.

In addition to the positive correlations present, several negative correlations were also found: working in a neighborhood-based middle school and difficulty aligning practice related to the complexity of the students' health related needs ( $r = -.215, p = .027$ ); working in a parochial high school and difficulty aligning practice due to the complexity of the surrounding neighborhood ( $r = -.208, p = .032$ ) and social determinants impacting students ( $r = -.200, p = .040$ ); the participants age and current nurse to student staffing ratios as a barrier to aligned practice ( $r = -.203, p = .038$ ); highest academic degree and attainment current nurse to student staffing ratios ( $r = -.210, p = .032$ ) and communication within the school as a barrier ( $r = -.200, p = .040$ ); and the number of years worked as a registered nurse overall and school communication ( $r = -.197, p = .044$ ).

Lastly, multiple regression (Table 4.17) was calculated to test if key barriers indicated by the participants would significantly predict alignment of the school nurses'

practice to the framework. The results of the regression analysis revealed no statistically significant barriers to practice.

Table 4.17  
Standardized Regression Coefficients Depicting Effect on Aligned Practice  
Accounting for Barriers

Variable		Aligned Practice	
		$\beta$	t
<i>Constant</i>			8.225
Q6.1Rev	The complexity of the students' health-related needs makes it difficult for my practice to fully align with the framework.	-.008	-.068
Q6.2Rev	The complexity of the surrounding community outside the school makes it difficult for my practice to fully align with the framework.	.099	.805
Q6.3Rev	Funding limits my ability to align my practice fully with the framework.	.092	.710
Q6.4Rev	Available resources limit my ability to align my practice fully with the framework.	-.160	-1.232
Q6.5Rev	My current nurse to student ratio makes it difficult for my practice to fully align with the framework.	.088	.760
Q6.6Rev	Communication within my school makes it difficult for my practice to fully align with the framework.	.300	2.652
Q6.7Rev	Social factors (housing, neighborhood, etc.) effecting my students make it difficult for my practice to fully align with the framework.	-.413	-1.557
Q6.8Rev	Changes to my role as a school nurse within my school make it difficult for my practice to fully align with the framework.	.355	1.313
R <sup>2</sup>			.184
Standard Error of the estimate			.706
Degrees of freedom			106

### Summary

The research questions presented in this study revealed key findings related to school nursing practice and the adoption of new innovations. The primary goal of this study was two-fold: (1) to expand current research regarding specific barriers and facilitators to school nursing practice, and (2) to better understand the school nurses'

adoption and application of new innovations in an urban school district. The successful adoption of an innovative approach to practice centers on the school nurses' awareness and agreement of new practice approaches supported by professional organizations, and the school district's ability to offer facilitators to align new practice. Overall, the results indicated several key findings that provide further understanding of the school nurses' practice in an urban school district, particularly as it relates to access to new evidence based practice approaches.

*Awareness.* In this study, participants were aware of the *Framework for the 21st Century School Practicing Nurse*, but several groups differed in their level of awareness. Black and Hispanic school nurses were more aware of the framework than White school nurses. School nurses who primarily work in parochial elementary schools and neighborhood-based high schools, were also more aware of the framework than school nurses working in neighborhood-based elementary schools. Lastly, school nurses who worked in less impoverished schools were more aware of the framework than those working in high poverty schools.

*Agreement.* Overall, while none of the independent variables were significant predictors of agreement, an overwhelming majority of the school nurses who participated in this study agreed with the *Framework for the 21st Century School Practicing Nurse* and its purposeful adoption.

*Alignment.* Regarding aligned practice, school nurses identified several elements of the framework as a component of their everyday practice, while other areas were practiced less frequently. Chronic disease management, advocacy, meaningful health/academic outcomes as a driver of their day to day practice, and health promotion



and disease prevention were the top ranked activities of the school nurses' day to day practice. However, cultural competency was ranked as the least important component of the participants practice. In addition, strategic collaboration with district level administrators was practiced but less frequently than other day to day activities. Lastly, school environment and parental facilitators were identified as facilitators to aligning practice with the framework, with parental support identified as a statistically significant predictor in the regression analysis. Lastly, while school nurses identified limited funding, limited resources, social factors (such as adequate housing and food available to students), and neighborhood effects as barriers, the regression analysis do not support these as significant predictors of practice alignment.

## CHAPTER 5

### DISCUSSION

The purpose of this dissertation study was to examine the school nurses' adoption and incorporation of new approaches to practice in an urban school district. Further, this study aimed to expand current research by examining specific facilitators and barriers to school nursing practice, more specifically as they relate to the adoption of newer approaches to practice. As previously stated, the *Framework for the 21st Century School Practicing Nurse* was chosen for this study due its development within the last 5 years as a new framework to guide current school nursing practice.

This evidence-based practice model, developed by the National Association for School Nurses provides a mechanism for school nurses to reach educational goals of supporting student health and academic success. The *Framework for the 21<sup>st</sup> Century School Nursing Practice*, developed in 2015 with the WSCC model in mind, is a visual and conceptual guide that provides structure and focus to current school nursing practice, with a goal to separate technical practice to a more professional practice (Maughan, Bobo, Butler, Schantz, & Schessler, 2015; Maughan, Duff, & Wright, 2016; Maughan, Bobo, Butler, & Schantz, 2016). This chapter will present a summary of the major findings, discuss the researcher's interpretation of the findings, study limitations, implications and benefits for policy and practice, as well as provide recommendations for future research.

Further, this chapter provides discussion and interpretation of the following research questions analyzed in chapter 4:

1. To what degree are school nurses aware and in agreement with the Framework for the 21st Century School Practicing Nurse?
2. To what extent does the school nurse's awareness, agreement, and practice align with the framework?
3. To what extent does the school nurses' awareness, agreement, and aligned practice of the framework differ across nurse factors, including school type and experience?
4. Do school nurses endorse specific facilitators and barriers from the literature that impact the use of new approaches and innovations such as the framework?
5. To what degree do these facilitators and barriers predict the school nurses' practice of new approaches, specifically the Framework for the 21st Century School Practicing Nurse?

Lastly, Roger's *Diffusion of Innovation (DOI) Theory* provided a lens for understanding the school nurse's perceived awareness and purposeful utilization of a new model for practice, specifically while examining perceived barriers and facilitators of adoption in an urban school district. Does the decision to adopt this new approach to practice stem from existing attitudes about school nursing practice, or are there other systemic factors such as the setting, local political conditions, or other factors that influence diffusion?

