THE IMPACT OF THE HEALTHY SCHOOLS PROGRAM ON READING, MATHEMATICS, AND SCIENCE ACHIEVEMENT OF 5TH GRADE STUDENTS: A CAUSAL-COMPARATIVE INQUIRY

A Dissertation

by

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This dissertation meets the standards for scope and quality of
Texas A&M University-Corpus Christi and is hereby approved.

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ABSTRACT

The obesity rate for children has become a national epidemic in America, resulting in the need to incorporate physical fitness and nutrition into the curriculum in an effort to improve health and academic achievement. The Healthy Schools Program (HSP) is an initiative that assists schools in establishing and sustaining healthy environments, which can be instrumental in making students perform better in school. Therefore, the purpose of the study was to examine the impact of the HSP on academic achievement.

The study employed a causal-comparative design and took place in an urban school district in south Texas. The characteristic-present group (N = 25) had participated in the HSP for one year. The comparison group (N = 26) had not participated in the HSP. The outcome measures were the State of Texas Assessments of Academic Readiness (STAAR) reading, mathematics, and science achievement scores. The 5th grade was chosen because the three subject matters are tested at this grade level.

The researcher had hypothesized that the HSP group would outperform the non-HSP group on the basis of the outcome measures. However, the results did not support the hypothesis. Power analysis and effect sizes showed that the lack of statistical significance could have not been related to the small sample sizes.

Although the study did not find that participation in the HSP impacted academic achievement, future research may suggest that establishing healthy lifestyle changes, starting at the elementary level, can have a positive impact on the whole child. If the study is going to be replicated by conducting another causal-comparative investigation, careful attention must be given to identifying the characteristic-present and comparison groups. In the current study, although the comparison group's curriculum did not include HSP, it had enjoyed other factors,

unknown to the researcher at the time of selecting the schools, which could have impacted the outcome measures. A comparison group must be selected from a population which is similar to the character-present group except for the variable(s)/characteristic(s) that are being investigated.

DEDICATION

I dedicate this dissertation to my family: Luke, Melanie, Clarissa, Emily, and Benjamin. You supported me each step of the way and encouraged me to keep going, even when I didn't think it was physically, mentally or emotionally possible. Luke, I love you more than words and thank you for everything you do for our family. You have provided so much support and most importantly, peace of mind for me to work on this dream for several years knowing our family was taken care of. Melanie, I'm so proud of you for setting such a great example for your younger sisters and brother. You are such a smart young lady and I know that you will accomplish any goal you set your mind to. Thank you for not letting me give up. Clarissa, you're a beautiful soul and have so many talents. Thank you for believing in me throughout this journey and for helping me believe in myself. Emily, my baby girl, I am so thankful that you understood why this was so important to me. Thank you for becoming so independent and for trying your best every day. Benjamin, you are the answer to our many prayers for a son. Thank you for being such a sweet boy and for always making sure your mommy had a quiet work space and a hot cup of coffee. Your random smiles and hugs gave me the strength to keep going. Luke, Melanie, Clarissa, Emily, and Benjamin, I am forever grateful to each of you for your unwavering support, love, and encouragement. I hope this accomplishment reminds you that you can do anything you set your mind to and that our family will love and support you each step of the way.

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Chapter I

Introduction

Background and Setting

Childhood obesity has become a national epidemic in the United States. Physical inactivity and poor eating habits may be contributing to the childhood obesity epidemic (Johnson, 2014). Ling, King, Speck, Kim, and Wu (2014) found that school-based healthy lifestyle interventions play a promising role in the prevention and control of childhood obesity. Nearly one in three children in the United States is overweight or obese, putting them at risk for serious health problems. Due to these facts, the Alliance for a Healthier Generation, founded by the American Heart Association and the Clinton Foundation, works to reduce the prevalence of childhood obesity and to empower kids to develop lifelong, healthy habits. Additionally, the Alliance works with schools, companies and community organizations, healthcare professionals, and families to transform the conditions and systems that lead to healthier children (Clinton Foundation, 2015).

With this in mind, the Alliance for a Healthier Generation's Healthy Schools Program (HSP) was created and is an evidence-based initiative that helps schools create and sustain healthy environments where students can learn better and flourish. By helping schools improve physical education, health education, and nutrition, as of 2015, the HSP has impacted more than 17 million students nationwide (Clinton Foundation, 2015).

This is important because creating healthier lifestyles for children prepares them for the physical and mental challenges that they face at school (Datko, 2015). Efforts are also being made to build healthier school environments by providing resources, training, and education for educators and school leaders to incorporate healthier lifestyle awareness as part of the curriculum

in elementary schools. According to the Clinton Foundation (2015), studies strongly suggest that students who are physically fit and eat well perform better on tests, get better grades, attend school more often, and behave better in class.

Additionally, The United States Department of Education provides resources to assist schools in addressing some health topics such as safety and drug prevention. However, it has not provided leadership for integrating school health into the fundamental mission of schools and supporting the widespread development and implementation of high quality, strategically planned, and effectively coordinated approaches that address a variety of health-related barriers to teaching and learning (Basch, 2010).

According to the Alliance for a Healthier Generation (2016), school and district wellness policies are key components for all school health-related initiatives. These polices act as a guides and evaluation tools to measure progress and success throughout the school year.

Since 2004, districts participating in federal school meals programs have been required to establish wellness policies. The requirements for the policies were strengthened by the Healthy, Hunger-Free Kids Act of 2010, but districts still needed clear guidance regarding what should be included, who should be involved, and how often policies should be reviewed and updated. On July 21, 2016, the United States Department of Agriculture released a final rule that helped clarify these uncertainties, making local wellness policies stronger than ever. Nationwide, districts need to revise their policy by August 2016, and need to fully comply with the requirements by June 30, 2017 (Alliance for a Healthier Generation, 2016).

According to Jensen (2009), students who come from low socioeconomic families face barriers that can impede their academic achievement. These students are exposed to daily stressful life events that prevent the normal development of a child's brain. However, exercise

can decrease stress and depression levels (Millilo & Leisman, 2004) and physical education can benefit children when taught in a meaningful and comprehensive program.

Furthermore, the National Association for Sport and Physical Education (2015) has been advocating for daily physical education activities. Some research now supports the importance of quality physical education, arts, and athletics in school programs (Lund, 2013). Health education in schools must be supported by a comprehensive school-wide system to promote children's health and must be developed and sustained by the collaborative efforts of school personnel, parents, school board members, community leaders, and health and social services agencies and providers to be successful in meeting students' needs. When these elements are in place, children can be taught to develop a lifelong commitment to health and well-being (Sallis et al., 1999), which in turn, increases success in school. Therefore, the health of children and their success in school are intimately linked. Thereby, the value of educating the whole child, including focusing on children's health, is also supported by empirical studies.

Recently, several multifaceted school-based physical activity and nutrition programs have been implemented that help change the culture of a school to encourage healthy behaviors (Kelly & Melnyk, 2008). This is crucial, as effective school-based intervention, which includes physical activity, healthy lifestyle education, and parental involvement, has been recommended for implementation at the earliest grade level possible (Zenzen & Kridli, 2009).

Specifically, the HSP supports schools in states with the highest obesity rates and is funded mostly by The Robert Wood Johnson Foundation. The HSP assists schools in developing healthier environments and recognizes the successful schools. The HSP also develops programs for teachers and staff to become healthy role models as well as providing opportunities for students to be active and have access to healthier food items (Clinton Foundation, 2015).

Statement of the Problem

The HSP was implemented in schools in a district in South Texas, hereafter referred to as the District, in the academic year of 2014-2015. Healthy children are expected to have higher attendance rates, higher test scores, and behave better in class. Thus, the purpose of the HSP is to promote healthy lifestyle habits. On the basis of the HSP's principles, the participating schools were provided with the recommended curriculum materials and had to document the students' physical fitness data. Also, guest speakers were brought in to encourage healthy lifestyles. Further, staff members were challenged to participate in wellness programs on campus. The effectiveness of the program on the basis of academic achievement in reading, mathematics and science had not been systematically investigated in the District.

Theoretical Framework

Health and well-being are connected to students' experiences and health education provides opportunities for students to be aware of the importance of making healthy eating choices and engaging in physical fitness. There is also a critical link between health and learning. According to the National Commission on the Role of the School and the Community in Improving Adolescent Health, efforts to improve school performance that ignore health are ill-conceived, as are health improvement efforts that ignore education (Christenson, 2000).

With this in mind, the Whole Child Theory (WCT) provided the theoretical framework for the study. The WCT is defined in terms of five developmental domains, namely, physical, social, emotional, ethical, and intellectual development (Ferrara, Santiago, & Quinn 2007).

The Theory of Multiple Intelligences (TMI) was also explored as a theoretical framework for the study. According to Gardner (1993), there are seven intelligences: logical-mathematical, visual-spatial, bodily kinesthetic, interpersonal, musical-rhythmic, intrapersonal, and verbal-

linguistic. The TMI allows teachers to educate students, using a child-centered approach (Hoerr, 2002).

For the purpose of the study, the WCT was considered a better fit, because it conceptualizes strategic planning for a healthy educational ecosystem. The potential for schools to improve academic achievement includes incorporating the work of teachers, community members, and families. Further, this theory provides a wider framework for developing school reform initiatives. The WCT also takes into account the growing body of conceptual knowledge and research from the fields of education, sociology, psychology, and neuropsychology, all of which underscore the complex nature of children's growth and learning (Morse & Allensworth, 2015).

Purpose of the Study

The purpose of the study was to examine the impact of the Healthy Schools Program on reading, mathematics and science achievement of 5th grade students by testing the hypothesis that the HSP is effective in impacting academic achievement. The 5th grade was chosen because reading, mathematics and science are tested at this grade level. The study was guided by the following research questions:

1. What is the impact of The Healthy Schools Program on student achievement in reading among 5th grade students in a South Texas school district?
2. What is the impact of The Healthy Schools Program on student achievement in mathematics among 5th grade students in a South Texas school district?
3. What is the impact of The Healthy Schools Program on student achievement in science among 5th grade students in a South Texas school district?

Operational Definitions

In the state of Texas, reading, mathematics and science are measured by the State of Texas Assessments of Academic Readiness, (STAAR) test (Texas Education Agency [TEA], 2010). Achievement in reading in 5th grade was measured in three reporting categories 1: Understanding/Analysis across Genres; 2: Understanding/Analysis of Literary Texts; and 3: Understanding/Analysis of Informational Texts. Achievement in mathematics in 5th grade was measured by five reporting categories, 1: Numerical Representations and Relationship; 2: Computations and Algebraic Relationships 3: Geometry and Measurement; and 4: Data Analysis and Personal Financial Literacy. Achievement in science in 5th grade was measured by four reporting categories 1: Matter and Energy; 2: Force, Motion and Energy; 3: Earth and Space; and 4: Organisms and Environments.

Glossary of Terms

The following definitions are provided for clarity of the terms and acronyms used in the study:

Critical Success Factors (CSF): strategic areas of focus for school improvement based on evidence-based research and have proven to be vital components for enhancing student learning and implementing continuous improvement efforts (Texas Education Agency, 2016).

Elementary and Secondary Education Act (ESEA): was part of President Lyndon B. Johnson's Great Society program. Passed in 1965, it created a clear role for the federal government in K-12 policy, and is aimed at helping to educate disadvantaged students (Texas, Education Agency, 2016).

Former Improvement Required (FIR): campuses are designated as FIR because they received an Improvement Required rating followed by Met Standard rating the following year (Texas Education Agency, 2016).

Healthy Schools Program (HSP): evidence-based initiative that helps schools create and sustain healthy environments where students can learn better and flourish (Clinton Foundation, 2015).

Improvement Required (IR): indicates unacceptable performance and is assigned to districts and campuses that do not meet the targets on all required indices for which they have performance data (Texas Education Agency, 2016).

No Child Left Behind (NCLB): signed into law by President George W. Bush on Jan. 8, 2002, aimed to provide all children with a fair, equal and significant opportunity to obtain a high-quality education. The United States Department of Education emphasizes accountability through compliance reporting to ensure disadvantaged students achieve academic proficiency (Texas Education Agency, 2016).

Professional Service Provider (PSP): experienced educators (former principals, superintendents, and district administrators) who provide assistance to campuses with required interventions in the Texas Accountability Intervention System (TAIS). The PSP serves as a member of the intervention team on campuses with low performance in the state accountability system as stipulated in Texas Education Code (TEC) §39.106(a) and/or provides assistance to priority schools identified under the United States Department of Education flexibility waiver. The PSP provides oversight in capacity building of campus and district leaders, teachers, and staff to understand the TAIS continuous improvement process and to identify and address gaps in the critical success factors (Texas Center for District and School Support, 2016).

State of Texas Assessments of Academic Readiness (STAAR): the standardized testing program that replaced the TAKS in 2012. The STAAR at grades 3 – 8 is designed to assess the subjects of reading, writing, mathematics, science, and social studies. The STAAR measures the readiness for success in subsequent grades and courses and ultimately for college and careers (Texas Education Agency, 2010).

Texas Accountability Intervention System (TAIS): designed to establish the foundational systems, actions, and processes to support continuous improvement of Texas schools and districts. The framework relies on a synthesis of decades of school improvement research to identify five systemic components regarding district-level commitments, four support system components for implementation at both the district and campus levels, and seven factors proven to be critical to campus success (Texas Center for District and School Support, 2016).

Texas Education Agency (TEA): the state agency that oversees primary and secondary public education. It is headed by the commissioner of education (Texas Education Agency, 2016).

