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by

Jon R. Gray, M.D.

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**The Capstone Committee for Jon Roger Gray Certifies that this is the approved
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**Survey of Obesity Related Programs
In Galveston County Public Schools: A Pilot Study**

Committee:

Laura Rudkin, Supervisor

Dana Beckham, Co-Supervisor

Elizabeth Reifsneider

Dean, Graduate School

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In Galveston County Public Schools: A Pilot Study

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Jon R. Gray, M.D.

Capstone

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Dedication

I would like to dedicate this project to my amazing and wonderful wife, Diane. Her support and encouragement have always and will always inspire me to be a better man.

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I would like to acknowledge and thank my Capstone committee for their time, direction, and insight. Your experience, knowledge and professionalism are of a caliber I hope to achieve someday.

Survey of Obesity Related Programs
In Galveston County Public Schools: A Pilot Study

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Jon R. Gray, MD, MPH
The University of Texas Medical Branch, 2008

Supervisor: Laura Rudkin

Childhood and adolescent obesity has developed into a major public health concern in the United States. The overweight and obesity rates of our children continue to rise and have been increasing dramatically for over 40 years. The rising health concerns coupled with alarming increases in health care expenditures related to obesity has caused the government to take action. The goal of this Capstone is twofold: The first is to determine what the minimal requirements for public school programs related to obesity are as set by Texas State Law. The second is to explicate what the select population of Galveston County schools of interest is actually doing. Programs that will be included are those related to physical activity, physical and health education and nutrition. By identifying and cataloging current program use and implementation as well as examining laws and their execution in the population of interest, determinations can be made regarding efficacy of these statutes and programs as they pertain to obesity in school-aged children.

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CHAPTER 1: INTRODUCTION

The public health community is facing a growing epidemic arguably larger than has been seen before. This epidemic is the marked and continuous rise in childhood and adolescent obesity in the United States (CDC, 2007b). The current and future burden of this problem is extreme and impacts the core of public health. Increasing rates of obesity in school-aged children have prompted the United States and Texas state governments to enact laws pertaining to this health concern. These laws mandate the minimum requirements that public schools must implement and to which they must adhere. Relevant laws address all programs related to obesity, physical education, physical activity, and nutrition. Further study is necessary to determine what these laws are, if schools are implementing and enforcing these laws, and if the laws and programs in question are sufficient to halt and reverse obesity in children and teenagers.

A. SPECIFIC AIMS:

Because this is a pilot project, the ultimate goal will be to establish a current and accurate database of regulations regarding obesity and a catalog of what programs Galveston County is currently utilizing within its schools. Gathering information about every program in Galveston is beyond the scope of this project. Therefore, the author will have two specific aims for this Capstone. The first aim will be to determine the actual minimum requirements pertaining to obesity that the federal government and the state of Texas have mandated. This will include all laws and regulations that public schools must abide by related to the subjects of physical activity, physical education,

nutrition, and obesity. The second specific aim will be to select an appropriate survey tool and begin to gather initial data to assess what programs the selected population of Galveston County schools is implementing. It will also be determined if these programs are being enforced as well as which of these schools are meeting or exceeding the standards set forth by law. The information gained from this pilot project can be utilized as a basis for further study. This will also provide a sturdy foundation of information that can be later developed and examined by the Galveston County Health District (GCHD) and its officials. Furthermore, GCHD will then have the fruitful opportunity to examine the efficacy of these laws and programs and be able to determine if the current minimum standards in place are indeed sufficient for the overarching public health concern of obesity among our children and teenagers.

B. BACKGROUND:

The term obesity has become commonplace in the lexicon of the American public. Obesity refers to a condition in the human body where fatty reserves, or adipose tissue, exceed what is considered a healthy limit (Mokdad, et al., 1998). Adipose tissue is commonly referred to as body fat. It is important to identify the difference between terms when referring to obesity. The term overweight is also commonly used. This term, however, refers simply to weighing too much in pounds, and has no relationship to the amount of body fat an individual is carrying on their person (Mokdad, et al., 1998). Being overweight, regardless of body fat levels and percentages does carry associated health risks along with it (Mokdad, et al., 2001). Another term used to differentiate being obese from overweight is “over-fat”. Lastly, Body Mass Index or, BMI, has become used in medicine and will be discussed in the following paragraph. The amount of body fat

and therefore the term obesity will be used subsequently by this author. Figure 1 illustrates a Magnetic Resonance Imaging (MRI) study of a morbidly obese individual where adipose tissue and muscle tissue are apparent in white and red colors, respectively (Metafilter, 2008). Additionally, a significant amount of visceral adipose tissue covering the internal organs is evident.