### **Summary of Findings**

This study examined the school nurses' awareness, agreement, and aligned practice with the *Framework for the 21st Century School Practicing Nurse*, while also examining specific barriers and facilitators to adoption. The results revealed that school

nurses were aware of this newer model to practice, but the level of awareness varied among the participants. Overall, several groups were more aware than others. Black and Hispanic school nurses were more aware of the framework than White school nurses. School nurses who primarily work in parochial elementary schools and neighborhood-based high schools were also more aware of the framework than school nurses working in neighborhood-based elementary schools. Lastly, school nurses who worked in less impoverished schools were more aware of the framework, than those working in high poverty schools. In addition, school nurses who participated in this study overwhelmingly agreed with the framework and its purposeful adoption. There were no significant differences in the level of agreement between groups.

Finally, regarding aligned practice, several domains of the framework were identified as components of practice, yet the importance of each differed. Several activities were considered regular practice, while other components of the framework were practiced less frequently. Chronic disease management, advocacy, meaningful health/academic outcomes as a driver of day to day practice, and health promotion and disease prevention were ranked as the top prioritized activities of the school nurses' day to day practice. Cultural competency was ranked as the least important component of the participants' practice. Further, while several components of the framework were practiced more frequently, strategic collaboration with district level administrators was practiced, but less frequently. The research revealed several facilitators and barriers to aligning practice with the framework such as school environment, parental facilitators, limited funding and resources, social factors (such as adequate housing and food available to students), and neighborhood effects.

## **Interpretation of Findings**

*Awareness.* For research question 1, school nurses were aware of the National Association for School Nurses' new visual approach to practice, however several groups were more aware than other groups. School nurses assigned to practice in parochial elementary schools and neighborhood-based high schools were more aware of the framework than school nurses working in neighborhood-based elementary schools. Schools with higher concentrations of poverty (81-100% student population) where school nurses were assigned reported less awareness of the framework than school nurses assigned to schools with lower levels of poverty. Additionally, Black and Hispanic participants were more aware of the framework than White participants.

The ability for school nurses to provide evidence-based care, guided by the awareness and utilization of new approaches to practice in all settings is key to assisting in producing better health and educational outcomes for students. Current research identifies key indicators of academic success such as student academic achievement, instructional quality, student participation, and school climate. Chronic absenteeism, for example, in early elementary grades impacts reading proficiency in third grade, which leads to an increased risk of dropping out of high school later (Balfanz & Byrnes, 2012; Johnson, 2017). School nurses provide care management of students with high rates of absenteeism by helping students and families to navigate health problems that impede attendance (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015), particularly in the elementary schools. Neighborhood-based elementary schools in urban school districts are in a unique position to combat risks and vulnerabilities that have the potential to negatively impact health outcomes and academic achievement. Present and past research

propose many arguments regarding the role of third grade success as a primary indicator of future academic outcomes. For example, reading level in third grade is a significant predictor of a student's eighth grade reading level, which in turn predicts future high school graduation and college entrance rates (Lesnick, Goerge, & Smithgall, 2010). Therefore, the findings from this study highlight the need for school nurses assigned to elementary schools to be afforded access and targeted awareness of new evidence-based approaches to practice as an important driver to academic success in later years.

Further, findings from this study indicate the perpetual cycle of factors that continue the cycle of poverty for students within high impoverished schools. School nurses in this study were less aware of the framework than school nurses assigned to schools with reported less poverty. Inequities within an education system that provide great schools for well-off students, and dangerous or less-resourced schools for inner-city children, amplifies inequality rather than opportunity (Kristof, 2014). There is a strong association between social class and health throughout the lifespan, as well as access to education that predicts a person's future success (Basch, 2011a; Johnson, 2017). As discussed in chapter 2, 20% of children live in poverty and lack access to adequate daily food intake, with many children relying on the nurse as their primary source of healthcare services (Johnson, 2017). Therefore, a significant finding of this research suggests the need for targeted professional development activities especially for those schools with significant risks associated with socioeconomic status. Lastly, while Black and Hispanic school nurses were more aware of the framework than White school nurses, other factors associated with overall school nurse placement, for example, may have added to the variability of the regression analysis.

*Agreement.* In part 1 of the survey instrument, school nurses were asked questions to assess their level of awareness of the framework. After answering a series of questions about their knowledge, in part 2 of the survey, participants were shown a visual graphic of the framework before progressing through the survey. To examine agreement, participants were asked to identify their level of agreement with the framework. An overwhelming 97% of school nurses agreed with the framework as a practical guide to practice, and the recommendation for its purposeful adoption. The findings support the development of *The Framework for the 21<sup>st</sup> Century School Nursing Practice* as a visual and conceptual guide that provides structure and focus to current school nursing practice, separating technical aspects of practice to a professional practice need (Maughan, Bobo, Butler, Schantz, & Schessler, 2015; Maughan, Duff, & Wright, 2016; Maughan, Bobo, Butler, & Schantz, 2016). School nurses agreed with the framework, yet the findings of this study highlight challenges with aligning practice due to existing barriers.

*Alignment.* *The Framework for the 21st Century School Practicing Nurse* incorporates several domains of suggested school nursing practice necessary for meeting the needs and complexities of the professional school nurse of today. The five overarching key principles include: Standards of Practice, Care Coordination, Leadership, Quality Improvement, and Community Public Health. Within each domain there are several practice activities included that drive the needs of current school nursing practice. The findings from this study revealed alignment with the framework in several areas, yet the ranked-level of importance of each differed among the participants. To examine practice alignment, school nurses were asked a series of questions related to domain. Chronic disease management, advocacy, meaningful health/academic outcomes as a

driver of day to day practice, and health promotion and disease prevention were highly ranked as priority activities of the school nurses' day to day practice. However, cultural competency was ranked as the least important component of the school nurses practice in the study. While school nurses prioritize important elements of care on a day to day basis, the need to provide culturally competent care cannot be minimized or overshadowed. Cultural competence is described as a set of congruent attitudes, behaviors, and policies that enable a system, organization, program, or individuals to work effectively in cross cultural situations to understand, appreciate, honor, and respect cultural differences and similarities within and between cultures (Cross et al., 1989; Dowell & Gula, 2018)

School nurses must look at the complexity of ethnicity, refugees, socioeconomics, and transitory issues as significant needs (Maughan & Adams, 2011. p. 358) particularly in demographically heterogeneous school districts. For example, as previously discussed, asthma disproportionately impacts children of color more frequently than non-Hispanic White children (Basch, 2011b; Engelke, Swanson, and Guttu, 2014; Johnson, 2017). Students with asthma often have high rates of absenteeism resulting in problems with behavior and reading, as well as grade repetition and learning disabilities (Rodriguez, 2013). In the SDP, 53% of the students enrolled are Black or African American, 20% Hispanic, 14% White, and 7% identify as Multi-Racial or Other. Therefore, the need for school nurses to provide culturally competent care as a priority of practice, highlights its incorporation into the framework as a priority component of care delivery. Further, while practiced less frequently, the findings also revealed strategic collaboration with district level administrators as an area of school nursing practice. Moreover, current facilitators and barriers impact the ability for school nurses to align practice with the framework.