Whole Child Theory (WCT): theoretical framework that supports the idea of incorporating academic and physical well-being in education. A long term development of children by providing the necessary resources needed to be successful rather than focusing only on academic achievement (Morse & Allensworth, 2015).

Theory of Multiple Intelligences (TMI): theory that consists of seven intelligences: logical-mathematical, visual-spatial, bodily kinesthetic, interpersonal, musical-rhythmic, intrapersonal, and verbal-linguistic (Gardner, 1993).

Delimitations, Limitations, and Assumptions

The study was delimited to one school district in South Texas and outcome measures of reading, mathematics, and science. The non-probability sampling limited the external validity to the study's participants. Due to the non-experimental nature of the study, no causal inferences were drawn. The study used existing data and it was assumed that the data had been collected and recorded accurately. It was assumed that the HSP implementation was accurate and that the researcher remained objective throughout the conduct of the study.

Significance of the Study

Educators have always sought ways to improve student success in the classroom. These efforts have extended beyond the classroom and have tapped in to community resources for support. Some of these efforts have included promoting healthy lifestyle habits for students so that healthier students experience greater success academically. Through the HSP, educators along with parents and community members have joined forces to provide the resources and tools to support the importance of physical fitness and healthy lifestyles for students with the hope of increasing academic achievement through these efforts.

Nationally, many school districts have acknowledged the value of educating the whole child through integrating health awareness and education (Morse & Allensworth, 2015). Educators that understand and support the whole child model have established programs and policies that implement effective use of resources, which have resulted in healthier school environments that target the needs of the whole child.

Although the results did not support the hypotheses, the need for additional funding through federal and state grants on the potential influence of the HSP on academic achievement should not be overlooked. The results support additional studies on the resource allocations and

professional development for teachers and coaches and curriculum enhancements, all focusing on developing the whole child. The results may also be instrumental in suggesting that concerned individuals should invest in community resources and tools to promote health awareness of elementary level students.

Chapter II

Review of the Literature

Introduction

Do healthier students perform better in school? According to Jensen (1998), in the same way that exercise shapes muscles, heart, lungs, and bones, it also strengthens the basal ganglia, cerebellum, and corpus callosum areas of the brain. Children engaged in daily physical education show superior motor fitness, academic performance, and attitude toward school as compared to their counterparts who do not participate in daily physical education (Pollatscheck & Hagen, 1996).

This chapter provides a review of the literature and research related to school programs that promote physical fitness and health awareness for students at the elementary level. The Texas A&M University-Corpus Christi Bell Library was used to identify the literature. The review of the literature is organized in four sections: (1) The Impact of Health and Physical Fitness on Academic Achievement, (2) Healthy Schools Program and Recess, (3) Theoretical Framework, (4) Why Measuring Mathematics, Reading, and Science, (5), Evolution of the State of Texas Assessments of Academic Readiness, and (6) Summary.

The Impact of Health and Physical Fitness on Academic Achievement

According to Sibley and Etnier (2003), along with improving students' health, cardiovascular capacity, muscle strength, body coordination, speed, reaction times, and stress responses, athletics improve cognition. Bjornebekk, Mathe, and Brene (2005) found that exercise increases the release of brain-derived neurotrophic factor (BDNF), a protein that supports learning and memory function, repair and maintenance of neural circuits, and the production of brain cells that are the keys to establishing the connections the brain needs so that

learning may take place. Similarly, Gomez-Pinilla, Dao, and So (1997) found that voluntary exercise increased levels of BDNF in the hippocampus, a brain area involved with learning and memory. In addition, exercise leads to increased levels of calcium, which is transported to the brain and enhances dopamine synthesis, making the brain sharper for both cognitive problem solving and work memory (Sutoo & Akiyama, 2003).

Such research findings are critical because when schools engage students in high-quality physical education, students' self-concepts (Tremblay, Vitaro, & Brendgen, 2000) and academic performance improve (Sallis et al., 1999). The relationship between physical fitness and academic achievement has grown in popularity due to the pressure on schools to produce students who meet academic standards (Castelli, Hillman, Buck, & Erwin, 2007). Case in point, Slater (2003) reported that there is a significant relationship between public school students' academic achievement and their physical fitness. He noted that exercise protects against the negative factors of stress and disabilities, enhances memory, focus, and brain function, which could consequently lead to better cognition and achievement.

In an effort to promote physical fitness, the United States Department of Health and Human Services (2008) suggested that children should do 60 minutes or more of physical activity daily, focusing on either moderate or vigorous-intensity aerobic physical activity. Vigorous-intensity physical activity should be included at least three days each week. Examples of aerobic activities are bike riding, walking, running, dancing, and playing active games like tag, soccer, and basketball. Muscle-strengthening activities should also be included on at least three days of the week as part of the 60 or more minutes. Some examples of muscle-strengthening activities for younger children are gymnastics, playing on a jungle gym, and climbing a tree.

Recently, Datko (2015) stated physical activity is necessary to a person's well-being. Since children are continuously developing physically and emotionally, they are especially impacted by the benefits of activity, and inversely, the negative effects of inactivity. Consequently, it is vital that schools provide physical education programs to ensure that each child stays active. First lady Michelle Obama's initiative, *Let's Move!* (2010), found that nearly one-third of U.S. children are overweight or obese. In African American and Hispanic communities, these numbers are even higher, with nearly 40% of the children being overweight or obese. The initiative recognized that schools are a key location for children to get their 60 minutes of play with moderate to vigorous activity, given the amount of time they spend there. The initiative also provided ideas for principals, teachers, and parents to help make schools healthier places to learn by providing quality nutrition, incorporating physical activity during the day, and teaching children about the importance of developing a healthy, active lifestyle. Specifically, the initiative suggested the following: (1) create a school health advisory council, (2) join the Healthier U.S. Schools Challenge, (3) set a good example and make the school a healthy work place, (4) incorporate nutrition education and physical education into the school day, and (5) plant a garden.

According to the Society of Health and Physical Educators (SHAPE), physical education has been a component in school curriculum for decades, but recently, schools have made cuts in physical education time in an effort to raise high stakes test scores of students by spending less time in the gymnasium and more time in the classroom (SHAPE America, 2013). In June of 2016, SHAPE's report revealed that only eight states required daily recess for elementary school students and only Oregon and the District of Columbia mandated that all children in elementary and middle school must participate in at least 30 minutes of physical education every day. The

SHAPE suggested kids in elementary school need to spend 150 minutes per week in physical education and noted that educators need to emphasize the importance of a strong program for physical education and place a priority on children being active at school (SHAPE America, 2013). The SHAPE America also published standards for K-12 physical education, for sport coaches, and for beginning physical education teachers. The goal of physical education is to develop physically literate individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthy physical activity. The SHAPE's national standards and grade-level outcomes for K-12 physical education define what a student should know and be able to do as result of a highly effective physical education program. States and local school districts across the country use the following national standards to develop or revise existing standards, frameworks, and curricula (SHAPE America, 2013):

Standard 1 - The physically literate individual demonstrates competency in a variety of motor skills and movement patterns.

Standard 2 - The physically literate individual applies knowledge of concepts, principles, strategies, and tactics related to movement and performance.

Standard 3 - The physically literate individual demonstrates the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness.

Standard 4 - The physically literate individual exhibits responsible personal and social behavior that respects self and others.

Standard 5 - The physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression, and/or social interaction.

According to Ratey and Hagerman (2008), moderate exercise can improve cognitive function and sharpen memory. The authors reported a school district's study in which the

students who demonstrated the most fitness also ended up with the highest academic scores. Research also suggests that there are structural properties of an exercise-enhanced brain that optimize learning (Bruel-Jungerman, Rampon, & Laroche, 2007). Jensen (2009) made several statements promoting the difference physical activity can make in the life of a child and cited studies that support the findings. He also noted that exercise can improve self-concept.

Despite the link between the positive effects related to physical activity and fitness, the benefits to cognitive health and the educational experience remain unclear (Strong, et al., 2005). Health professionals, along with educators, have believed that students who are physically fit and active perform better in school. Several studies have documented a positive relationship between physical fitness and academic achievement or other cognitive performance measures (California Department of Education, 2001). Other studies have observed minimal or no connections (Tremblay, Inman, & Williams, 2000). Positive associations have been found between physical activity and cognition (Sibley & Etnier, 2003; Coe, Pivarnik, Womack, Reeves, & Malina, 2006; Shephard, 1997; Tomporowski, 2003). Standardized test scores have been used to measure cognitive functioning, which has also been associated with physical fitness (Etnier et al., 1997; Hillman, Castelli, & Buck, 2005). Tremblay, Vitaro, & Bendgen (2000) argued that not all research supports these findings and suggested further examination on the subject.

Further, a study conducted by the California Department of Education (CDE) identified the links between physical fitness and academic achievement. Reading and mathematics scores from the Stanford Achievement Tests were individually compared to fitness scores (Cooper Institute for Aerobics Research, 1999). There was a positive relationship between physical fitness levels and the Stanford Achievement Test scores and higher levels of fitness were linked to higher academic achievement scores. Coe et al. (2006) extended the findings of the CDE

(2001) because a direct link between physical activity and higher grades in school was evident. The key findings of the study indicated that physical fitness was linked to academic performance in 3rd - 5th grade children, offering support for the idea that children who are physically fit are more likely to perform better on standardized assessments.

Additionally, the Sports, Play, Active Recreation for Kids (SPARK) program, implemented in a medium-sized urban school district in Illinois, was intended to raise physical activity levels to improve health-related fitness (Castelli, Hillman, Buck, & Erwin, 2007). A study of the SPARK program by McKenzie, Sallis, Faucette, Roby, and Kolody (1993) compared the effects of professional development for three different conditions: (1) physical education (taught by specialists), (2) elementary classroom (taught by classroom teachers trained in providing effective, age appropriate physical activity) and, (3) control (physical activity provided by elementary classroom teachers without training). The study found the intervention groups provided more opportunities for the students to be physically active than did the control group. During the SPARK intervention, academic achievement was measured and it was found that replacing academic time with physical education curriculum did not have adverse effects on student achievement (Sallis et al., 1999). Despite positive trends in the relationship between physical fitness education and academic achievement, the intervention groups did not show significant gains on standardized test scores as a result of the increase in physical activity. The study was conducted in an already high achieving school district, limiting the application of the findings.

Duncan, Duncan, Strycker, and Chaumeton (2002) argued that additional research is needed to measure the impact physical fitness has on student achievement. They suggested that the influence of culture and poverty should be examined due to the connection between these

variables and fitness and cognitive levels. Hillman, Castelli, and Buck (2005) suggested aerobic fitness improves the behavioral performance of students based on cognitive research that linked aerobic fitness to enhancements in neuro-electrical and behavioral performance of children during a stimulus discrimination task. The findings suggested that higher fit children applied more attentional resources to working memory than did the other children. Sibley and Etnier (2003) confirmed that significant relationships between physical activity and cognitive performance were present in school-aged children. Their findings showed that physical activity may be beneficial to cognitive health in children.

Schools dealing with increased pressures to yield academic outcomes may reallocate their efforts in ways that have unintentional consequences for children's health (Anderson, Butcher, & Schanzenbach, 2010). For example, schools may do away with recess and physical education in favor of increased academic time in the classroom. Johnson (2014) argued that Federal mandates, such as No Child Left Behind, have increased pressure on educators to focus on preparing students to meet the standards in reading, mathematics, and science through equal opportunities for all socioeconomic levels; thereby; placing low prioritization on physical fitness and opportunities for students to spend quality time on physical fitness.

On the contrary, advocates of decreasing recess time insist that physical education classes offer more of a structured setting for children to engage in physical activity, and therefore should replace recess. They go on to point out that in physical education; children receive adult-directed instruction on health, fitness, physical activities and competencies, and rules of organized games. This type of standards-based instruction drives children to learn and expand their experiences. All of this is valuable for children's development and health; however, both recess and physical education are recommended because they offer differential benefits (Centers for Disease Control

and Prevention, 2010; Council on Physical Education and Children, 2001; Dills, Morgan & Rotthoff, 2011; Jarrett & Maxwell, 2005). Recess is different from physical education classes in that recess activities are child-directed, unstructured, and children are free to choose activities and develop rules through cooperative play. Allowing children to engage in unstructured and child-directed play time is essential for learning and development (Barros, Silver, & Stein, 2009).

Healthy Schools Program and Recess

The Alliance for a Healthier Generation's HSP can be instrumental in creating and sustaining healthy environments where students, especially those in greatest need, can learn and flourish (Clinton Foundation, 2015). This evidence-based initiative creates sustainable health change in schools and has a proven, positive impact on student health. Childhood is a crucial time for healthy habits to be adopted; thus, childhood health interventions can have a significant impact on lifestyle changes (Wilson et al., 2007). The HSP Framework of Best Practices is an assessment tool that lists specific criteria that define a healthy school environment. Through this assessment tool and a customized action plan, the Framework helps schools work towards the Alliance's National Healthy Schools Award. Schools must demonstrate implementation of specific best practices in each of the following modules that address school health: (1) school health and safety policies and environment, (2) health education, physical education and other physical activity programs, (3) nutrition services, (4) health promotion for staff, and (5) family and community involvement (Alliance for a Healthier Generation, 2016; Clinton Foundation, 2015).

According to Waite-Stupiansky and Findley (2001), recess has been called "the fourth R" and is an important part of the elementary school day. The free play and physical activity that

take place during recess are key factors to learning (Barros, Silver, & Stein, 2009). Recess offers opportunities for children's social, emotional, cognitive, and physical well-being, especially for children who are disadvantaged (Milteer & Ginsburg, 2012).