Figure 1: MRI of Obesity (Metafilter, 2008)

The term Body Mass Index, or BMI, has become an accepted measure of obesity in the medical and research arenas (Appels, et al., 2006). BMI is a mathematical equation that relates a person's height to their weight, and was developed in the 1800's by a Belgian scientist named Adolphe Quetelet (Ciccarelli, et al., 2000). It is calculated by dividing an individual's weight in kilograms by their height in meters squared. A series of charts have been developed that allows one to plot their height and weight and arrive at their BMI. This number extends from 18.5 to 40 with numerical ranges of less than 18.5 as underweight, 18.5 to 25 as normal weight, 25 to 30 as overweight, 30 to 40 as obese and more than 40 as morbidly obese (CDC, 2007a). Many critics of the usage of BMI argue that it is an unreliable measure of obesity because it doesn't take into account a person's lean body mass such as muscle and bone. Moreover, the use of BMI in children is controversial because of vastly different rates and ages of growth spurts and ethnic and racial differences in frame size, muscularity, and body composition (Engelmann, et al., 2004). BMI is used slightly differently in children as well. It is calculated identically but it is then compared to typical values for other children of the same age. This results in percentiles where less than the 5th percentile is underweight and more than the 95th percentile is considered overweight. Despite these contentions, use of the Body Mass Index has become common and it is reliable as a screening tool for child and adolescent obesity (Appels, et al., 2006).

Obesity is the result of a physiological energy surplus that occurs within our bodies (Daniels, et al., 2005). The energy a human uses is designated as Calories. One Calorie is the metric unit of energy that is required to raise one kilogram of water one degree Celsius (Daniels, et al., 2005). We make use of this energy to eat, breathe, move,

and even move our eyes as we read. The food we eat contains Calories that provide energy for every activity. The sum of all the energy expended by a human over a certain amount of time is termed our metabolism (Daniels, et al., 2005). When more energy is consumed than is expended, the end result is storage of this energy in the form of adipose tissue. Everyone has some adipose tissue; in fact, a certain amount is necessary for proper physiological functioning. This tissue is required to cushion internal organs from damage, for creation and sustainment of hormones, as well as regulation of body temperature (Daniels, et al., 2005). It is only when body fat exceeds healthy limits that we become concerned and a myriad of health problems become apparent.

Obesity has become a major health concern and target of intervention by federal and state level government. This concern is especially evident for school-aged children given the dramatic rise in the prevalence of obesity among children coupled with the burgeoning costs of obesity-related health care (Ogden, et al., 2002). While many regulations have been mandated, there is a paucity of resources available to develop, implement and enforce them. This Capstone will elucidate how these policies and their usage by the public school system affect behaviors and subsequent health outcomes as well as the role that schools play in the development and sustainment of obesity.

C. SIGNIFICANCE:

The term epidemic is outdated when referring to obesity in America. An epidemic exists when a disease occurs in greater numbers than is expected (CDC, 2007b). Unfortunately, obesity is becoming more normative in our country and I would contend that obesity has become endemic. That is, obesity is now expected and is maintained

despite no further insults, inputs or perturbations attributable to the disease (CDC, 2007b). Much as the Human Immunodeficiency Virus (HIV) has become endemic to Sub-Saharan Africa, obesity has become endemic to the United States (CDC, 2007b).

Obesity has spread globally with more than 1 billion people across the planet classified as overweight and over 300 million classified as obese (WHO, 2008). The increases are seen in both industrialized and developing nations and in men, women and children. The United States has become one of the most obese countries on the planet and the most obese developed nation in the world with only a handful of countries such as Malta, The Cook Islands and Samoa topping our overweight and obesity prevalence rates (WHO, 2008). In America there are approximately 200 million overweight and 100 million obese individuals in our population (CDC, 2007a). The National Health and Nutrition Examination Survey (NHANES) is a survey conducted by the National Center for Health Statistics (NCHS) and provides a snapshot of the health and nutrition of the U.S. population (CDC, 2008). NHANES is the only national survey that collects extensive health information from both face-to-face interviews and medical examinations and provides unique opportunities to study major nutrition, infection, environmental and chronic health conditions in the U.S. (CDC, 2008). Table 1 utilizes the NHANES and further delineates the trend of overweight and obese adults in the United States from 1976 to 2004.