*Facilitators & Barriers.* The research revealed several barriers and facilitators to aligning practice with the framework: supportive school environment, parental facilitators, limited funding and resources, social factors, and neighborhood effects. The National Center on Safe Supportive Learning Environments defines a supportive school environment broadly by a school's ability to have appropriate facilities, well- managed classrooms, availability of school-based health facilitators, and clear, fair disciplinary policies and practices. In contrast, a poor school environment has issues related to low teacher satisfaction, high teacher turnover rates, low academic expectations, and a poor and unsafe physical environment (<https://safesupportivelearning.ed.gov/topic-research/environment>). Therefore, supportive school environments not only impact teacher satisfaction and their ability to meet the needs of students, school nurses also work best in environments that reflect the overall need for success in students. These environments typically have added parental facilitators as well.

In *Organizing Schools for Improvement: Lessons Learned from Chicago*, there are five essential facilitators for school improvement: school leadership, strong parent-community-school ties, student-centered learning climate, professional capacity, and coherent instructional guidance system (Bryk, 2010). This study revealed parental support as a significant predictor of aligning school nursing practice with the framework. Children with engaged parents had higher high school graduation rates, improved classroom behavior and fewer detentions, higher grades and test scores, higher levels of social skills (Smith, Wohlstetter, Kuzin, & De Pedro, 2011; Michael, Merlo, Basch, Wentzel, & Wechsler, 2015; Morse, 2015), fewer special education placements, and improved overall behavior community (Smith, Wohlstetter, Kuzin, & De Pedro, 2011).

Parental involvement in the school community has been shown to decrease risky health behaviors in students (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015), as well as add to the overall success of school nursing practice particularly in vulnerable schools. The concept of family-centered care has been studied extensively across a variety of professional disciplines such as education, nursing, medicine, and public health. Family-centered care can be described as the full involvement of families in the overall care of a child. The partnership between families and professionals can allow for collaboration and mutual respect in the effective planning of services and interventions (Concepcion, Murphy, & Canham, 2007). Previous research suggests a deep and real commitment by school nurses to engage in family-centered practice, however barriers such as high nurse-to-student ratios limits the time that can be spent with parents and families (Concepcion, Murphy, & Canham, 2007).

Another finding of this research relates to funding and resources. Limited funding and resources within the SDP was a significant predictor of the school nurses' ability to fully align practice with the framework. Consistent with previous research, school nurses attributed successful practice with a school district's ability to offer better services, expand their role, and access better technology and resources such as funding, materials, and human resources (Hoekstra, Young, Eley, Hawking, & McNulty, 2016). With proper funding for urban school districts, school nurses can help eliminate health disparities that impede academic success as a strategy to close the achievement gap, and give access to quality resources that serve low-income minority youth (Basch, 2011a), particularly resources that promote the adoption of new evidence-based practice approaches.

There is a strong association between social class and health throughout the lifespan, where the level of education one attains becomes a strong social determinant that predicts future success (Basch, 2011a; Johnson, 2017). In this study, social factors that impact the lives of the students and neighborhood effects were significant predictors for the school nurses' alignment of practice with the framework. School nurses who care for students with significant challenges related to inadequate housing, food insecurity, low socioeconomic status, lack of transportation, low family literacy, lack of access to health services, living in vulnerable high crime and disinvested neighborhoods, and cultural barriers, are impeded in their ability to deliver a high-quality practice. These factors are known to cause 80% of health concerns (Maughan, Bobo, Butler, & Schantz, 2016, p. 49) that students face today, ultimately impacting school nurse practice and adoption of new models of care.

### **Study Limitations**

Limitations to this study include the distribution of the survey instrument, convenience sampling, validity and reliability of the data, and the use of forced choice items. First, the researcher was unable to email the sampling pool the invitation to participate in this research directly. Rather, the email invitation including the survey instrument was emailed to the sampling pool by the school health services coordinator on the school district's health services listserv. Given the nature of the survey distribution, it is possible that participants answered the survey items more positively than they would have if the survey were sent from the researcher. Further, while online survey research provides a level of ease of access to many, some members of the sampling pool may not have been comfortable with an online survey and possibly would have preferred a paper-

based instrument. Second, the use of a convenience sample caused an underrepresentation of men in this study. The current registered nurse workforce is made up largely of women at 90.4%, while 9.6% of nurses are men. Demographics of the school nursing workforce mimic the overall registered nurse workforce as well (Johnson, 2017). However, in this study only 1% of the school nurses who participated in the study were men (U.S. Department of Health and Human Services, 2017). A more representative study would reflect the current nursing workforce and improve the overall quality of the data.

Another limitation of this research relates to validity and reliability of the survey results. To account for inconsistencies in the data, particularly given that the data collection was conducted at a single point in time, replication of this study could ensure external validity and reliability. Because of the survey design, it is difficult to generalize the results to all school nurses working in all school districts. Lastly, a forced choice survey instrument may not be relevant to all school nurses who work in a variety of settings within the SDP. Participant interviews would provide further insight into the survey responses and allow for a deeper understanding of the school nurses' potential practice alignment with the framework. Despite these limitations, this study provided useful information for district administrators to implement and advocate for policies to improve support for school nursing practice in school districts.

### **Implications for Policy and Practice**

The goal of this study was to disseminate the findings of this research for the benefit of school nurses and school district administrators working in low income urban school districts. More specifically, this study highlights the need for school nurses to

have access to evidence-based resources to enhance effective practice to drive positive health and academic outcomes. In addition, while school nurses may have access to new approaches to caring for vulnerable populations, district-level support is necessary to remove existing barriers that impede practice alignment. Specific to this study, the *Framework for the 21st Century School Practicing Nurse* addresses the specific needs of the school nurse working in an evolving educational health setting. The purposeful adoption of this framework is three-fold: 1) it allows school nurses to shift their approach from the technical to professional, 2) it allows newly hired school nurses to use the framework to improve quality of their practice, 3) and it gives more experienced school nurses the ability to prioritize and expand care delivery (Maughan, Bobo, Butler, & Schantz, 2016).