The Centers for Disease Control and Prevention (2010) defined recess as regularly scheduled periods within the elementary school day for unstructured physical activity and play. The benefits of recess for a child's cognitive, emotional, physical, and social well-being have been reviewed (Ramstetter, Murray, & Garner, 2010). Yet, Henley, McBride, Milligan, and Nichols (2007) found a trend in reducing recess to provide additional time for academic subjects in addition to its removal for punitive or behavioral reasons. Furthermore, Parsad and Lewis (2005) pointed out that the time allotted to recess decreases as children get older and is less abundant among children of lower socioeconomic status and in the urban setting. According to the National Association of Early Childhood Specialists (2002), just as physical education and physical fitness contribute to personal and academic performance, recess offers its own, unique benefits. Recess represents an essential, planned break from rigorous cognitive tasks, providing a time to rest, play, imagine, think, move, and socialize. The Association also noted that after recess, students are more attentive and better able to perform cognitive tasks. In addition, recess helps young children to develop social skills that are otherwise not acquired in the more structured classroom environment (Robert Wood Johnson Foundation, 2007).

In addition, The American Academy of Pediatrics Council on School Health (2013) reported that a healthy school climate is an important factor that contributes to students' academic success and recess plays a significant part in this. However, the quality of recess programs still remains in question. Therefore, a set of guidelines outlined by the American Academy of Pediatrics has been developed to assist schools to create a positive recess climate.

Furthermore, according to the National Association of Sport and Physical Education (2015), there are many benefits of physical activity and fitness, not only for a child's physical well-being but also for academic and social maturation. The Association noted that recess provides the opportunity for children to be active in the mode of their choosing and to practice movement and motor skills in addition to allowing young children free activity for the sheer joy of it. Even minor movement during recess counterbalances sedentary time at school and at home and helps the child achieve the recommended 60 minutes of moderate to vigorous activity per day, a standard strongly supported by the American Academy of Pediatrics, which can help lower risk of obesity (Ramstetter, Murray, & Garner, 2010). Many school wellness programs have adopted the idea of scheduling recess before lunch, which stems from studies that examined food waste by students in relation to the timing of their recess. It is found that when students have recess before lunch, more time is taken for lunch and less food is wasted. Additionally, Ramstetter, Murray, and Garner (2010) reported that teachers and researchers have noted an improvement in the student behavior at meal time, which carried into the classroom in the afternoon. The concept of scheduling recess before lunch is supported by The Centers for Disease Control and Prevention and the United States Department of Agriculture.

Theoretical Framework

Whole Child Theory

The core belief in the whole child concept is the understanding that children grow physically, emotionally, and intellectually, and that schools should address all of these areas of growth. The WCT focuses on the long-term development and success of children by ensuring that they have all of the fundamental resources they need to succeed rather than only focusing on academic achievement (Morse & Allensworth, 2015). This model places students at the core of

the design. According to the America's Promise Alliance (2006), the fundamental needs of students are: (1), healthy start, (2) safe places, (3) caring adults, (4) opportunities to help others, and (5) effective education. A survey completed in 2006 by America's Promise revealed that 7 in 10 young people, ages 12 to 17, received only three or less of the five fundamental resources needed to flourish.

Morse and Allensworth (2015) suggested that schools must seek out the opinions and ideas of every student, not just those elected to student government or acknowledged as school leaders. This dialogue must begin in elementary grades as students learn how to develop and present a convincing argument and advocate for their own health, safety, engagement, support for learning and academic challenges as well as these supporting their peers. They also noted that these skills can be developed, refined, and supported by the implementation of a comprehensive, sequential pre-kindergarten through grade 12 health education programs, aligned with the National Health Education Standards.

Nationally, many school districts have embraced the importance of addressing the whole child through better alignment and integration of health and education (Morse & Allensworth, 2015). When those in decision-making roles understand and embrace the whole school, whole community, and whole child model, they are able to create programs and policies that lead to collaboration and effective use of resources, creating healthier school environments that address the needs of the whole child. Chiang, Meagher, and Slade (2015) noted that a small body of research has demonstrated the critical links between health and education, highlighting the importance of health to educational outcomes, and the importance of educational attainment to health. Although there are strong links, the health and education sectors have, for the most part,

grown, developed, and established their influence independent of each other. Although they serve the same child, they often tend separately to the same issues.

According to Chiang, Meagher, and Slade (2015), the alignment, integration, and collaboration across health and education sectors hold the potential for greater efficiency, reduced resource consumption, and improved outcomes for both sectors. The authors noted that alignment, collaboration, and integration between two of the sectors that are of primary importance to children, education and health, can be a challenge. Local school districts often do not have a working relationship with their local health districts, rarely share information and data, and develop interventions without cross-sector collaboration and partnerships. At the state level, health and education departments can struggle to reach beyond their respective agencies, to manipulate funding streams or to navigate authority structures in order to actively collaborate and align initiatives. Policymakers also miss opportunities to integrate health education into state and local education policy and practice, and vice versa, as health and education have distinct accountability measures, and pressures to achieve short-term gains can make it challenging to take a more integrated, long-term approach (Chiang, Meagher, & Slade 2015).

Additionally, health programs and services such as those provided by the American Diabetes Association (ADA), American Public Health Association (APHA), and the Society of Health and Physical Educators (SHAPE) are provided in many schools in the United States; however, the quality of these programs varies significantly. Most schools implement programs that target health through physical education, breakfast and lunch meal programs, health services that provide care and administration of medications, counseling for health related issues, and curricula bringing awareness to tobacco and alcohol, drugs, nutrition, teen pregnancy, and sexually transmitted diseases (Kann, Telljohann, & Wooley, 2007). Children attend school for

more than half of their waking hours and also eat at school. Therefore, school is a valuable place to initiate physical activity and nutritional behavior changes that are likely to have an impact on health issues such as childhood obesity. Schools have depended on physical education to instill health values and to keep students physically fit (Lee, Burgeson, Fulton, & Spain, 2007).

Multiple Intelligences Theory

Teaching the whole child is a concept first developed by the Association for Supervision and Curriculum Development (2007). This outlook provides a safe learning environment in which students can be actively engaged, academically challenged, and supported by the school and the community. The Multiple Intelligence Theory supports the Whole Child Theory (WCT). Gardner developed the Theory of Multiple Intelligences (TMI) as a way to address the individual needs of students by differentiating pedagogical content and activities based on students' different capacities to learn (Gardner, 1993). According to Gardner (1993), there are seven intelligences that everyone has, namely, (1) logical-mathematical, (2) visual-spatial, (3) bodily-kinesthetic, (4) interpersonal, (5) music-rhythmic, (6) intrapersonal, and (7) verbal-linguistic, and suggested that students have different abilities and do not all learn the same way. Hoerr (2002) argued that many educators use a curriculum-centered approach instead of taking into consideration the distinct learning styles of each individual student.

Additionally, Gardner (1999) found there are many different ways by which students learn based on their abilities. The TMI allows teachers to use a "child-centered" approach (Hoerr, 2002). Physical education teachers can implement the TMI through several segments during a unit on sports education (Martin & McKenzie, 2013). Hannaford (1995) argued that qualities we associate with the mind can never exist separate from the body. He went on to note that movement is an indispensable part of learning and thinking. Teaching via the WCT and

TMI along with activities that promote movement allows students the opportunity to learn in an engaging environment. The TMI targets each individual student's primary intelligence to enrich student learning.

Ratey and Hagerman (2008) stated that researchers have learned that school-based physical activity programs and physical education have had a positive influence on motivation, attention, and student engagement in both the classroom and the gymnasium. Additional benefits of school-based physical activity include the reduction of anxiety, obesity, and hypertension (Lengel & Kuczala, 2010).

Outcome Measures: Mathematics, Reading, and Science

Since President Ronald Reagan presented *A Nation at Risk*, several reform efforts have taken place at the local, state, and federal level. The purpose of the report was to examine the public school system in the United States. According to *A Nation at Risk* (National Commission on Excellence in Education, 1983), test scores in American schools were failing, teachers were not adequately educated, and millions of Americans were illiterate. The report suggested that our entire nation was at risk of failure due to the education system.

As a result, national, state, and local efforts to increase academic achievement were developed and executed. Some of the strategies for assisting schools in the implementation of high quality, strategic, and effective school health practices include establishing the development of policies, professional development for educators, and the implementation of guidelines. The health factors that impact educational outcomes influence the quality of life and the ability to contribute and live productively in a democratic society (Basch, 2010). Despite compelling evidence, linking health and academic achievement, the United States Department of Education does not offer initiatives to reduce educationally relevant health inequalities as part of a national

strategy to close the achievement gap. In order to address educationally relevant health issues in a strategic and coordinated way, the ways by which schools are financed, services are offered, and the time devoted to addressing social-emotional issues must be changed. It is not realistic to expect that schools close the education gaps or fix the health disparities that plague our nation alone; however, since students spend the majority of their daily lives in school, this institution can have a powerful impact on education (Basch, 2010).

The State Board of Education (SBOE) revised the TEKS for mathematics in April of 2012. The SBOE specified the implementation of the new standards in kindergarten through eighth grade classrooms in the 2014-2015 school year (Texas Education Agency, 2016). Texas teachers have worked to close instructional gaps in skills and raise the level of rigor and depth of knowledge for students to master the curriculum and meet the state standards on the STAAR.

Elementary mathematics has become one of the skills needed to be successful in the 21st century and an important part of early elementary education. According to the National Association for the Education of Young Children (2009), the mathematics skills that are learned early on build the foundation for future learning and can indicate the ability to meet challenges as students mature. Children show a natural interest in mathematics at a young age, and parents and teachers should take advantage of this critical time to establish a solid foundation that may allow the interest in mathematics to grow into adulthood (National Association for the Education of Young Children, 2009).

Instruction in mathematics for children should include techniques designed to demonstrate the relevancy of mathematics to the world they live in and their possible future careers. Teachers must aim to make real world connections to the skills they teach and must

explain the rationale behind the concepts they teach in the classroom (Lapp, Grant, Moss, & Johnson, 2013).

Due to the assessment requirements for the NCLB, 71% of elementary school districts nationwide have reduced time spent on subjects other than reading and mathematics (Jennings & Rentner, 2006). Science is taught in kindergarten through 5th grade. Students in the 5th grade are assessed over scientific concepts that are taught as early as second grade.

The demand for graduates in careers in science, technology, engineering, and mathematics (STEM) has led to the concern of scientific literacy (Association of American Universities, 2006). The need for developing a scientifically literate population stems from the demands of living in a high-tech and global economy. Science achievement gaps have raised concerns about the nation's future. According to Lacy and Wright (2009), science occupations are predicted to grow faster than all other fields. For this reason, interventions that focus on the closing of achievement gaps should begin when students are young. The leaky science pipeline may begin as early as third grade (Quinn & Cooc, 2015). Therefore, developing scientific literacy is an important goal for all students in fifth grade in Texas and the TEKS are scaffolded through the years to build on fundamental scientific concepts, leading to critical thinking and analytical problem-solving skills.

The elementary science curriculum in Texas covers four main categories: (1) Matter and Energy, (2) Force, Motion, and Energy, (3) Earth and Space, and (4) Organisms and Environments. Scientific investigations and reasoning skills are incorporated into 40% of the questions on the 5th grade science STAAR (Texas Education Agency, 2016).

Creating and maintaining a classroom rich with learning opportunities and student success is a challenge for teachers, especially when they are faced with the pressures of high

stakes testing. Students are taught to read as early as kindergarten after they have mastered letter recognition and phonemic awareness. Decoding the words in a sentence is not enough for students to be considered readers. Comprehension, fluency, analyzing, inferring, and using schema to draw conclusions are all necessary key components to read and understand the content. According to Rasinski and Young (2015), reading fluency consists of two major components, namely, automatic word recognition and expressiveness in oral reading. Automatic word recognition refers to ability of fluent readers to decode words so effortlessly that they can direct their limited cognitive energy to comprehension, the ultimate goal of reading. It is not sufficient for students to be able to decode words accurately as it is taught by phonics instruction. Although phonics instruction leads readers to accurately identify words, the process of "sounding a word" takes up a considerable amount of attention that could otherwise be devoted to making meaning (Rasinski & Young, 2015). Texas students are expected to comprehend, analyze, and make inferences on the reading passages that make up the STAAR.

Evolution of the State of Texas Assessments of Academic Readiness

The State of Texas Assessments of Academic Readiness (STAAR) program was first administered to Texas students in 2011 with the intent to assess students in the core subject areas of mathematics, writing, reading, social studies, and science in grades three to twelve (Texas Education Agency, 2012). Texas has a long history of student assessments, dating back to 1979, when the first statewide testing program was implemented. Through periodic changes in legislation and policy, assessments in Texas have grown in length, scope, and rigor (Texas Education Agency, 2014). The Texas assessment program began when the 66th Legislature that enacted a law requiring basic skills competencies in mathematics, reading, and writing for grades three, five, and nine. In 1980, Texas assessed minimum skills in mathematics, reading, and

writing, as required by the statute, with the Texas Assessment of Basic Skills (TABS). In 1986, the Texas Education Agency implemented the Texas Educational Assessment of Minimum Skills (TEAMS) assessment, which was the first statewide assessment students had to pass to be eligible to receive a high school diploma. In 1990, the Texas Assessment of Academic Skills (TAAS) shifted the assessment focus from minimum skills to more rigorous academic skills. The TAAS was administered every year from 1994 through 2002 to students in grades three to eight and ten in reading and mathematics; grades four, eight, and ten in writing; and grade eight in science and social studies. Students were required to pass the exit level assessments in reading, writing, and mathematics at the 10th grade level as part of the graduation requirements (Texas Education Agency, 2015). In 2003, the Texas Assessment of Knowledge and Skills (TAKS) replaced the TAAS as the statewide assessment program to assess the state-mandated curriculum, the Texas Essential Knowledge and Skills (TEKS). By law, students needed to pass exit level assessments in English and language arts, mathematics, science, and social studies to graduate from a public high school in the state of Texas.