The trends in overweight and obesity are similarly dismal for children and adolescents, the target population of this Capstone. This epidemic is occurring in boys and girls in all 50 states, in younger children as well as adolescents, across all socio-

	NHANES II 1976-80	NHANES III 1988-94	NHANES 1999-2000	NHANES 2001-02	NHANES 2003-04
Overweight or obese (BMI greater than or equal to 25.0)	47.0	55.9	64.5	65.7	66.2
Obese (BMI greater than or equal to 30.0)	15.0	23.2	30.9	31.3	32.9

Table 1: Age-adjusted prevalence of overweight and obesity in US adults (expressed in percentages) CDC, 2007a

economic strata, and among all ethnic groups, though specific subgroups including African Americans, Hispanics, and American Indians are disproportionately affected (Ogden, et al., 2002; Caballero, et al., 2003). Over the past four decades, since the 1970's, the prevalence of childhood obesity has more than doubled for preschool children age 2-5 years and adolescents aged 12-19 years, and it has more than tripled for children aged 6 to 11 years (Ogden, et al., 2002). Overall, 25% of children in the US are overweight and 11% are obese (Dehghan, et al., 2005). This prevalence means a total of over 12 million overweight and obese children in the United States (Dehghan, et al., 2005). Major concerns have arisen because numerous studies have also shown that obese children have a significantly elevated risk of becoming obese adults (CDC, 2007b; Parsons, et al., 1999). The old adages that children often grow out of "baby fat" or the act of slimming down as a teenager no longer seem to apply. Of additional concern is the fact that childhood obesity affects mortality and morbidity rates as adults (Dietz, 1998). Table 2 further delineates the trend of overweight and obese children and adolescents in the United States from 1963 to 2002.

Age (years)	NHANES 1963-70	NHANES 1971-74	NHANES 1976-80	NHANES 1988-94	NHANES 1999-2002
6-11	4.0	4.0	7.0	11.0	16.0
12-19	5.0	6.0	5.0	11.0	16.0

Table 2: Prevalence of overweight and obesity in US children and adolescents (expressed in percentages) CDC, 2007b

Concern about these trends is warranted as obesity leads to an elevated risk of a wide array of health problems (Scott, et al., 2002). These problems include, but are not limited to, heart failure, hypertension, osteoarthritis (a degeneration of cartilage and its underlying bone within a joint), dyslipidemia (such as high total cholesterol or high levels of triglycerides), type II diabetes, coronary heart disease, stroke, gallbladder disease, sleep apnea and respiratory problems, endometrial, breast, and colon cancer, gout, fatty liver disease, chronic venous insufficiency, depression, low self esteem, poor body image, anxiety disorders, and even suicide (Dietz, 1998).

Health-related quality of life (QOL) refers to the subset of QOL indicators directly related to an individual's health, which as defined by the World Health Organization includes physical, mental, and social well being (WHO, 2008). Obese children and adolescents also have a markedly decreased health-related quality of life as compared with their healthy weight peers and a quality of life that is similar to children with cancer (Schwimmer, et al., 2003).

While the physical and mental health deficits experienced by overweight children and teenagers warrants decisive intervention and action, the economic burden of obesity lends further credence to this end. This consists of health care costs but also extends well

beyond the walls of our hospitals including the value of income lost from decreased productivity, restricted activity, absenteeism, and bed days (Wolf and Colditz, 1996). The overall economic burden of obesity in the United States has now exceeded \$100 billion dollars annually of which, approximately \$52 billion are direct costs of healthcare (Hossain, 2007). These costs amount to approximately 5.7% of all US health expenditures (Hossain, 2007). The cost of lost productivity in America due to obesity is approximately \$3.9 billion, and another \$33 billion is spent annually on weight-loss products and services (Wolf and Colditz, 1996).

Some contend that the cause of this global pandemic of obesity is unknown. Countless uninformed others tout erroneous reasons as the cause for these increases in incidence and prevalence such as genetics (Neiman, 2004). While genetics may predispose one to obesity, it is certainly not the cause of this epidemic. Over the past 20 years, however, researchers have begun to identify key factors that contribute to making our children overweight and to suggest what we can do to tackle this disease. There also exists information describing how our schools and school systems may be both culpable contributors to the causes of childhood obesity and an effective target of opportunity for intervention and change (Stice, et al., 2006).