Recognizing Roger's *Theory of Innovation*, five variables influence the adoption of an innovation: Perceived Attributes of Innovation, Type of Innovation – Decision, Communication Channels, Nature of the Social System, and Extent of Change Agents' Promotion Effects. As stated in chapter 2, five core *Attributes of Innovation* which affect diffusion include: if the innovation is better than what currently exists (relative advantage), if the innovation fits with the intended audience (compatibility), is the innovation easy to use (complexity), can the innovation be tried before deciding to adopt (trialability), and are the results of the innovation visible and easily measurable (observability) (Glanz & Oldenburg, 2008). *Type of Innovation – Decision* is the second variable that influences adoption. There are three types of decisions that influence adoption: innovation decision made by the individual, innovation decision made by the influence of others, innovation decision made by the influence of authority (Celik, Sahin,

& Aydin, 2014). The *communication channels* used to diffuse an innovation also impact the rate of adoption. Poor communication channels result in slower rates of adoption of new ideas and new practices. Further, the *nature of the social system* including norms and interconnectedness influence adoption, while the extent of the change agents' promotion efforts can drive adoption activity at various stages of diffusion (Rogers, 1992).

Using the *Diffusion of Innovation Theory* as a conceptual framework for the adoption of the *Framework for the 21<sup>st</sup> Century School Practicing Nurse* can serve as the foundation for raising awareness of health-related innovations, as well as creating meaningful professional development programs at the district level, school level, and the individual school nurse level. The findings from this study can be used to create the programs that serve three primary purposes. For new evidence-based practice approaches, specifically those recommended by professional practice organizations such as the National Association of School Nurses, the first goal would be to raise awareness of newly available models. Urban school districts that lack the ability to provide funding for external professional development, can provide internal professional development by utilizing more school nurses in executive level leadership positions within school districts. Second, additional support could include targeted programming over time that fosters the successful adoption of the framework into practice.

Finally, several key findings from this study highlight barriers and facilitators as significant predictors of the successful adoption of the framework into school nursing practice. Policy makers, district level administrators, school and community leaders, and professional health organizations can use the results from this study to advocate and lobby for equitable policies that support school nursing practice in vulnerable schools.

Improving educational and health outcomes of students who attend schools in impoverished urban school districts will require implementing policies and support for not only teachers, but for school nurses as well.

### **Implications for Future Research**

Several follow-up demographic studies could be explored to more fully examine individual domains of the framework. As discussed previously, the framework includes five key principles: *Standards of Practice, Care Coordination, Leadership, Quality Improvement, and Community Public Health*. For example, future work could reveal differences in *Quality Improvement* practices of school nurses by school type, by number of school building assignments, as well as by staffing ratios. Also, given the significant differences in awareness of the framework revealed in this study, a more extensive study with a larger sample size across several school districts could help determine the degree to which those differences occur. Future research could also seek to conduct a comparative analysis of the differences in innovative practice alignment of new evidence based approaches to care in urban, rural, and suburban districts. An examination of differences across school districts will provide deeper understanding of the need for the adoption of new ideas.

### **Conclusion**

This study provided valuable insight into the school nurses' role within an urban school district, as well as evidence about the adoption and utilization of new practice models. While this research is important to school health administrators and school nurses, the findings from this research can be useful for non-health care professionals working in schools. The *Framework for the 21st Century School Practicing Nurse* was a

valuable exemplar to examine whether school nurses are aware of and in alignment with practicing according the framework. It can be assumed that because the framework was developed by a professional practice organization of school nurses, that this newer visual model of school nursing care would have disseminated rather easily to all school nurses. While professional practice organizations provide a wealth of professional development opportunities, nurses who work in non-health care settings may not always have the support necessary to access new evidence-based approaches. Therefore, this study can serve as a catalyst for future conversations regarding the dissemination and diffusion of other new models and innovations targeted to school nurses who work in urban school districts.



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## **APPENDICES**

## APPENDIX A

### FACILITATORS: CORRELATION LEGENDS & MATRIX

Table 4.12 Correlation Legend - Facilitators

Q5.1Rev	In general, I practice in a supportive school environment.
Q5.2Rev	My nursing practice fully aligns with the NASN's framework.
Q5.3Rev	The teachers and staff are supportive of my ability to incorporate all of the NASN's Framework into my practice.
Q5.4Rev	School funding for my position allows my practice to fully align with the NASN's Framework.
Q5.5Rev	Professional development within my school district allows for my practice to fully align with the NASN's Framework.
Q5.6Rev	Parental support helps me to align my practice fully with the NASN's framework.
Q5.7Rev	I have an adequate nurse to student staffing ratio.
Q5.8Rev	I have an adequate nurse to student staffing ratio that allows for my practice to align with the NASN's framework.