The State of Texas Assessments of Academic Readiness (STAAR) was implemented in the 2011-2012 school year by the Texas Education Agency, as mandated by the 80th and 81st Texas legislatures. The STAAR is an assessment that is designed to measure how well students are able to apply the knowledge and skills in the TEKS, the state-mandated curriculum. Each of the questions on the STAAR is aligned with the TEKS taught at the grade level or subject being tested (Texas Education Agency, 2015). Each assessment has a four-hour time limit and a passing standard set by a raw score converted into a scale score. The State Board of Education establishes the cut scores needed to meet the state standards. The STAAR consists of three levels of performance: Level I - Unsatisfactory Academic Performance, Level II - Satisfactory

Performance, and Level III - Advanced Academic Performance (Texas Education Agency, 2015).

The Texas Education Agency also has designated the 5th grade as part of the Student Success Initiative (SSI). The SSI grade level advancement criteria apply to students who take the STAAR in 5th grade. The SSI was enacted by the 76th Texas Legislature in 1999 and later modified in 2009 by the 81st Texas Legislature (Texas Education Agency, 2016). Under the SSI grade placement requirements, students are required to pass the STAAR reading and mathematics assessments to be promoted to the 6th grade. Students in 5th grade are allowed three opportunities to pass the reading and mathematics sections of the STAAR test and the first administration takes place in the spring. Students who are not successful on the first attempt are offered targeted interventions based on the items that were missed on the STAAR. The second administration takes place at the end of the school year. Students who are still not successful on the STAAR are recommended for accelerated instruction during summer school. The third administration is offered in the summer. If a student is not successful on the third attempt, state criteria require that the student be retained in the 5th grade. However, a student that was not successful on any of the three opportunities of STAAR may advance to the next grade level only if the Grade Placement Committee (GPC), consisting of an administrator, the parent or guardian, and the teacher, unanimously decides that the student is capable of performing at the grade level with an accelerated instructional intervention. The purpose of the SSI is to ensure that each student receives the academic support necessary to succeed in reading and mathematics (Texas Education Agency, 2016). This is a collaborative effort between students, teachers, parents, and community members, working together towards this goal.

The STAAR differs from past state assessments in that the level of rigor is higher and students are expected to apply a deeper understanding of the standards and use critical thinking skills to analyze the questions that are intended to prepare them for the challenges of the 21st century (Texas Education Agency, 2016). Beginning in 2013, districts must meet all four indexes to receive a Met Standard or Met Alternative Standard rating. The four indexes are (1) Student Achievement, (2) Student Progress, (3) Closing Performance Gaps, and (4) Postsecondary Readiness. In 2015, due to the changes in the state assessment program, a campus or district had to meet the target on either the first or second index, plus meeting the target on the 3rd and 4th indexes. The performance standard in index 1 increased from 55% to 60% in 2015 (Texas Education Agency, 2016).

Summary

The study focused on examining the impact of the HSP on academic success in reading, mathematics and science in a non-probability sample of 5th grade students. Educating the whole child through nutrition awareness, increasing physical fitness levels, and character education plays a significant role in the development of elementary students. The integration of healthy sustainable changes in schools is increasing across America and organizations are providing funding to bring resources and programs that focus on creating healthier environments to fruition. Addressing school health through health and safety policies, health education, physical education, nutrition services, health promotion for staff and family, and community involvement are becoming a bigger part of the educational world.

By creating more opportunities for schools to establish wellness programs and integrating health and fitness into the curriculum, students are exposed to standards and expectations for healthier lifestyles and possibly improve academic performance. Additionally, programs at the

state and local levels are vital in providing support and partnerships that link health and education stakeholders in an effort to reduce the physical, emotional and social barriers to academic success and learning.

Chapter III

Method

Introduction

The purpose of the study was to examine the impact of the Healthy Schools Program (HSP) on reading, mathematics, and science achievement of 5th grade students in an urban school district in South Texas. The following research questions guided the study:

1. What is the impact of the Healthy Schools Program on academic achievement in reading among 5th grade students in a South Texas school district?
2. What is the impact of the Healthy Schools Program on academic achievement in mathematics among 5th grade students in a South Texas school district?
3. What is the impact of the Healthy Schools Program on academic achievement in science among 5th grade students in a South Texas school district?

Research Design

The study utilized an ex post facto, causal-comparative research design. Ex post facto is a Latin phrase meaning "operating retroactively" (Gall, Gall, & Borg, 2007, p. 296). This type of research focuses on examining the relationship between the independent and dependent variables, which is more suggestive than proven, and does not involve the manipulation of the independent variable. Causal-comparative research is a type of ex-post facto investigation that seeks to identify potential cause-effect relationships by forming groups of individuals in which the independent variable is present or absent, followed by comparing the groups on the basis of one or more dependent variables. No causal inferences may be drawn due to the non-experimental nature of this type of study (Gall, Gall, & Borg, 2007).

In the study, the independent variable was the HSP with two levels. The characteristic-present group, school A, consisted of 5th graders who had utilized the HSP. A sample of 5th graders who had not utilized the HSP formed the comparison group, school B. The outcome measures were academic achievement in reading, mathematics, and science.

Intervention

According to the Alliance for a Healthier Generation (2016), the HSP has 4 objectives: (1) establishing a healthy school environment as an education priority, (2) providing healthier food options for students during the regular and extended school day, (3) increasing opportunities for students to move and play, and (4) developing programs for teachers and staff to become healthy role models.

The HSP helps create and sustain a healthy environment where students, especially those in greatest need, can learn and flourish. This evidence-based initiative helps promote healthy changes in schools that may positively impact student health (Clinton Foundation, 2015). The HSP identifies specific criteria that define a healthy school environment. Through assessment tools and a customized plan of action, the framework helps schools work towards the Healthier Generation's National Alliance of Healthy Schools Award. To earn this award, schools must show evidence of implementation of best practices in each of the following modules that address school health: School Health and Safety and Environment, Health Education, Physical Education and Other Physical Activities Programs, Nutrition Services, Health Promotion for Staff, and Family and Community Involvement.

Physical Education teachers must attend professional development sessions at least once per year as part of the HSP. Additionally, free water must be accessible by students on campus at all times. Students are encouraged to bring containers of drinking water to keep with them

during the school day. Healthy options are offered in the school cafeteria and any food sold on campus must meet specific guidelines set forth by the following USDA's Smart Snacks in Schools Standards:

Any food sold in schools must be a grain product containing 50% or more whole grains by weight or have whole grains as the first ingredient; or have as the first ingredient a fruit, a vegetable, a dairy product, or a protein food; or a combination food that contains at least ¼ cup of fruit and/or vegetable; or 10% of the Daily Value (DV) of one of the nutrients of public health concern in the 2010 Dietary Guidelines for Americans (calcium, potassium, vitamin D, or dietary fiber). If water is the first ingredient, the second ingredient must be one of the food items above. Foods must also meet several nutrient-related requirements, for example, snack items - ≤ 200 calories, entrée items - ≤ 350 calories, snack items - ≤ 230 mg sodium, entrée items - ≤ 480 mg sodium, total fat - $\leq 35\%$ of calories, and saturated fat - $< 10\%$ of calories. Beginning July 1, 2016, foods may not qualify, using the 10% DV criteria and snack items must contain ≤ 200 mg sodium per item (United States Department of Agriculture, 2016).

All schools may sell the following beverage items: plain water (with or without carbonation), unflavored low-fat milk, unflavored or flavored fat-free milk and milk alternatives permitted by the National School Lunch Program/School Breakfast Program, 100% fruit or vegetable juice, 100% fruit or vegetable juice diluted with water (with or without carbonation), and no added sweeteners. There is no portion size limit for plain water. Elementary schools may sell up to 8-ounce portions of milk and juice (United States Department of Agriculture, 2016).

In addition to the nutritional guidelines, the HSP award criteria require 20 minutes per day for recess. Staff members are also provided with the tools for healthier living and

encouraged to participate in wellness activities to serve as role models for the students. Community members and business partners are invited to the school to speak to students about healthier living and physical fitness (Clinton Foundation, 2015).

Subject Selection

The subjects were recruited from two elementary schools in the District, as of the 2014-2015 school year. The characteristic-present group, School A, consisted of a non-probability sample of 25 5th grade students whose curriculum included the HSP. The comparison group, School B, consisted of 26 5th grade students whose curriculum did not include the HSP. These were the students for whom complete data were available, as provided to the researcher by the Texas Education Agency. Permission to conduct the study was obtained from the Institutional Review Board at Texas A&M University-Corpus Christi (Appendix A).

At the time of conducting the study, Schools A and B had an enrollment of approximately 290 and 350 students in pre-kindergarten through grade 5. Both elementary campuses had similar demographics. The attendance rates for School A and School B were 95.80% and 95.90%, respectively. The average 5th grade class size for School A was 24 and 23 for School B. The special education population for School A was 7.90% and 6.00% for School B. The overwhelming majority of the students in both schools were Hispanic. Specifically, ethnicity percentages for School A were 84.60% Hispanic, 10.10% White, and 3.70% African American. School B's ethnicity percentages were 90.40% Hispanic, 7.00% White, and 2.60% African American. In 2015, both campuses were rated Met Standard for state accountability.

Instrumentation

The State of Texas Assessments of Academic Readiness (STAAR) test scores was used to measure the academic achievement scores. The 80th and 81st sessions of the Texas Legislature

called for a new state assessment program to replace the Texas Assessment of Knowledge and Skills (TAKS), with the aim of continuing to use statewide student assessments to improve the State's education system (State of Texas Assessment of Academic Readiness (STAAR) Standard Setting Technical Report, 2013). The STAAR was implemented as the statewide assessment program in 2011-2012, and was designed to measure student's understanding of the Texas Essential Knowledge and Skills (TEKS), which is the State curriculum (Texas Education Agency, 2010). These standards are designed to prepare students to succeed in postsecondary opportunities and to compete globally. The STAAR focuses on fewer skills and addresses them in a deeper manner. By focusing on the TEKS that are most critical to assess, the STAAR measures the academic performance of students as they progress from elementary to middle to high school.

Achievement in reading in 5th grade was measured by three reporting categories: (1) Understanding/Analysis across Genres, (2) Understanding/Analysis of Literary Texts, and (3) Understanding/Analysis of Informational Texts. Achievement in mathematics in 5th grade was measured by four reporting categories: (1) Numerical Representations and Relationship, (2) Computations and Algebraic Relationships, (3) Geometry and Measurement, and (4) Data Analysis and Personal Financial Literacy. Achievement in science in 5th grade was measured by four reporting categories: (1) Matter and Energy, (2) Force, Motion, and Energy, (3) Earth and Space, and (4) Organisms and Environments. For all categories, the proportion of correct answers to the total number of test items was computed as the outcome measure.

Data Collection

The data were obtained from the TEA and included raw scores in each of the abovementioned reporting STAAR categories. Data on gender, bilingual status, limited English

proficiency level, and socioeconomic status were the only demographic data that the TEA provided to the researcher.

Data Analysis

The raw data were exported into the Statistical Package for the Social Sciences (SPSS), which was used for the purpose of data manipulation and analysis. The number of test questions answered correctly to the total number of questions in each of the reporting categories determined student academic achievement in reading, mathematics, and science. Descriptive statistics were utilized to organize and summarize the data.

A series of t-test for Independent Samples (Field, 2013) was performed to compare the characteristic-present and comparison groups on the basis of total category scores. A series of Chi-square Test of Independence, corrected for continuity (Field, 2013) was performed to compare the HSP and non-HSP groups on the basis of gender and risk-status of the study participants.

The Pearson Product Moment Correlation Coefficient (Field, 2013) was used to examine the magnitude and direction of the bivariate associations among the STAAR category scores.

A series of multivariate analysis of variance (MANOVA) was performed to test the hypothesis that the HSP group outperformed the non-HSP group on the basis of the outcome measures of reading, mathematics, and science. The MANOVA is used to compare groups on the basis of two or more correlated outcome measures (Stevens, 2009). The mathematical expression, vector, is used to represent each subject's score on more than one response variable. The mean of the vectors for each group is called a centroid. The MANOVA is used to differentiate among groups with respect to their centroids (Stevens, 2009). The two samples were approximately equal as the largest sample size (n = 26) divided by the smallest sample size

(n = 25) was less than 1.50 (Stevens, 2009). The MANOVA is robust with respect to the equality of covariance matrices assumption when the sample sizes are approximately equal.

The mean difference effect sizes (0.20 = small effect, 0.50 = medium effect, >0.80 = large effect) were computed to examine the practical significance of the findings (Cohen, 1988). To do so, the mean difference was divided by the pooled standard deviation.

The study's sample sizes were small. A series of power analysis was conducted to estimate the required sample size for each of the outcome measures to achieve statistical significance at the 0.05 level on the basis of total academic achievement scores.