In 2000, there were 53.2 million students enrolled in schools in the United States (United States Census Bureau, 2006). During the decades of the 1950s and 1960s, snacking during school was a carefully monitored milk break, with rancorous debates about whether chocolate milk should be allowable. Lunches at school were prepared on the premises and students were offered little choice (Richards, 2004). The meals were designed by dieticians to be well balanced and healthy and children were given fixed

portions (Richards, 2004). Currently many schools have commercial vending machines with unhealthy snack options and high-sugar drinks and sell fast food and other unhealthy items in the cafeteria. To complicate the situation, at the same time as fast food and soft drinks invaded schools, physical education and activity or even recess time was sharply truncated or eliminated altogether for a large number of students (Richards, 2004). While legislatures have taken aim to correct these problems, the efforts are often misguided and do not speak to the actual root cause of the problem (Richards, 2004).

As in many organizations, businesses and government entities, the final deciding factor is money or more precisely, a lack of money. Public schools are often severely underfunded, especially in poor neighborhoods where obesity has the highest incidence (Richards, 2004). Fast food giants and soft drink companies pay these underfunded schools a significant amount of desperately needed money for contracts and exclusivity to peddle their unhealthy products. Additionally, many schools function with student populations far exceeding their capacity limiting adequate food options without expansive and costly cafeteria renovations (Richards, 2004). These factors have paved the way for prepackaged foods and a dramatic increase in outside vendors. Lastly, this overcrowding has made the implementation and sustainment of physical activity difficult. Coupled with ubiquitous staff reductions, and therefore decreased educator to student ratio, these agreements may save money and help augment the bottom line but have served to neglect the long-term health and well being of our children.

The trends described above have permeated into Texas and likely apply to Galveston County as well. The Galveston County Health District wants to increase their fund of knowledge so they can initiate projects to halt and reverse these trends.

CHAPTER 2: DATA AND METHODS

To conduct this Capstone, data were collected in two manners. The first was a comprehensive and thorough literature review that spanned the topics of federal and state legislature as well as obesity and the second was gathering primary information via utilization of the selected survey tool with chosen school officials. Both methods will be explained in further detail in this chapter. It should be noted that because this Capstone is a pilot study, a limited amount of data were collected for the second specific aim. This Capstone was completed in conjunction with the GCHD. Childhood and adolescent obesity within Galveston County has been raised as serious public health threat and therefore become a target of intervention by the GCHD. The goals of the GCHD were therefore prioritized and are clearly stated in the specific aims of this Capstone.

To speak to the first specific aim of this project, there is not one universally utilized or accepted, specific and concise database that addresses minimum requirements that Texas public schools must adhere to in relation to childhood and adolescent obesity. The author used standard web searches with Google, America Online, Wikipedia and Yahoo with the following keywords and combinations of these keywords: obese, obesity, overweight, childhood, adolescent, school, public, legislature, law, mandate, Texas, education, nutrition, physical activity, physical education, vending machines, competitive foods, and meal programs. The author also specifically searched the United States Department of Education, the United States Department of Agriculture, the Texas Education Agency, the World Health Organization, the Centers for Disease Control and Prevention and 80th Legislature Regular Session of Texas Legislature Online.

To complete the second aim of this Capstone, an adequate tool to assess the school population of interest needed to be carefully selected. The School Health Index (SHI) that was developed by the CDC was the instrument chosen because of its thoroughness and breadth as well as its modular nature and therefore adaptability to this Capstone. Moreover, it was chosen because of a history of successful utilization as demonstrated in studies by Staten et al. in 2005 and Brener et al. in 2006. The CDC developed the SHI in January of 2005 with the premise that student health and safety are greatly influenced by the entire school environment (CDC, 2006). It is an eight-module tool that may be utilized online or in paper format that assesses “best practices” schools should be undertaking for complete health and safety of students. The eight modules are: School Health and Safety Policies and Environment, Health Education, Physical Education and Other Physical Activity Programs, Nutrition Services, School Health Services, School Counseling, Psychological, and Social Services, Health Promotion for Staff and Family and Community Involvement. Because of the comprehensive features of the SHI and the specific goals of this project, only four modules were utilized. These included the Health Education module, Physical Education and Other Physical Activity Programs module, Nutrition Services module, and the Health Promotion for Staff module. While all of the modules are essential for total health and safety of school children, this author concluded that those pertaining to topics such as safety, tobacco and alcohol use and sexually transmitted diseases were beyond the scope of this project. The SHI was designed to be utilized by a team consisting of representatives from different groups within the school including parents, teachers, students, administrators, other staff members, and concerned community members (CDC, 2006). The SHI is available in two

slightly different versions. One version is for grade schools and the other is for both middle and high schools. The appropriate SHI was delivered to each school based on the grade level of its attending students. A copy of each of the four modules used in this Capstone is presented in Appendix A.