Table 4.13  
Correlation Matrix - Facilitators

	White	Black or AA	Hispanic or Latino	Elementary Public Neighborhood	Middle Public Neighborhood	High School Public Neighborhood	High School Public Special Admit	Elementary Parochial	High School Parochial	Age	Highest Academic Degree	SN Certification	# of Schools Worked	School SES	Yrs Worked as a SN in SDP	Yrs Worked as an RN Overall
C5.1Rev	Pearson Correlation	-0.186	0.167	0.098	-0.247	0.050	0.008	0.120	0.098	0.133	0.122	-0.121	0.022	-0.266	0.081	0.184
	Sig. (2-tailed)	0.055	0.086	0.314	0.010	0.612	0.939	0.217	0.314	0.176	0.215	0.218	0.823	0.006	0.414	0.060
C5.2Rev	Pearson Correlation	-0.277	0.173	0.133	-0.010	0.018	-0.092	0.056	-0.051	-0.090	-0.052	-0.033	-0.137	-0.123	-0.132	-0.012
	Sig. (2-tailed)	0.004	0.075	0.173	0.922	0.851	0.347	0.569	0.603	0.363	0.601	0.741	0.164	0.210	0.178	0.900
C5.3Rev	Pearson Correlation	-0.196	0.087	0.118	-0.103	0.004	0.021	0.114	-0.081	-0.050	-0.015	0.044	0.015	-0.228	-0.044	-0.026
	Sig. (2-tailed)	0.043	0.375	0.226	0.293	0.971	0.834	0.241	0.407	0.615	0.882	0.655	0.883	0.019	0.659	0.793
C5.4Rev	Pearson Correlation	-0.219	0.157	0.162	-0.078	-0.020	0.015	0.098	-0.150	0.062	-0.022	-0.199	-0.150	-0.212	0.152	0.086
	Sig. (2-tailed)	0.024	0.107	0.095	0.427	0.841	0.878	0.318	0.124	0.528	0.822	0.042	0.127	0.030	0.122	0.381
C5.5Rev	Pearson Correlation	-0.239	0.202	0.011	0.058	-0.010	-0.045	0.090	-0.138	0.013	-0.065	0.015	-0.045	-0.114	0.004	0.056
	Sig. (2-tailed)	0.013	0.037	0.914	0.551	0.915	0.644	0.356	0.158	0.898	0.508	0.880	0.647	0.247	0.967	0.572
C5.6Rev	Pearson Correlation	-0.036	-0.049	0.102	-0.072	0.039	-0.100	0.120	0.006	0.088	0.151	-0.199	0.019	-0.232	0.179	0.176
	Sig. (2-tailed)	0.709	0.616	0.297	0.464	0.681	0.305	0.218	0.952	0.374	0.125	0.042	0.847	0.017	0.068	0.072
C5.7Rev	Pearson Correlation	-0.221	0.218	0.063	-0.036	-0.040	0.080	-0.109	-0.084	0.184	0.244	-0.130	-0.295	0.077	0.234	0.036
	Sig. (2-tailed)	0.022	0.024	0.519	0.716	0.681	0.412	0.263	0.392	0.060	0.012	0.186	0.002	0.436	0.016	0.715
C5.8Rev	Pearson Correlation	-0.205	0.186	0.097	-0.044	-0.057	0.065	-0.064	-0.058	0.202	0.266	-0.189	-0.264	0.020	0.251	0.074
	Sig. (2-tailed)	0.034	0.056	0.321	0.651	0.558	0.507	0.509	0.554	0.038	0.006	0.053	0.007	0.839	0.010	0.455

## APPENDIX B

### BARRIERS: CORRELATION LEGENDS & MATRIX

Table 4.15: Correlation Legend - Barriers

Q6.1Rev	The complexity of the students' health-related needs makes it difficult for my practice to fully align with the framework.
Q6.2Rev	The complexity of the surrounding community outside the school makes it difficult for my practice to fully align with the framework.
Q6.3Rev	Funding limits my ability to align my practice fully with the framework.
Q6.4Rev	Available resources limit my ability to align my practice fully with the framework.
Q6.5Rev	My current nurse to student ratio makes it difficult for my practice to fully align with the framework.
Q6.6Rev	Communication within my school makes it difficult for my practice to fully align with the framework.
Q6.7Rev	Social factors (housing, neighborhood, etc.) effecting my students make it difficult for my practice to fully align with the framework.
Q6.8Rev	Changes to my role as a school nurse within my school make it difficult for my practice to fully align with the framework.



## APPENDIX C

### SURVEY INSTRUMENT

Before you begin, let's make sure you meet the criteria to take this survey. Please indicate which license you currently hold.

1. Licensed Practical Nurse
2. Registered Nurse

#### **Part 1: Knowledge of the National Association of School Nurses' (NASN) Framework for the 21st Century School Practicing Nurse.**

For each of the following, please indicate how knowledgeable you are about the NASN framework overall, as well as the key principles of the framework.