Chapter IV

Results

The purpose of the ex post facto causal-comparative study was to compare academic achievement in reading, mathematics, and science, as measured by the STAAR reporting category scores, between 5th graders who participated in the HSP and the 5th graders who did not participate in the HSP. It was hypothesized that the students who participated in the HSP would outperform the students in the non-HSP school on the basis of outcome measures. The study was guided by the following research questions:

1. What is the impact of the Healthy Schools Program on academic achievement in reading among 5th grade students in a South Texas school district?
2. What is the impact of the Healthy Schools Program on academic achievement in mathematics among 5th grade students in a South Texas school district?
3. What is the impact of the Healthy Schools Program on academic achievement in science among 5th grade students in a South Texas school district?

The data were obtained from the TEA, coded, and analyzed by using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize and organize the data. A series of Chi-square Test of Independence, corrected for continuity, was performed to compare the HSP and non-HSP groups on the basis of gender and risk-status of the study participants. A series of multivariate analysis of variance (MANOVA) was used to compare the two groups on the basis of group centroids for each set of the outcome measures. The two sample sizes were approximately equal (largest n/smallest n < 1.50); thus, the MANOVA analyses were considered robust with respect to the equality of covariance matrices assumption. The mean difference effect sizes were computed to examine the practical

significance of the findings. A series of t-test for Independent Samples was performed to test the group differences on the basis of the total category scores. The level of significance was set, a priori, at 0.05.

A Profile of Subjects

The characteristic-present group (n = 25) included 5th grade students who had participated in the HSP program and the comparison group (n = 26) consisted of 5th grade students who had not participated in the HSP program. All met the criteria for being considered disadvantaged. None was either bilingual or limited English proficient. The majority of the HSP and non-HSP students were female and male, respectively. The majority of both groups were at-risk students. As can be seen in Table 1, group differences on the basis of gender and at-risk status were not statistically significant.

Table 1

A Profile of Subjects

	HSP Group (n = 25)		Non-HSP Group (n = 26)	
Demographic Characteristic	F	%	F	%
Gender*				
Female	16	64.00	12	46.20
Male	9	36.00	14	53.80
At Risk Status**				
Yes	19	76.00	20	76.90
No	6	24.00	6	23.10

* $X^2(1, N = 51) = 1.00, p = 0.32$

** $X^2(1, N = 51) = 0.00, p = 1.00$

Reading Achievement

Achievement in reading was measured by the proportion of correct answers to the total number of questions in each of the three reporting categories. There were three reading categories: (1) Understanding and Analysis across Genres (10 items), (2) Understanding and Analysis of Literary Texts (19 items), and (3) Understanding and Analysis of Informational Texts (17 items). The means and standard deviations are presented in Table 2.

Table 2

STAAR Reading Achievement Measures

	HSP Group (n = 25)		Non-HSP Group (n = 26)	
Reporting Category	M*	SD	M*	SD
Category 1	0.64	0.26	0.66	0.20
Category 2	0.67	0.21	0.67	0.22
Category 3	0.64	0.19	0.60	0.19

*Proportion of correct answers (theoretical range: 0.00 – 1.00)
Note: Category 1: Understanding/Analysis across Genres
Category 2: Understanding/Analysis of Literary Texts
Category 3: Understanding/Analysis of Informational Texts

The Levene's Test of Equality of Error Variances showed that homogeneity of variances assumption was met for all three measures. Results are shown in Table 3.

Table 3

Homogeneity of Variances Assumption Summary Table, Reading Scores

	DF Numerator	DF Denominator	F	p
Category 1	1	49	2.11	0.15
Category 2	1	49	0.10	0.75
Category 3	1	49	0.06	0.80

Note: Category 1: Understanding/Analysis across Genres
Category 2: Understanding/Analysis of Literary Texts
Category 3: Understanding/Analysis of Informational Texts

As can be seen in Table 4, reading category test scores were correlated with each other (Table 4) and MANOVA was used to compare the HSP and non-HSP groups on the basis of the group centroid.

Table 4

Correlation Matrix for STAAR Reading Category Scores

Category	Reading Category 1	Reading Category 2	Reading Category 3
Reading Category 1	1.00	0.66*	0.61*
Reading Category 2		1.00	0.70*
Reading Category 3			1.00

*$p < .01$
Note: Category 1: Understanding/Analysis across Genres
Category 2: Understanding/Analysis of Literary Texts
Category 3: Understanding/Analysis of Informational Texts

The MANOVA showed that the group differences on the basis of the centroids were not statistically significant, $F(3, 47) = 0.38$, $p = 0.77$.

Mean difference effect sizes, as computed by Cohen's *d*, were used to examine the practical significance of the findings. All were either negligible or small. Results are presented in Table 5.

Table 5

Mean Difference Effect Sizes for STAAR Reading Reporting Category Scores

Reporting Category	Mean Difference	p	Effect Size*
Category 1	0.02	0.81	0 .07[a]
Category 2	0.00	0.95	0 .02[b]
Category 3	0.04	0.51	0 .19[b]

*0.20 = small effect, 0.50 = medium effect, 0.80 = large effect
[a]The mean difference favored the non-HSP group.
[b]The mean difference favored the HSP group.
Note: Category 1: Understanding/Analysis Across Genres
Category 2: Understanding/Analysis of Literary Texts
Category 3: Understanding/Analysis of Informational Texts

The group differences on the basis of the total reading categories scores between the HSP (M = 0.65, SD = 0.18) and non-HSP (M = 0.64, SD = 0.19) groups were not statistically significant, $t(49) = 0.22$, $p = 0.83$. The effect size was negligible ($d = 0.06$).

Mathematics Achievement

Achievement in mathematics was measured by the proportion of correct answers to the total number of questions in each of the reporting categories. There were four categories: (1) Numerical Reporting and Relationships (8 items), (2) Computations and Algebraic Relationships (24 items), (3) Geometry and Measurement (12 items), and (4) Data Analysis and Personal Financial Literacy (6 items). The means and standard deviations are presented in Table 6.

Table 6

STAAR Mathematics Achievement Measures

Reporting Category	HSP Group (n = 25) M*	SD	Non-HSP Group (n = 26) M*	SD
Category 1	0.56	0.21	0.67	0.25
Category 2	0.54	0.16	0.60	0.19
Category 3	0.57	0.22	0.59	0.22
Category 4	0.58	0.23	0.63	0.22

*Proportion of correct answers (theoretical range: 0.00 – 1.00)
Note: Category 1: Numerical Reporting and Relationships
Category 2: Computations and Algebraic Relationships
Category 3: Geometry and Measurement
Category 4: Data Analysis and Personal Financial Literacy

As shown in Table 7, the homogeneity of variances assumption was met in all measures. The mathematics category test scores were correlated with each other (Table 8). The MANOVA showed that the group differences on the basis of the centroid were not statistically significant, $F(4, 46) = 1.38$, $p = 0.26$. Mean difference effect sizes, as computed by Cohen's d, were used to examine the practical significance of the findings. The effect sizes favored the non-HSP group. Results are presented in Table 9. The group differences on the basis of the total mathematics scores between the HSP ($M = 0.55$, $SD = 0.16$) and non-HSP ($M = 0.61$, $SD = 0.18$) groups were not statistically significant, $t(49) = 1.29$, $p = 0.85$. The effect size was 0.37, favoring the Non-HSP group.

Table 7

Homogeneity of Variances Assumption Summary Table, Mathematics Scores

	DF Numerator	DF Denominator	F	p
Category 1	1	49	1.44	0.24
Category 2	1	49	0.07	0.80
Category 3	1	49	0.01	0.96
Category 4	1	49	0.66	0.42

Note: Category 1: Numerical Reporting and Relationships
Category 2: Computations and Algebraic Relationships
Category 3: Geometry and Measurement
Category 4: Data Analysis and Personal Financial Literacy

Table 8

Correlation Matrix for STAAR Mathematics Category Scores

Category	Category 1	Category 2	Category 3	Category 4
Category 1	1.00	0.53*	0.64*	0.45*
Category 2		1.00	0.75*	0.55*
Category 3			1.00	0.54*
Category 4				1.00

*$p < .01$
Note: Category 1: Numerical Reporting and Relationships
Category 2: Computations and Algebraic Relationships
Category 3: Geometry and Measurement
Category 4: Data Analysis and Personal Financial Literacy

Table 9

Mean Difference Effect Sizes for STAAR Mathematics Reporting Category Scores

Reporting Category	Mean Difference	p	Effect Size*
Category 1	0.11	0.10	0.48[a]
Category 2	0.07	0.18	0.39[a]
Category 3	0.03	0.67	0.12[a]
Category 4	0.05	0.46	0.21[a]

*0.20 = small effect, 0.50 = medium effect, 0.80 = large effect

[a]The mean difference favored the non-HSP group.

Note: Category 1: Numerical Reporting and Relationships
Category 2: Computations and Algebraic Relationships
Category 3: Geometry and Measurement
Category 4: Data Analysis and Personal Financial Literacy

Science Achievement

Achievement in science was measured by the proportion of correct answers to the total number of questions in each of the four reporting categories: (1) Matter and Energy (8 items), (2) Force, Motion, and Energy (10 items), (3) Earth and Space (12 items), and (4) Organisms and Environments (14 items). The means and standard deviations are presented in Table 10. The homogeneity of variances assumption, as shown in Table 11, was met in all measures.

Table 10

STAAR Science Achievement Measures

Reporting Category	HSP Group (n = 25) M*	SD	Non-HSP Group (n = 26) M*	SD
Category 1	0.66	0.23	0.70	0.26
Category 2	0.68	0.15	0.66	0.24
Category 3	0.63	0.15	0.66	0.19
Category 4	0.63	0.19	0.63	0.21

*Proportion of correct answers (theoretical range: 0.00 – 1.00)

Note:

Category 1: Matter and Energy
Category 2: Force, Motion, and Energy
Category 3: Earth and Space
Category 4: Organisms and Environments

Table 11

Homogeneity of Variances Assumption Summary Table, Science Scores

	DF Numerator	DF Denominator	F	p
Category 1	1	49	0.39	0.54
Category 2	1	49	2.83	0.10
Category 3	1	49	2.53	0.19
Category 4	1	49	0.85	0.36

Note:

Category 1: Matter and Energy
Category 2: Force, Motion, and Energy
Category 3: Earth and Space
Category 4: Organisms and Environments

The science category test scores were correlated with each other (Table 12) and MANOVA was used to compare the HSP and non-HSP groups on the basis of the group centroid.

Table 12

Correlation Matrix for STAAR Science Category Scores

Category	Category 1	Category 2	Category 3	Category 4
Category 1	1.00	0.58*	0.63*	0.73*
Category 2		1.00	0.48*	0.63*
Category 3			1.00	0.57*
Category 4				1.00

*$p < .01$

Note:

Category 1: Matter and Energy
Category 2: Force, Motion, and Energy
Category 3: Earth and Space
Category 4: Organisms and Environments

The MANOVA showed that the group differences on the basis of centroids were not statistically significant, $F(4, 46) = 0.37$, $p = 0.83$. Mean difference effect sizes, as computed by Cohen's *d*, were used to examine the practical significance of the findings. The effect sizes were negligible. Results are presented in Table 13. The group differences on the basis of the total science between the HSP ($M = 0.64$, $SD = 0.14$) and Non-HSP ($M = 0.66$, $SD = 0.19$) groups were not statistically significant, $t(49) = 0.26$, $p = 0.09$. The effect size, favoring the Non-HSP group, was negligible ($d = 0.07$).

Table 13

Mean Difference Effect Sizes for STAAR Science Reporting Category Scores

Reporting Category	Mean Difference	p	Effect Size*
Category 1	0.04	0.54	0.18[a]
Category 2	0.02	0.74	0.10[b]
Category 3	0.03	0.53	0.18[a]
Category 4	0.00	0.99	0.00

*0.20 = small effect, 0.50 = medium effect, 0.80 = large effect

[a]The mean difference favored the Non-HSP group.

[b]The mean difference favored the HSP group.

Note:

Category 1: Matter and Energy
Category 2: Force, Motion, and Energy
Category 3: Earth and Space
Category 4: Organisms and Environments

Power Analysis

Theoretically, the probability of a Type II Error (not rejecting a false null hypothesis) can never be ruled out. The study's sample sizes were small. A power analysis was conducted for each of the outcome measures.

For academic achievement in reading, 2,510 subjects in each group were needed to achieve statistical significance at the 0.05 level, as shown in the following SPSS command lines and Output 1:

```
matrix data var = group rowtype_ y/factor=group.
begin data
1 mean .65
1 n 2510
2 mean .64
2 n 2510
. stddev .18
. corr 1.0
end data.
manova y by group(1,2)/print=cellinfo(means) signif(efsize)/matrix=in(*)/power/design.
```

Output 1

Power Analysis for Reading Achievement Scores

Tests of Significance for y using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	162.58	5018	.03		
group	.13	1	.13	3.87	.049

For academic achievement in mathematics, 65 subjects in each group were needed to achieve statistical significance at the 0.05 level, as shown in the following SPSS Command lines and Output 2:

```
matrix data var = group rowtype_ y/factor=group.
begin data
1 mean .55
1 n 65
2 mean .61
2 n 65
. stddev .17
. corr 1.0
end data.
manova y by group(1,2)/print=cellinfo(means) signif(efsize)/matrix=in(*)/power/design.
```

Output 2

Power Analysis for Mathematics Achievement Scores

Tests of Significance for y using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	3.70	128	.03		
group	.12	1	.12	4.05	.046

For academic achievement in science, 580 subjects in each group were needed to achieve statistical significance at the 0.05 level, as shown in the following SPSS command lines and

Output 2:

```
matrix data var = group rowtype_ y/factor=group.
begin data
1 mean .64
1 n 580
2 mean .66
2 n 580
. stddev .17
. corr 1.0
end data.
manova y by group(1,2)/print=cellinfo(means) signif(efsize)/matrix=in(*)/power/design.
```

Output 3

Power Analysis for Science Achievement Scores

Tests of Significance for y using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	33.47	1158	.03		
group	.12	1	.12	4.01	.045

The power analyses showed that the HSP could have affected academic achievement in mathematics if the sample sizes were reasonably larger. Very large sample sizes were needed to achieve statistical significance in reading and science and effect sizes were also negligible, suggesting that the HSP could have not realistically influenced the outcome measures in these two samples of 5th graders.