1=Strongly Agree

2=Agree

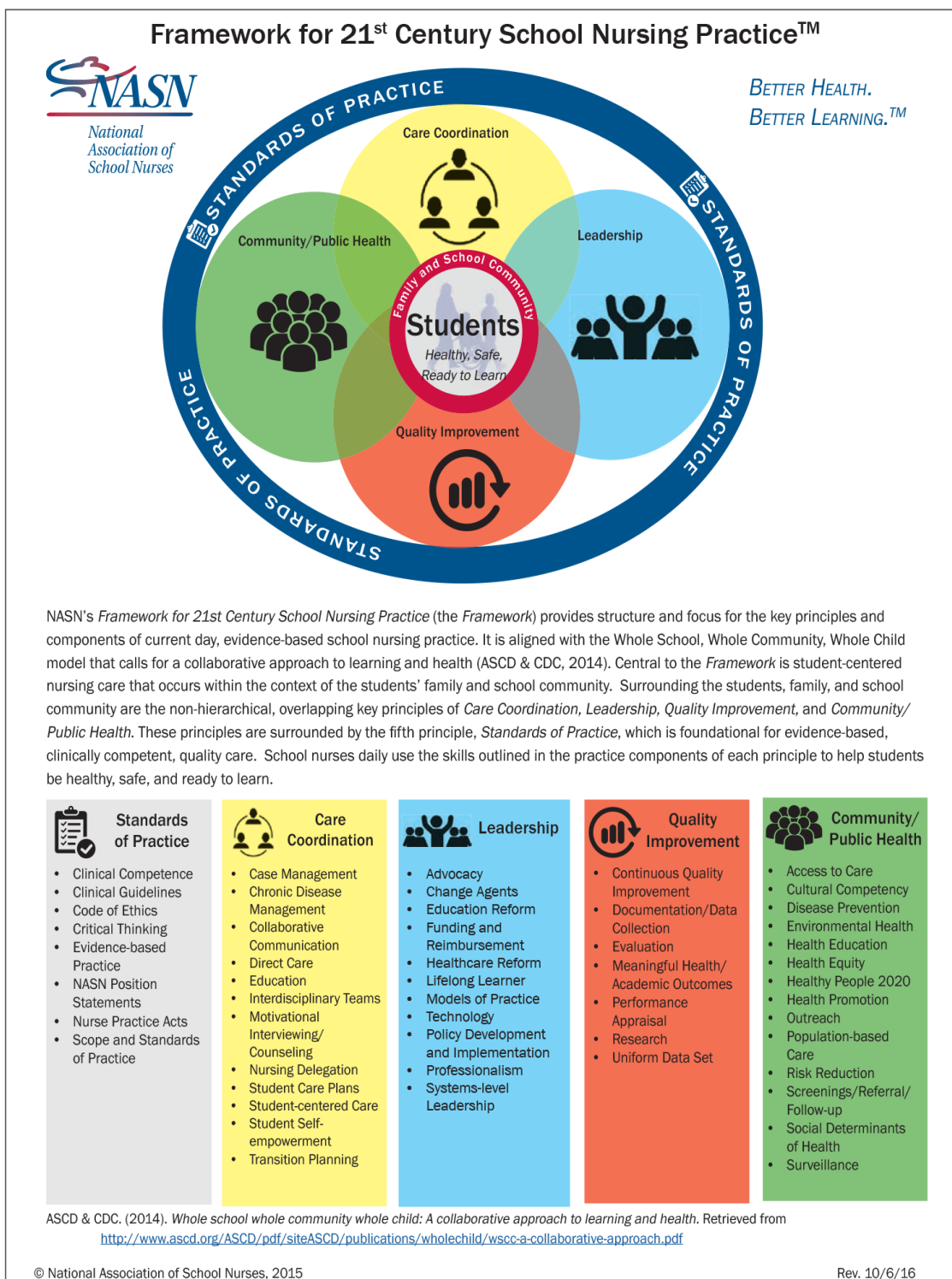
3=Neutral

4=Disagree

5=Strongly Disagree

	SA	A	N	D	SD
<b>1.1 In general, I am aware of the NASN's Framework for the 21st Century School Practicing Nurse.</b>					
<b>1.2</b> I am aware of the <i>Whole School, Whole Community, Whole Child</i> model.					
<b>1.3</b> I am aware that <i>Standards of Practice</i> is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.					
<b>1.4</b> I am aware that <i>Care Coordination</i> is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.					
<b>1.5</b> I am aware that <i>Leadership</i> is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.					
<b>1.6</b> I am aware that <i>Quality Improvement</i> is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.					
<b>1.7</b> I am aware that <i>Community/Public Health</i> is a target domain of the NASN's Framework for the 21st Century School Practicing Nurse.					

**Part 2: Below you will find the Framework for the 21<sup>st</sup> Century School Nursing Practice. Please familiarize yourself with the framework.**



**Part 3: Agreement with key principles of the National Association of School Nurses' (NASN) Framework for the 21st Century School Practicing Nurse.**

For each of the following, please indicate your level of agreement with the framework overall, as well as the key principles of the framework.

1=Strongly Agree

2=Agree

3=Neutral

4=Disagree

5=Strongly Disagree

	SA	A	N	D	SD
<b>3.1 To what extent do you think this framework should be incorporated into school nursing practice?</b>					

**3.2** Considering *Care Coordination* as a component of your day to day school nursing practice, rank the following in order of importance from 1 to 5, where 1 is the most important and 5 is the least important.

<b>Rank 1 to 5 (1 most imp. to 5 least imp.)</b>	
Case Management	
Chronic Disease Management	
Collaborative Communication	
Education/Teaching	
Interdisciplinary Teamwork	

**3.3** Considering *Leadership* as a component of your day-to-day school nursing practice, rank the following in order of importance from 1 to 5, where 1 is the most important and 5 is the least important.

<b>Rank 1 to 5 (1 most imp. to 5 least imp.)</b>	
Advocacy	
Education Reform	
Healthcare Reform	
System Level Leadership	
Lifelong Learner	



**3.4** Considering *Quality Improvement* as a component of your day to day school nursing practice, rank the following in order of importance from 1 to 5, where 1 is the most important and 5 is the least important.

<b>Rank 1 to 5 (1 most imp. to 5 least imp.)</b>	
Continuous Quality Improvement	
Documentation/Data Collection	
Evaluation	
Meaningful Health/Academic Outcomes	
Performance Appraisal	

**3.5** Considering *Community/Public Health* as a component of your day to day school nursing practice, rank the following in order of importance from 1 to 5, where 1 is the most important and 5 is the least important.

<b>Rank 1 to 5 (1 most imp. to 5 least imp.)</b>	
Providing access to Care	
Cultural Competency	
Health Promotion/Disease Prevention	
Health Equity	
Population Based Care	

**Part 4: How the school nurses' practice aligns with the National Association of School Nurses' (NASN) Framework for the 21st Century School Practicing Nurse.**

For each of the following, please indicate to what extent the NASN framework relates to your practice as a school nurse in the SDP.

<b>Alignment</b>	<b>Daily</b>	<b>4-6 times per week</b>	<b>2-3 times per week</b>	<b>Once per week</b>	<b>Never</b>
<b>4.1</b> I engage in the overall coordination of care of the students within my school.					
<b>4.2</b> I am actively involved in the chronic disease management of students in my school.					
<b>4.3</b> I collaborate with other health and social disciplines as it relates to the care of the students in my school.					
<b>4.4</b> I partner with families and caregivers to ensure that decisions include my students' needs.					
<b>4.5</b> I participate in strategic collaborations with district level					

administrators to inform health and educational policies.					
<b>4.6</b> My school district provides enough professional development opportunities that improve my practice as a school nurse.					
<b>4.6.1</b> I regularly participate in professional development activities within my school district to improve my practice as a nurse.					
<b>4.7</b> I participate in continuing education activities outside of my school district to improve my practice.					
<b>4.8</b> I utilize technology (collect data, web based resources, etc.) within my daily practice.					

**Part 5: Facilitators that support the National Association of School Nurses' (NASN) Framework for the 21st Century School Practicing Nurse.**

For each of the following, please indicate the level of support you receive to promote your ability to practice using the key domains of the NASN framework.

1=Strongly Agree

2=Agree

3=Neutral

4=Disagree

5=Strongly Disagree

	<b>SA</b>	<b>A</b>	<b>N</b>	<b>D</b>	<b>SD</b>
<b>5.1</b> In general, I practice in a supportive school environment.					
<b>5.2</b> My nursing practice fully aligns with the NASN's framework.					
<b>5.3</b> The teachers and staff are supportive of my ability to incorporate all of the NASN's Framework into my practice.					
<b>5.4</b> School funding for my position allows my practice to fully align with the NASN's Framework.					
<b>5.5</b> Professional development within my school district allows for my practice to fully align with the NASN's Framework.					
<b>5.6</b> Parental support helps me to align my practice fully with the NASN's framework.					
<b>5.7</b> I have an adequate nurse to student staffing ratio.					

5.8 I have an adequate nurse to student staffing ratio that allows for my practice to align with the NASN's framework.					
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**Part 6: Barriers that impact the use of the National Association of School Nurses' (NASN) Framework for the 21st Century School Practicing Nurse.**

For each of the following, please indicate the level of impact key barriers have on your ability to practice using the NASN framework.