Summary

The study's hypotheses were that the school participating in the HSP would outperform the non-HSP school on the basis of academic achievement in reading, mathematics, and science, as measured by the 2015 STAAR test data. None of the hypotheses were supported by the findings. The mean difference effect sizes were mainly negligible.

Chapter V

Summary, Conclusions, and Discussion

Introduction

Establishing healthier lifestyles for students, prepares them for the physical and mental encounters that they face at school (Datko, 2015). Efforts are taking place to create healthier school environments by offering resources and professional development and training for educators and school leaders to incorporate healthier lifestyles as part of the curriculum in elementary schools. According to the Clinton Foundation (2015), studies strongly suggest that students who are physically fit and follow a healthy diet perform better on assessments, make better grades, attend school more often, and behave better in class.

As part of the HSP, nutrition programs and physical education plans have recently been implemented in schools to shape the culture of a school and promote healthy student behaviors (Kelly & Melnyk, 2008). Zenzen and Kridli (2009) recommended implementing physical activity, healthy lifestyle education, and parent involvement in schools at the earliest possible grade level. This effort is supported by The Robert Wood Johnson Foundation, which funds the HSP in states with the highest obesity rates. As a result, the HSP assists schools in developing healthier environments and recognizes the schools that are successful in their endeavors through bronze, silver, and gold awards at the national level. Additionally, the HSP creates programs for teachers and staff to serve as healthy role models as well as providing opportunities for students to be active and have access to healthier food items (Clinton Foundation, 2015).

Despite the recent pressures of assessment accountability, educators must not lose sight of the importance of educating the whole child. Educating students on the importance of making healthy eating choices and physical activity contribute to the connection between health and

student learning. The National Commission on the Role of the School and the Community in Improving Adolescent Health emphasized that efforts to improve school performance that ignore health are ill conceived, as are health improvement efforts that ignore education (Christenson, 2000).

The purpose of the study was to examine the impact of the HSP on reading, mathematics, and science achievement of 5th grade students, and to test the hypothesis that the HSP is effective in impacting academic achievement. The study was guided by the following research questions:

1. What is the impact of The Healthy Schools Program on student achievement in reading among 5th grade students in a South Texas school district?
2. What is the impact of The Healthy Schools Program on student achievement in mathematics among 5th grade students in a South Texas school district?
3. What is the impact of The Healthy Schools Program on student achievement in science among 5th grade students in a South Texas school district?

Summary of the Results

Multivariate analysis of the data showed that none of the group differences was statistically significant. Power analyses showed that the lack of statistical significant could have not been realistically related to the small sample sizes. Additionally, effect sizes were negligible.

Conclusions

The researcher had hypothesized that 5th grade students in the HSP would outperform the 5th grade students in the non-HSP school on the basis of academic achievement in reading, mathematics, and science, as measured by the 2015 STAAR test results. Analysis of the data did not support the hypothesis. It was concluded that participation in the HSP does not impact academic achievement in 5th grade reading, mathematics, and science. No causal inferences

were drawn due to non-experimental nature of the study. The external validity was limited to the study's participants due to non-probability nature of the sampling.

Discussion

The study's South Texas school district had been working with schools to implement the HSP since 2001. Some schools in the district had implemented the HSP and been recognized nationally as Bronze and Silver Award recipients based on the level of implementation of the program, set by specific criteria from the Alliance for a Healthier Generation.

The review of literature provided insight into the creation of the HSP and the recent efforts to educate the whole child, despite the accountability pressures and sanctions associated with standardized testing, specifically the STAAR test. These efforts include the Alliance for a Healthier Generation's HSP movement to encourage kids to develop lifelong healthy habits by ensuring their environments promote good health. The Alliance's HSP helps create and sustain healthy environments where students, especially those in greatest need, can succeed. This evidence-based initiative creates sustainable healthy changes in schools and has had a positive impact on student health. The HSP Framework of Best Practices includes specific criteria that define a healthy school environment. The Framework helps schools work towards the Alliance's National Healthy Schools Award by utilizing an assessment tool and a customized action plan. To earn the award, schools must demonstrate implementation of specific best practices in each of the following modules that address school health: School Health and Safety Policies and Environment, Health Education, Physical Education and other Physical Activity Programs, Nutrition Services, Health Promotion for Staff, and Family and Community Involvement (Alliance for a Healthier Generation, 2015).

The Whole Child Theory (WCT) was the theoretical framework deemed most appropriate for the study, because it supports the idea of incorporating academic and physical well-being in education. Morse and Allensworth (2015) described the WCT as a long term development of children by providing the necessary resources they need to be successful rather than focusing only on academic achievement. This theory works to address the fundamental needs of children which are (1) a healthy start, (2) safe places, (3) caring adults, (4) opportunities to help others, and (5) effective education (America's Promise Alliance, 2006).

Miller (2008) defined holistic education as an effort to cultivate the development of the whole human being. Traditional schooling reflects the view of the child as a receiver of information; a holistic approach recognizes that to become a full person, a growing child must develop physical, psychological, emotional, interpersonal, moral, and spirited capacities. Miller identified four core qualities that define a holistic education. A holistic education encourages experimental learning, which is more meaningful to the students and matters to their lives. This type of education includes questioning, discussion, experimentation, and active engagement as opposed to the focus on grading, assessing, labeling, and comparing of students. A focus on personal relationships is another component of holistic education. Value is placed on developing a sense of community and belonging. Safety, respect, caring, and love are important components of the learning environment. A concern for the interior life of the child plays a significant role in developing the whole child. The transmission of knowledge and information is replaced by focusing on the journey and preparation inward and outward into the world. Lastly, there is a respect for diversity and an understanding that everything in the world exists in context to inclusive communities.

As a result, the Association for Supervision and Curriculum Development's (ASCD) Commission of the Whole Child worked to create a definition of the whole-child approach to education. The Commission's report, the Learning Compact Redefined: A Call to Action (Association for Supervision and Curriculum Development, 2007) pointed out that the current institutions focus on success in reading and mathematics but argued that educational experience should include more than just academic subjects. Specifically, the initiative is based on the idea that healthy kids make better students, students must feel safe and secure physically and mentally, they must be academically engaged, must feel supported by caring adults, and they must be provided rigorous curriculum that prepares them for life outside of school.

According to the Association for Supervision and Curriculum Development (2007), the whole child is intellectually active, physically, verbally, socially, and academically competent, empathetic, kind, caring and fair, creative and curious, disciplined, self-directed, and goal oriented, a critical thinker, confident, cared for and valued (p. 10). In order to help cultivate the whole child, the Association for Supervision and Curriculum Development (2008) suggested that adults in the community need to ensure that students are safe, healthy, engaged, supported, and challenged, and have access to a wide curriculum that includes fine arts, history and foreign languages.

In keeping with the idea that health affects learning, the Association for Supervision and Curriculum Development (2007) recommended that schools establish a school health advisory council including students, families, and community members, routine health screenings that include immunizations, vision, hearing, and dental concerns, physical education and health classes that encourage healthy lifetime habits, and making healthy food choices available at school.

The commission pointed out that students learn at high levels when they are healthy. Likewise, the ability to learn is affected by physical activity and metabolism. The percentage of overweight children is a public health challenge (Maddison et al., 2009) and the level of physical activity impacts all body systems, exerting powerful influences on the brain, emotional stability, physical well-being and the ability to learn. Educating the whole child means nurturing cognitive, social, emotional, and physical development of children.

Academic achievement was measured by STAAR reading, mathematics, and science test scores. The proportion of correct answers was used to measure the STAAR Reporting Category for each content area. None of the group differences was statistically significant.

What Could Have Happened?

According to the principal of the HSP school, School A, the physical education coach spearheaded the HSP program on the campus. The coach arranged for guest speakers to come in and deliver presentations on healthy lifestyles and nutritious eating during physical education classes. The coach also worked with community organizations to plant a vegetable garden in the school's field. Students were involved in planting the vegetables and maintaining the gardens. When the vegetables were ready, students worked together to harvest them and used recipes to create healthy snacks and meals with the vegetables from their garden. The principal also mentioned that in an effort to maintain their silver award status, the campus stakeholders agreed to discontinue selling snacks that were of minimal nutritious value. Fundraisers no longer included selling chocolate candy, pizza, sodas, or popcorn on campus. This was a school-wide effort to make healthy living a priority. Furthermore, he mandated that all students participate in a minimum of 20 minutes of recess each day in addition to the 45 minutes of daily physical education time. A schedule was created so that every classroom had access to the playground

and equipment at designated times and teachers were no longer allowed to withhold recess as a form of punishment for students. Every student had an opportunity for recess each day and an additional 20 minutes of physical activity built into the school day schedule.

The principal of the non-HSP school, School B, stated that the PE coach and paraprofessional were both new to the position. Guest speakers were called in to speak to the students during PE classes but School B did not participate in the HSP program's framework. Recess at School B was optional and if teachers took the students out, it was for no more than 15 minutes and mostly for the students in the lower grade levels. The older students did not participate in recess at School B. The principal of School B also mentioned that her students were deprived of PE classes once a week in favor of receiving tutoring in various topics. There was a stronger push for academic achievement than recess or PE time at School B, according to the principal. The principal stated that the students at School B participated in PE classes most of the week and spent 45 minutes engaged in physical fitness activities, pointing out that they were not kept in the classrooms all day without any type of physical movement. School B's principal felt that there was not a big difference between PE class time and recess and stated that the majority of the upper grade level teachers did not feel that recess time was necessary and would rather use that time to focus on academics in the classroom, since the students were already receiving 45 minutes of PE time on most of the days during the week.

To speculate on the outcome, a closer look at other factors that might have influenced the scores at the non-HSP school may provide additional information. Most likely, the non-HSP school received federal grant monies for additional resources to supplement the curriculum and prepare the students for the STAAR test. School B was deemed a Former Improvement Required (FIR) Campus. Campuses that earn a rating of FIR through the State Accountability

System must engage in improvement planning and continuous monitoring through the Texas Accountability Intervention System (TAIS). Campuses continue working in the TAIS the first year they earn a Met Standard state accountability rating, after being identified as Improvement Required (IR). In addition to improvement planning through the TAIS, Campus turnaround planning and implementation, hearings, increased interaction with the TEA support specialists, and assignment of monitor, conservator, or management team are also included in the school improvement plans (Texas Education Agency, 2016). As part of the state sanctions and efforts to improve student success, School B was issued a Professional Service Provider (PSP) from the state. The PSP was assigned to work with the campus leadership team to set annual and quarterly goals for student achievement and to periodically meet with the team to monitor and adjust the improvement plans as needed. It is possible that the targeted quarterly and annual goals set forth by the PSP and campus leadership team at School B contributed to the STAAR outcome measures.

Another factor that may have impacted the outcome was that as an IR school, School B was mandated by the state of Texas to go through the reconstitution process. This process consisted of each staff member reapplying and interviewing for their positions at the school. Not all teachers who applied and interviewed were hired to return to the campus. The principal of School B stated that after the reconstitution process, there were 19 new teachers on the campus replacing the former staff members. Additionally, of the teachers returning to the campus in grades 3-5, only one was previously a teacher on the campus and eight were new to the campus and the teaching profession. It is possible that the new teaching staff, most of whom were recent university graduates, implemented the latest research-based teaching methods which might have impacted the STAAR scores for School B.

The state of Texas secured a conditional waiver from the U.S. Department of Education for specific provisions of the Elementary and Secondary Education Act (ESEA), commonly known as the No Child Left Behind (NCLB) Act of 2001. Under the waiver, campuses are identified as either Priority or Focus according to Principle 2: State-Developed Differentiated Recognition, Accountability, and Support. Priority and Focus schools, with district assistance, must engage in the TAIS, which aligns to the ESEA turnaround principles through the critical success factors (CSFs). The U.S. Department of Education allowed each state's education agency to request flexibility on specific requirements of NCLB in exchange for rigorous and comprehensive state-developed plans designed to improve educational outcomes for all students, close achievement gaps, increase equity, and improve the quality of instruction. The TEA's ESEA flexibility request was approved on September 30, 2013 (Texas Education Agency, 2015).

Focus schools are Title I schools, ranked by the widest gaps between reading and mathematics performance of the federal student groups and safeguard targets of 75 percent. The federal student groups include African American, White, Hispanic, English Language Learners (ELL), Special education, Economically Disadvantage and All Student Group. Focus School status was determined by ranking all campuses by their averaged gap from the largest to the smallest. Schools with the largest averaged gap were selected as Focus Schools (Texas Education Agency, 2015). School B was identified as a Focus School and was eligible to receive additional funding, which may have impacted the outcome measures in this study. The money from the focus grant might have been used to purchase additional resources, including software and teaching materials, provide additional funding for teachers to work with struggling students after school, and hire tutors to work with small groups of students on interventions that help address areas of weakness on the TEKS. The grant funding might also have been used to

provide additional professional development to the teaching staff on the latest research-based teaching strategies and to pay for them to attend conferences or staff development from the Educational Service Center, Region 2. These additional efforts, funded through the Focus Grant, might have impacted the STAAR scores at School B. School A, also a Title 1 campus, did not qualify for the additional funding through the Focus Grant which may have been a reason for the study's outcome.

Another factor to be explored is the personnel that worked with the students at the non-HSP school. Since the non-HSP school was formerly an Improvement Required (IR) school, as well as a Focus School, the campus received focus grant monies to improve academic outcomes. It is possible that the federal grant monies were used to hire additional personnel to work with students in need of targeted interventions for achievement gaps on the TEKS. Did the use of additional resources purchased with grant monies impact the outcome? Did the additional academic support from personnel hired with federal grant monies impact the outcome? Overall, the key factors may lie in further exploration of the impact of federal grant monies that were awarded to the non-HSP school to improve academic performance and target achievement gaps with specific interventions for struggling students.

Implications

On the basis of the study's review of the literature and results and her professional experiences as an administrator, the researcher recommends the following for a meaningful design and implementation of the HSP for at-risk disadvantaged students at the elementary school level.

To establish a healthy school environment as an education priority, it is recommended to establish a team of stakeholders that includes students, staff, and community members to lead the

culture change on each campus and establish attainable goals that target improving health and nutrition education at school.

To provide healthier food options for students during the regular and extended school day and eliminating foods of minimal nutritional value from the campus, prohibiting the sale or consumption of candy, sodas, and fast food items during or after school hours is recommended. Another suggestion would be to allow each student to bring a refillable water bottle to keep hydrated throughout the school day.

To increase opportunities for students to move and play, it is recommended to offer a mandated 20 minute daily recess schedule for all students in kindergarten through fifth grade in addition to the 45 minute daily physical education classes. Extra-curricular sponsors would be paid for additional hours dedicated to developing programs such as running clubs, dance teams, and sports clubs.

To develop programs for teachers and staff to become healthy role models, removing the vending machines from the teacher's lounge and replacing the soda machines with water vending machines can be an effective strategy. Teachers must also be encouraged to participate in physical activities with their students during recess time. Community members could donate incentives for staff members to participate in healthy life-style activities that include weight loss challenges and afterschool fitness events such as Zumba, running, and coordinated sports events.

Recommendations for Further Research

The study's delimitations, limitations, and assumptions offer opportunities for further research: 1) due to the non-probability nature of sampling, external validity was limited to study participants, 2) the study was delimited to one school district in South Texas; 3) the study was delimited to two schools; 4) the study was delimited to the outcome measures of academic

achievement in reading, mathematics, and science for one grade level; 5) it was assumed that the participating HSP school followed the program accordingly. To enhance the generalization of the study's results, the researcher recommends: 1) the replication of the study in other school districts in Texas; 2) replication of the study in other grade levels; 3) replication of the study in other academic subjects; 4) replication of the study to examine academic growth from year to year; 5) replication of the study for multiple years of STAAR.

It is unlikely to be able to obtain the permission to conduct an experimental study by manipulating the HSP. If the study is going to be replicated by conducting another causal-comparative investigation, careful attention must be given in identifying the characteristic-present and comparison groups. In the current study, although the comparison group's curriculum did not include the HSP, as explained in the discussion section, it had enjoyed other factors, unknown to the researcher at the time of selecting the schools, which could have impacted the outcome measures. A comparison group must be selected from a population which is similar to the characteristic-present group except for the variable(s)/characteristic(s) that are being investigated.

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APPENDIX A

TAMUCC IRB PERMISSION

TAMUCC IRB PROTOCOL

TEXAS A&M UNIVERSITY
CORPUS CHRISTI

OFFICE OF RESEARCH COMPLIANCE
Division of Research, Commercialization and Outreach

6300 Ocean Drive, Unit 5844
Corpus Christi, Texas 78412
O 361.825.2497 • F 361.825.2755

Human Subjects Protection Program | Institutional Review Board

APPROVAL DATE:	April 29, 2016
TO:	Ms. Christina Barrera
CC:	Dr. Kamiar Kouzekanani
FROM:	Office of Research Compliance Institutional Review Board
SUBJECT:	Initial Approval
Protocol Number:	IRB # 56-16
Title:	THE IMPACT OF THE HEALTHY SCHOOLS PROGRAM ON READING, MATHEMATICS, AND SCIENCE ACHIEVEMENT OF 5TH GRADE STUDENTS: A CAUSAL-COMPARATIVE INQUIRY
Review Category:	Qualifies for Exemption

Approval determination was based on the following Code of Federal Regulations:

Eligible for Exemption (45 CFR 46.101)

Criteria for exemption has been met (45 CFR 46.101) - The criteria for exemption listed in 45 CFR 46.101 have been met (or if previously met, have not changed).

(4)Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Provisions:

Comments: The TAMUCC Human Subjects Protections Program has implemented a post-approval monitoring program. All protocols are subject to selection for post-approval monitoring.

This research project has been granted the above exemption. As Principal Investigator, you assume the following responsibilities:

1. Informed Consent: Information must be presented to enable persons to voluntarily decide whether or not to participate in the research project unless otherwise waived.
2. Amendments: Changes to the protocol must be requested by submitting an Amendment Application to the Research Compliance Office for review. The Amendment must be approved before being implemented.
3. Completion Report: Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the Research Compliance Office.
4. Records Retention: All research related records must be retained for three years beyond the completion date of the study in a secure location. At a minimum these documents include: the research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to participants, all correspondence to or from the IRB or Office of Research Compliance, and any other pertinent documents.
5. Adverse Events: Adverse events must be reported to the Research Compliance Office immediately.

6. Post-approval monitoring: Requested materials for post-approval monitoring must be provided by dates requested.

FOR COMPLIANCE OFFICE USE ONLY:	
IRB#	
Date Received:	
☐ Revision	

Application for Review of Research Involving Human Subjects
Institutional Review Board (IRB)

Texas A&M University-Corpus Christi

TEXAS A&M UNIVERSITY CORPUS CHRISTI
RESEARCH COMMERCIALIZATION OUTREACH

INSTRUCTIONS

1. Complete CITI Training
CITI training is required for all researchers and faculty advisors listed on the protocol. Completion reports DO NOT need to be sent with protocol application if CITI was completed through TAMUCC.

2. Complete Form
All sections of the form are required. The protocol review will not begin if any section is incomplete.

3. Submit Application & Completed Supplemental Documents: ***IRB protocol application forms are ONLY accepted in electronic format. Please utilize digital signatures and email form with the IRB Protocol Application Form to IRB@tamucc.edu.*** *Review of application will not begin until all required documentation is received.*

Please contact Kassandra Brown at (361)825-2892 or kassandra.brown@tamucc.edu or Erin Sherman at (361)825-2497 or erin.sherman@tamucc.edu for questions or assistance completing this application.

INVESTIGATOR INFORMATION

	Name	Email (USE TAMUCC EMAIL ADDRESS)	College	Category	Category (Other)
PI	Christina Barrera	Cbarrera5@islander.tamucc.edu	Education	Graduate Student	
Co-PI (1)	Kamiar Kouzekanani, PhD	Kamiar.Kouzekanani@tamucc.edu	Education	Faculty Adviser	
Co-PI (2)					
Co-PI (3)					
Co-PI (4)					
Co-PI (5)					

PROJECT INFORMATION

A. Research Classification: Doctoral Dissertation Other:

Please review the Human Subject Research Categories at the end of the protocol form before completing B.

B. Review Classification: Exempt (4)

Submit copies of external funding proposal with IRB protocol application, if applicable.

C. Is the project externally funded? No Funding Start Date: Funding Agency:

THE IMPACT OF THE HEALTHY SCHOOLS PROGRAM ON READING, MATHEMATICS, AND SCIENCE ACHIEVEMENT

D. Project Title: OF 5TH GRADE STUDENTS: A CAUSAL-COMPARATIVE INQUIRY

E: The starting date CANNOT be a date before IRB approval is received. If you will start as soon as approval is received, enter "Upon IRB Approval" for the starting date.
F: The completion date is an estimated date of completion. ***A Completion Report is REQUIRED at the conclusion of the project noting the actual completion date.***

E. Starting Date: Upon IRB Approval F: Estimated Completion Date: May 2017

PROJECT PURPOSE & OBJECTIVES

A. Describe Project Purpose. ***Be specific and thorough.***

The purpose of the study is to examine the impact of the Healthy Schools Program (HSP) on reading, mathematics, and science achievement of 5th grade students by testing the hypothesis that the HSP is effective in impacting academic achievement. The 5th grade is chosen because reading, mathematics, and science are tested at this grade level.

B. Describe Project Objectives and/or Research Questions. ***Be specific and thorough.***

The study is guided by the following research questions:
1. What is the impact of the Healthy Schools Program on student achievement in reading among 5th grade students in a South Texas school district?
2. What is the impact of the Healthy Schools Program on student achievement in mathematics among 5th grade students in a South Texas school district?
3. What is the impact of the Healthy Schools Program on student achievement in science among 5th grade students in a South Texas school district?

RESEARCH SUBJECTS & RECRUITMENT (Description, Source and Recruitment of Research Subjects)

A. Indicate whether the following populations will be specifically targeted for inclusion in the project. Inclusion and exclusion criteria needs to be described in detail in Section B. **Select Y or N for each participant category.**

Adults over the age of 18 (ABLE to legally consent)	Y ☐	N ☒	Prisoners (adults or juveniles)	Y ☐	N ☒
Adults over the age of 18 (UNABLE to legally consent)	Y ☐	N ☒	Participants whose first language is NOT English	Y ☐	N ☒
Individuals under the age of 18 (minors)	Y ☒	N ☐	Students enrolled in a researcher's course(s)	Y ☐	N ☒
Pregnant Women, fetuses, and/or neonates Note: Projects including this vulnerable population are *generally* health care/ medical studies specifically targeting research of pregnant women, fetuses, and/or neonates. Pregnant women can be included in projects if all inclusion criteria is met and a specific exclusion is not part of the project design. Select "No" unless the project specifically involves the inclusion of pregnant women, fetuses, and/or neonates.	Y ☐	N ☒	Employees under the direct supervision of a researcher	Y ☐	N ☒

B. Describe the inclusion and exclusion criteria that will be used to define who is included or excluded in the final participant population (ex. minimum age, grade range, physical characteristics, learning characteristics, professional criteria, etc.)

5th grade students from 2 campuses in a school district in South Texas.

C. Target number of participants (Include minimum target if a specific target is not appropriate for project design.)

Approximately 50 students from each school for a total of 100.

D. THIS SECTION MUST BE COMPLETED WHEN CONDUCTING RESEARCH AT OR RECRUITING PARTICIPANTS FROM NON-TAMUCC FACILITIES
NOTES:
1. Specifically name locations for research and/or recruitment of participants.
2. Written permission (email, letter, etc.) required for all non-TAMUCC locations. See IRB Forms website for specific permission requirements.
3. Written permission must be submitted with IRB protocol application.

☐ N/A - Not conducting research or recruiting participants from non-TAMUCC facilities

Specify location(s) of project and/or recruitment of participants.
See notes for off-campus locations above.

Corpus Christi Independent School District. Existing data will be used. No subjects will be recruited.

E. RECRUITMENT
NOTE:
Submit copies of all recruitment materials (emails, online postings, fliers, ets.) with IRB protocol application. Written scripts are needed for any verbal recruitment materials.

E(1). Describe the methods that will be used to identify pool of potential participants.

Not applicable, existing data will be used.

E(2). Describe when, where and how potential participants will be recruited.

Not applicable, existing data will be used.

E(3). Describe materials that will be used to recruit participants.
***See note above regarding submission of recruitment materials.**

Not applicable, existing data will be used.

E(4). Describe how materials to recruit participants will be distributed/how participants will be contacted (ex. online, via email, through faculty members, through a professional association, etc.). Include description of any assistance that will be needed to distribute recruitment materials (ex. listserv owners, faculty permission for classroom recruitment, etc.)

Not applicable, existing data will be used.

E(5). Describe the amount, source and timing(s) of any payment(s)/incentive(s) to participants, if applicable.

Not applicable, existing data will be used.

RESEARCH DESIGN, METHODS, & DATA COLLECTION/PROTECTION PROCEDURES

METHODS NOTE:
Submit copies of project materials with IRB protocol application (ex. survey, interview questions, data collection form, demographic questionnaire, etc.)

A. Select the appropriate description for data collection and project records below.
DEFINITIONS:
Anonymous: the collection of data in a manner where no one, including the researcher(s), will be able to identify the participant providing responses/data
Confidential: the collection of data in a manner where data may be linked to individual participants through the use of codes, audio/video recordings, or other identifiers

Anonymous

B. Describe the study design including methods and procedures step-by-step in common terminology. Describe each procedure in detail, including frequency, duration and location of each procedure. The methods must be described completely and in detail (ex. type of data collected, how data will be collected, who will conduct interaction/data collection, etc.).

*For projects with multiple participant classifications (ex. students and teachers, athletes and coaches, etc.): Describe the study design including methods and procedures step-by-step for each classification of participants.