1=Strongly Agree

2=Agree

3=Neutral

4=Disagree

5=Strongly Disagree

	SA	A	N	D	SD
6.1 The complexity of the students' health-related needs makes it difficult for my practice to fully align with the NASN's Framework.					
6.2 The complexity of the surrounding community outside the school makes it difficult for my practice to fully align with the NASN's Framework.					
6.3 Funding limits my ability to align my practice fully with the NASN's Framework.					
6.4 Available resources limit my ability to align my practice fully with the NASN's Framework.					
6.5 My current nurse to student ratio makes it difficult for my practice to fully align with the NASN's Framework.					
6.6 Communication within my school makes it difficult for my practice to fully align with the NASN's Framework.					
6.7 Social factors (housing, neighborhood, etc.) effecting my students make it difficult for my practice to fully align with the NASN's Framework.					
6.8 Changes to my role as a school nurse within my school make it difficult for my practice to fully align with the NASN's Framework.					

**Part 7: Purposeful adoption of the National Association of School Nurses' (NASN) Framework for the 21st Century School Practicing Nurse into day to day practice.**

7.1. Is this the first time that you heard of the NASN's framework while completing this survey?

1. Yes
2. No

If this is your first time hearing about the framework, and you selected YES, **proceed to part 8** of the survey. IF you selected NO, please answer the following q's.

7.2. Were you influenced by anyone to incorporate the NASN's framework into your practice? If yes, check all that apply.

1. School district school nurse supervisor/coordinator.
2. Another school nurse working in the school district.
3. Another school nurse working outside of the school district.
4. Professional development within the school district.
5. Professional development outside of the school district.
6. I incorporated the framework on my own.

7.3 How much do you think hearing about the framework effected your practice?

1. A great deal
2. A lot
3. A moderate amount
4. A little
5. None at all

**Part 8: Demographic Information**

8.1 What is your age?

1. 21-30
2. 31-40
3. 41-50
4. 51-60
5. 61 or more

8.2 Which of the follow best describes your race and ethnicity? *Select All That Apply.*

1. American Indian or Alaskan Native
2. Asian
3. Black or African American
4. Hispanic or Latino
5. Native Hawaiian or Other Pacific Islander
6. White
7. Two or more races

**8.3** What is your gender?

1. Male
2. Female
3. Non-Binary

**8.4** What is your highest academic degree in nursing?

1. Less than BSN
2. BSN
3. MSN
4. DNP
5. EdD or PhD

**8.5** Do you hold a school nurse certification?

1. Yes
2. No

**8.6** Within a given week, how many buildings do you work in within the SDP as a school nurse?

1. 1
2. 2-3
3. 4-5
4. 6 or more

**8.7** In what type of school do you spend more than 50% of your time practicing within a week?

1. Elementary (public – *neighborhood based*)
2. Middle (public – *neighborhood based*)
3. High School (public – *neighborhood based*)
4. Elementary (public – *special admission*)
5. Middle (public – *special admission*)
6. High School (public – *special admission*)
7. Elementary (parochial)
8. Middle (parochial)
9. High School (parochial)
10. Charter School

**8.8** In the school where you spend more than 50% of your time practicing within a week, select the percentage of the students in your school who are eligible for free or reduced lunch.

1. 0 - 25%
2. 26 - 50%
3. 51 - 65%
4. 66 - 75%
5. 76 - 85%
6. 86 - 95%
7. 96 - 100%

**8.9** How many years have you worked as a registered nurse overall?

1. 0-1 years
2. 2-5 years
3. 6-10 years
4. 11-15 years
5. 16-20 years
6. 20 years or more

**8.10** How many years have you work as a school nurse within the SDP?

1. 0-1 years
2. 2-5 years
3. 6-10 years
4. 11-15 years
5. 16-20 years
6. 20 years or more

**9.0 Comments:**

What else is important to your work that isn't included in this survey?

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Do you have any additional questions, comments, or concerns you would like to share?

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**APPENDIX D**  
**RECRUITMENT LETTER**

Hello, my name is Tamika Curry. I am a current PhD student at Temple University in the College of Education, Urban Education department. I am conducting a research study to explore the facilitators and barriers of the school nurses' practice, specifically as it relates to adopting new innovations for practice. I am inviting you to participate in this study because of your experience as a school nurse employed within the School District of Philadelphia.

Participation in this research includes completing a survey anonymously about your perspectives, which will take approximately 15 minutes. If you agree to participate, at the completion of the survey you will be randomly entered in a drawing to receive a *\$75 Amazon gift card*. Four school nurses who complete the online study will be selected after the survey period closes.

If you would like to participate in the research, click on the link below to access the consent form and survey. If you have any questions, I can be reached by phone (telephone # provided) or *tuf33466@temple.edu*.

Sincerely,

Tamika Curry, MSN, RN  
PhD Student  
Urban Education Department  
College of Education  
Temple University

## **APPENDIX E**

### **SURVEY CONSENT**

#### **Project Title**

Adopting Innovations of Practice: Perspectives of School Nurses' Regarding Facilitators and Barriers to Practice in an Urban School District.

#### **Principal Investigator**

*Will J. Jordan, PhD*, College of Education, Temple University, (215) 204-6677

#### **Student Investigator**

*Tamika Curry, MSN, RN*, College of Education, Temple University

#### **Why am I being invited to take part in this research?**

You are invited to participate in a web-based online survey designed to examine the perspectives of the school nurses' practice. This study will expand current research by examining facilitators (facilitators) and barriers to school nursing practice as it relates to adopting new innovations. This is a research project being conducted by Tamika Curry, MSN, RN a doctoral student at Temple University, College of Education. It should take approximately 15 minutes to complete.

#### **What should I know about this research?**

Your participation in this online survey is voluntary. Whether or not you take part is up to you. You may refuse to take part in the research or exit the survey at any time without penalty. Your decision will not be held against you. You can ask all the questions you want before you decide. You are free to decline to answer any question in the survey that you do not wish to answer for any reason.

#### **Is there an incentive for completing this survey?**

At the completion of the survey, you will be randomly entered into a drawing to receive a \$75 Amazon gift card. Four school nurses who complete the online study will be selected after the survey period closes.



**How long will I be in this research?**

We expect that it will take you 15 minutes to complete this online survey.