The study utilizes an ex post facto, causal-comparative research design. The independent variable is the HSP with two levels: 1) the characteristic-present group will consist of 5th graders who utilized the HSP, 2) a sample of 5th graders who did not utilize the HSP will form the comparison group. Due to non-experimental nature of the study, no causal inferences will be drawn. The outcome measures are academic achievement in reading, mathematics, and science, as measured by the State of Texas Assessments of Academic Readiness (STAAR). Achievement in reading in 5th grade is measured by three reporting categories 1: Understanding/ Analysis across Genres; 2: Understanding/Analysis of Literary Texts; and 3: Understanding/Analysis of Informational Texts. Achievement in mathematics in 5th grade is measured by five reporting categories, 1: Numerical Representations and Relationship; 2: Computations and Algebraic Relationships 3: Geometry and Measurement; and 4: Data Analysis and Personal Financial Literacy.

Achievement in science in 5th grade is measured by four reporting categories 1: Matter and Energy; 2: Force, Motion and Energy; 3: Earth and Space; and 4: Organisms and Environments.

The study uses existing data, which will be obtained from the Texas Education Agency (TEA). The TEA has been contacted (attached).

The data will include reading, mathematics, and science test scores as well as data on age, gender, ethnicity, limited English proficiency level, and socioeconomic status of the 5th graders. The participants' names will NOT be included in the data that will be provided to the PI. Univariate and multivariate statistical techniques will be used to analyze the data and answer the research questions.

C. Describe any equipment (including audio and video equipment) utilized during the project. Note whether the equipment is owned by the researcher(s), university, or other source. Include description of how and where equipment is stored throughout the study (including any security such as password protection on equipment).

The PI's personal computer will be used to store the data and perform data analysis The computer is located at the PI's home office. The computer is kept locked and password-protected when not in use.

D. Describe data protection methods including a minimum of the following: location of data storage, methods for data protection, names of individuals who will have access to data, etc.

*For projects utilizing video and/or audio recordings: Describe, at a minimum, the methods for storage or recordings, transcription of recordings, whether recordings will be erased following transcription, etc.

The TEA will provide the PI with an electronic copy of the raw data. Both the PI and the dissertation chair will save the data in their computers. Both will also make backup copies of the data and maintain them for at least 3 years. Both computers are kept locked and password-protected when not in use.

E. Describe retention methods, including at a minimum how long project materials (including consent documents, project data, etc.) will be retained, format of storage (digital, paper, etc.), etc.

*Note: All project materials must be retained for a minimum of three years beyond the completion of the project. Completion of the project is defined as no longer collecting, using, studying or analyzing data.
***Note: Completion report must be submitted at the completion of the project. Please submit to IRB@tamucc.edu.**

All data will be stored electronically for a minimum of three years beyond the completion of the dissertation study.

RISKS & PROTECTION MEANS

A. Select all levels of risk that apply to the project. **Select Y or N for each risk category.**

No risk	Y ☒	N ☐
Minimal risk Definition: the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.	Y ☐	N ☒
Greater than minimal risk	Y ☐	N ☒

B. Describe each potential risk and the steps taken to protect human subject participants from the risk (ex. breach of confidentiality, possibly injury, psychological distress, pressure to conform, pressure to participate/coercion, etc.). Consider physical, psychological, social, legal and economic risk.

	Risk	Protection Mechanism
1.		
2.		

	Risk	Protection Mechanism
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

C. Describe the protection means specifically and how participants will be provided information regarding and gain access to any necessary outside assistance (ex. medical care, counseling, etc.) if available.

Not applicable, existing data will be used.

BENEFITS

A. Describe the potential benefits individual participants may experience from taking part in the research, or note no potential benefits to individual participants. *Benefits DO NOT include payments/incentives for participation. See research subjects section for payments/incentives.*

There are no direct benefits to the participants whose already collected data will be used for the purpose of the study.

B. Describe the potential benefits to society, others and/or generalizable knowledge.

Results of the study will be used to examine the relationship between Healthy Schools Program and academic achievement, which may be of practical importance to educators and other concerned individuals.

INFORMED CONSENT PROCESS

CONSENT METHODS NOTE
Submit copies of all consent forms with IRB protocol application (ex. information sheet, online consent, signed consent, assent, parental consent, translated consents, etc.view questions, data collection form, demographic questionnaire, etc.)

A(1). Is a waiver of signed informed consent requested *(ex. information sheet, online consent, etc.)*? **Select Y or N for waiver of signed consent.**	Y ☐	N ☒	**A(2).** If yes, select the appropriate criteria from description at end of IRB protocol form.	C

B. Describe methods for obtaining informed consent from human subject participants.

Be specific and thorough. At minimum, describe how researcher(s) will gain access to participants, how participants will be provided the consent documentation, in what format the consent will be provided, any discussion that will take place with participants, and methods of communication utilized to keep participants aware of their rights throughout the study, if applicable.

Note:
(1) Participants must be given time to review the consent/informational documents and ask questions.
(2) Projects involving minors must include parental consent and a separate assent written at a level appropriate to the age group of participants. Parental consent must be available in English and Spanish when the possibility exists that English may not be the first language of parents/guardians.
(3) Information sheets should be utilized for exempt studies in which the only record of participants would be signed consent forms.
(4) The online consent template should be utilized as a guide for online survey consent.

Not applicable, existing data will be used.

INVESTIGATOR(S) QUALIFICATIONS

A. Describe qualifications or attach CVs/resumes of ALL researchers and faculty advisers to conduct human subjects research.

The PI is a doctoral student at TAMUCC and has already completed the on-line CITI course on the protection of human research participants. The Co-PI is the faculty adviser and the dissertation committee chair; he is a professor of Quantitative Methods at TAMUCC.

SIGNATURES: INVESTIGATOR(S) RESPONSIBILITIES & CONFLICT OF INTEREST CERTIFICATION

RESPONSIBILITIES:
By complying with the policies established by the Institutional Review Board of Texas A&M University-Corpus Christi, the principal investigator(s) subscribe(s) to the principles stated in "The Belmont Report" and standards of professional ethics in all research, development, and related activities involving human subjects under the auspices of Texas A&M University-Corpus Christi. The principal investigator(s) further agree(s) that:

A. An amendment will be filed for review and approval will be received from the Institutional Review Board before making ANY changes are made in this research project.
B. Any adverse event will be immediately reported to the Institutional Review Board.
C. A continuation will be approved for expedited and full review studies BEFORE the protocol approval expiration date. The study will CEASE once approval expires unless a continuation is approved.
D. Signed informed consent documents and all project records will be kept for the duration of the project and for at least three years after the completion of the project at a location approved by the Institutional Review Board and as described in the protocol.

CONFLICT OF INTEREST:
All Principal Investigators and Co-Investigators must certify the Conflict of Interest Statement below and comply with the conditions or restrictions imposed by the University to manage, reduce, or eliminate actual or potential conflicts of interest or forfeit IRB approval and possible funding. This disclosure must also be updated annually (for expedited and full board reviews)when the protocol is renewed.

Carefully read the following conflict of interest statements and check the appropriate box after considering whether you or any member of your immediate family* have any conflicts of interest.

*Immediate family is considered to be a close relative by birth or marriage including spouse, siblings, parents, children, in-laws and any other financial dependents.

Financial conflicts of interest include:

a) A financial interest in the research with value that cannot be readily determined;
b) A financial interest in the research with value that exceeds $5,000.00;
c) Have received or will receive compensation with value that may be affected by the outcome of the study;
d) A proprietary interest in the research, such as a patent, trademark, copyright, or licensing agreement;
e) Have received or will receive payments from the sponsor that exceed $5,000.00 in a specific period of time;
f) Being an executive director of the agency or company sponsoring the research;
g) A financial interests that requires disclosure to the sponsor or funding source; or
h) Have any other financial interests that I believe may interfere with my ability to protect participants.

PROVIDE DETAILS AS ATTACHMENT FOR ANY NON-FINANCIAL CONFLICT OR FINANCIAL CONFLICT OF INTEREST RELATED TO THIS PROJECT.			
ALL INVESTIGATOR(S) AND ADVISOR(S) MUST SIGN THE PROTOCOL AND IDENTIFY WHETHER A FINANCIAL CONFLICT OF INTEREST EXISTS. The Principal Investigator should save a copy of the IRB Protocol Form after emailing the form to the Office of Research Compliance for review. Type the name of each individual in the appropriate signature line. Add additional signature pages if needed for all Co-Principal Investigators, collaborating and student investigators, and faculty advisor(s).			
	Typed Name	Conflict of Interest (SELECT ONE)	Date
PI	Christina Barrera	No conflict of interest with this proje	
	PI Signature:	christina.barrera@ccisd.us Digitally signed by christina.barrera@ccisd.us DN: cn=christina.barrera@ccisd.us Date: 2016.04.15 14:40:13 -05'00'	
Co-PI (1)	Kamiar Kouzekanani	No conflict of interest with this proje	
	Co-PI (1) Signature:	Kamiar Kouzekanani Digitally signed by Kamiar Kouzekanani Date: 2016.04.13 13:03:20 -05'00'	
Co-PI (2)			
	Co-PI (2) Signature:		
Co-PI (3)			
	Co-PI (3) Signature:		
Co-PI (4)			
	Co-PI (4) Signature:		
Co-PI (5)			
	Co-PI (5) Signature:		

Human Subject Research Categories

Please Note

The following types of studies do not qualify for exempt reviews and are subject to expedited or full reviews:

1) Studies involving a faculty member's current students
2) Studies involving the following and similar sensitive subject matters which can potentially cause discomfort and stress to the participant: Abortion, AIDS/HIV, Alcohol, Body Composition, Criminal Activity, Psychological Well-being, Financial Matters, Sexual Activity, Suicide, Learning Disability, Drugs, Depression

Studies involving audio taping and/or videotaping *DO NOT* qualify for exempt review.

Exempt Review Categories

1) Research conducted in established or commonly accepted educational settings, involving normal education practices, such as (i.) research on regular and special education instructional strategies, or (ii.) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless (i.) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii.) any disclosure of human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview

procedures, or observation of public behavior that is not exempt under the previous paragraph, if (i.) the human subjects are elected or appointed public officials or candidates for public office; or (ii.) federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

5) Research and demonstration projects that are conducted by or subject to the approval of federal department or agency heads, and that are designed to study, evaluate, or otherwise examine (i.) public benefit or service programs (ii.) procedures for obtaining benefits or services under these programs (iii.) possible changes in or alternatives to those programs or procedures; or (iv.) possible changes in methods or levels of payment for benefits or services under those programs

6) Taste and food quality evaluation and consumer acceptance studies (i.) if wholesome foods without additives are consumed or (ii.) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture

Expedited Review Categories

(1) Clinical studies of drugs and medical devices only when condition (a) or (b) is met.
   a. Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review.)
   b. Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/ approved labeling.

(2) Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows:
   a. from healthy, nonpregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or
   b. from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

(3) Prospective collection of biological specimens for research purposes by noninvasive means.
Examples: (a) hair and nail clippings in a nondisfiguring manner; (b) deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction; (c) permanent teeth if routine patient care indicates a need for extraction; (d) excreta and external secretions (including sweat); (e) uncannulated saliva collected either in an unstimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue; (f) placenta removed at delivery; (g) amniotic fluid obtained at the time of rupture of the membrane prior to or during labor; (h) supra- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques; (i) mucosal and skin cells collected by buccal scraping or swab, skin swab, or mouth washings; (j) sputum collected after saline mist nebulization.

(4) Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/ approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications.)

Examples: (a) physical sensors that are applied either to the surface of the body or at a distance and do not involve input of significant amounts of energy into the subject or an invasion of the subject's privacy; (b) weighing or testing sensory acuity; (c) magnetic resonance imaging; (d) electrocardiography, electroencephalography, thermography, detection of naturally occurring radioactivity, electroretinography, ultrasound, diagnostic infrared imaging, doppler blood flow, and echocardiography; (e) moderate exercise, muscular strength testing, body composition assessment, and flexibility testing where appropriate given the age, weight, and health of the individual.

(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis). (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(4). This listing refers only to research that is not exempt.)

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b) (2) and (b)(3). This listing refers only to research that is not exempt.)

(8) Continuing review of research previously approved by the convened IRB as follows:
a. where (i) the research is permanently closed to the enrollment of new subjects; (ii) all subjects have completed all research-related interventions; and (iii) the research remains active only for long-term follow-up of subjects; or
b. where no subjects have been enrolled and no additional risks have been identified; or
c. where the remaining research activities are limited to data analysis.

(9) Continuing review of research, not conducted under an investigational new drug application or investigational device exemption where categories two (2) through eight (8) do not apply but the IRB has determined and documented at a convened meeting that the research involves no greater than minimal risk and no additional risks have been identified.

Criteria for Waiver of SIGNED Consent

(c) An IRB may approve a consent procedure which does not include, or which alters, some or all of the elements of informed consent set forth above, or waive the requirement to obtain informed consent provided the IRB finds and documents that:
(1) The research or demonstration project is to be conducted by or subject to the approval of state or local government officials and is designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs; **and**
(2) The research could not practicably be carried out without the waiver or alteration.

(d) An IRB may approve a consent procedure which does not include, or which alters, some or all of the elements of informed consent set forth in this section, or waive the requirements to obtain informed consent provided the IRB finds and documents that:
(1) The research involves no more than minimal risk to the subjects;
(2) The waiver or alteration will not adversely affect the rights and welfare of the subjects;
(3) The research could not practicably be carried out without the waiver or alteration; and
(4) Whenever appropriate, the subjects will be provided with additional pertinent information after participation.