**Who can I talk to about this research?**

If you have questions, concerns, or complaints, or think the research has hurt you, contact my research supervisor, *Will J. Jordan, PhD* via phone at (215) 204-6677 or via email at [will.jordan@temple.edu](mailto:will.jordan@temple.edu), or the student investigator, *Tamika Curry, MSN, RN* via phone or via email at [tuf33466@temple.edu](mailto:tuf33466@temple.edu).

This research has been reviewed and approved by an Institutional Review Board. You may talk to them at (215) 707-3390 or e-mail them at: [irb@temple.edu](mailto:irb@temple.edu) for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

**What happens to the information collected for this research?**

To the extent allowed by law, we limit the viewing of your personal information to people who have to review it. We cannot promise complete secrecy. The IRB, Temple University, Temple University Health System, Inc. and its affiliates, and other representatives of these organizations may inspect and copy your information.

Your survey responses will be stored in Qualtrics in a password protected electronic format. You will complete the survey using an anonymous link generated from Qualtrics. Thus, identifying information such as your name, email address, or IP address will not be collected. To be eligible for the \$75 Amazon gift card at the end of the survey, you will be asked if you wish to receive the incentive. If you respond yes, will be taken to a second survey where you will be asked to enter your name and email address to be eligible for the random drawing. Remember, your responses to the survey will be

anonymous. Lastly, your decision to participate or not will not be shared with your employer.

**Electronic Consent**

Please select your choice below. You may print a copy of this consent form for your records. Clicking on the “I consent” button indicates that:

- You have read the above information
- You voluntarily agree to participate
- You are 18 years of age or older

I consent

I do not consent

## APPENDIX F

### SDP APPROVAL LETTER

#### THE SCHOOL DISTRICT OF PHILADELPHIA RESEARCH REVIEW COMMITTEE

440 N. BROAD STREET, 2ND FLOOR, PORTAL A

PHILADELPHIA, PENNSYLVANIA 19130

TELEPHONE (215)-400-6417

FAX (215) 400-4252

March 7, 2018

Dr. Will Jordan  
College of Education  
Temple University  
1301 Cecil B. Moore Ave.  
Philadelphia, PA 19130

Dear Dr. Jordan:

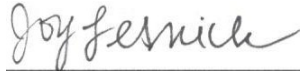
Please allow this letter to serve as notice that The School District of Philadelphia (SDP), through the Office of Research and Evaluation's (ORE) Research Review Committee, has granted you approval to conduct study #2017-11-576, "*Framework for 21st Century School Practicing Nurse: The Perspectives of School Nurses' Regarding Facilitators and Barriers to Practice in Urban School Districts.*" Your data collection must be consistent with the activities described in your proposal and you must adhere to the Standard Terms for Research Data License Agreement.

In addition, please note:

- This letter is not a data agreement. If you have requested administrative data as part of your RRC proposal, you will receive a draft data agreement to review with additional information including the data we can provide, the conditions for using the data, and the estimated cost. All student data must remain strictly confidential.
- Entry into SDP schools is contingent on the principals' approval. Once a principal has agreed to participate in your study, he/she must complete the *Principal Support to Conduct Research Form* (<http://bit.ly/2ErsM5g>). Please return completed forms to ORE by email ([researchreview@philasd.org](mailto:researchreview@philasd.org)) prior to commencing your project.
- All researchers working in schools must have completed FBI clearance, child abuse history clearance, and criminal record checks. All clearances must be submitted to ORE prior to entering schools.
- You are required to provide a copy of your final report to ORE at the conclusion of your study.

Good luck with your project and feel free to contact us if you have any questions.

Best regards,

A handwritten signature in cursive script that reads "Joy Lesnick". The signature is written in black ink and is positioned above a horizontal line.

Joy Lesnick, Ph.D.

Director

Office of Research and Evaluation

## APPENDIX G

## TEMPLE IRB APPROVAL LETTER



Research Integrity & Compliance  
Student Faculty Center  
3340 N. Broad Street, Suite 304  
Philadelphia PA 19140

Institutional Review Board  
Phone: (215) 707-3390  
Fax: (215) 707-9100  
e-mail: [irb@temple.edu](mailto:irb@temple.edu)

## Certification of Approval for a Project Involving Human Subjects

Date: 26-Apr-2018

Protocol Number: 25100  
PI: JORDAN, WILL J.  
Review Type: EXEMPT  
Approved On: 26-Apr-2018  
Approved From: 26-Apr-2018  
Approved To:  
Committee: A1  
School/College: EDUCATION (1900)  
Department: URBAN EDUCATION (19033)  
Sponsor: NO EXTERNAL SPONSOR  
Project Title: Adopting Innovations for Practice: Perspectives of School Nurses'  
Regarding Barriers and Facilitators in an Urban School District

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The IRB approved the protocol 25100.

If the study was approved under expedited or full board review, the approval period can be found above. Otherwise, the study was deemed exempt and does not have an IRB approval period.

If applicable to your study, you can access your IRB-approved, stamped consent document or consent script through ERA. Open the Attachments tab and open the stamped documents by clicking the Latest link next to each document. The stamped documents are labeled as such. Copies of the IRB approved stamped consent document or consent script must be used in obtaining consent.

Before an approval period ends, you must submit the Continuing Review form via the ERA module. Please note that though an item is submitted in ERA, it is not received in the IRB office until the principal investigator approves it. Consequently, please submit the Continuing Review form via the ERA module at least 60 days, and preferably 90 days, before the study's expiration date.

Note that all applicable Institutional approvals must also be secured before study implementation. These approvals include, but are not limited to, Medical Radiation Committee ("MRC"); Radiation Safety Committee ("RSC"); Institutional Biosafety Committee ("IBC"); and Temple University Survey Coordinating Committee ("TUSCC"). Please visit these Committees' websites for further information.

Finally, in conducting this research, you are obligated to submit the following:

- Amendment requests - all changes to the study must be approved by the IRB prior to the implementation of the changes unless necessary to eliminate apparent immediate hazards to subjects

- **Reportable new information** - using the **Reportable New Information** form, report new information items such as those described in the Investigator Guidance: Prompt Reporting Requirements HRP-801 to the IRB within 5 days
- **Closure report** - using a closure form, submit when the study is permanently closed to enrollment; all subjects have completed all protocol related interventions and interactions; collection of private identifiable information is complete; and Analysis of private identifiable information is complete.

For the complete list of investigator responsibilities, please see the Policies and Procedures, the Investigator Manual, and other requirements found on the Temple University IRB website: : <http://research.temple.edu/irb-forms-standard-operating-procedures#POLICY>

Please contact the IRB at (215) 707-3390 if you have any questions