Because of the large number of schools in Galveston County, a smaller population was selected to adequately represent each school district within the County. The schools that were chosen were one grade school, one middle school and one high school from the following Independent School Districts (ISD): Clear Creek, Dickinson, Friendswood, Galveston, Hitchcock, La Marque, Santa Fe and Texas City. The most populous school in each category (grade, middle or high school) was the one selected. If school grades were separated non-traditionally, such as schools with only 5th and 6th grade students, additional schools were added so that all grades from 1 through 12 were represented. The entire school list totaled 29 locations and is presented in Appendix B.

The context of this study is all Galveston County schools, however, the schools chosen adequately represent the entire population of schools. Specific information about the selected school districts is included in Appendix C. It should be noted that there is considerable socioeconomic and ethnic diversity within Galveston County. This is an interesting framework to explore what is being done to prevent childhood obesity in a geographic area with a broad spectrum of types and availability of resources.

After selecting the SHI and the appropriate modules to assess the chosen population of schools, points of contacts were identified at each institution. E-mails were sent to the eight superintendents of each school district; however, several “undeliverable notifications” were returned electronically. After not receiving responses via email, eight

letters were sent to the same individuals also with no response. Additional emails were composed to school nurses, school principals and assistant principals. Schools that had not replied to one of the previous communication attempts were then physically visited in order to complete the SHI in person or schedule appointments with appropriate administrators to complete the forms. Finally, copies of the SHI, thorough instructions on how to complete the tool, and fax, email, and telephone information of the author and supervisor of this Capstone were distributed via email to the principals of each school with the assistant principal “carbon copied”.

CHAPTER 3: RESULTS

Results for the first specific aim will be presented in narrative and table format. Because this is a pilot study, the results for the second specific aim were completed with as much information as the author could gather given the allotted timeframe. This pilot data will assist the researcher that decides to continue this project and serves as a launching point to assemble information from the remaining schools that have not yet contributed via the SHI. While the information presented here will assist the Galveston County Health District in its goal of providing unparalleled public and community health to its constituents, the full benefits cannot be realized until all of the schools selected have completed their assessments.

A. FEDERAL AND STATE LEGAL REQUIREMENTS:

The legal requirements that have recently been put into place regarding obesity in our public schools are vast and cover a range of topics. Table 3 was assembled by the American Academy of Pediatrics and includes state-by-state legislation that had been enacted as of 2007 for the Childhood Obesity Prevention Program (AAP, 2007). This represents federal legislature and illustrates what is currently being done on a national level. For the purposes of this Capstone, Texas legislation will be further explored and discussed in the following paragraphs. For consistency with the goals of this Capstone and easier assimilation topics will be presented in the following categories: Nutrition, Physical Activity and Physical Education, and Obesity-Related Screening.

Childhood Obesity Prevention					
STATE	ADDRESSES SCHOOL NUTRITION	ADDRESSES PHYSICAL ACTIVITY	ESTABLISHES STATE TASK FORCE	MANDATES BMI SCREENING	MANDATES OBESITY TREATMENT COVERAGE
Alabama	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Alaska					
Arizona	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Arkansas	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
California	<input checked="" type="checkbox"/>				
Colorado	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
Connecticut	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Delaware			<input checked="" type="checkbox"/>		
Dist. of Columbia					
Florida	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Georgia					<input checked="" type="checkbox"/>
Hawaii					
Idaho					
Illinois	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Indiana	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
Iowa					
Kansas	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Kentucky	<input checked="" type="checkbox"/>				
Louisiana	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Maine	<input checked="" type="checkbox"/>				
Maryland	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
Massachusetts					
Michigan					
Minnesota					
Mississippi		<input checked="" type="checkbox"/>			
Missouri				<input checked="" type="checkbox"/>	
Montana		<input checked="" type="checkbox"/>			
Nebraska					
Nevada			<input checked="" type="checkbox"/>		
New Hampshire		<input checked="" type="checkbox"/>			
New Jersey					
New Mexico	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
New York	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
North Carolina	<input checked="" type="checkbox"/>				
North Dakota		<input checked="" type="checkbox"/>			
Ohio					
Oklahoma	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Oregon					
Pennsylvania	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Rhode Island	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
South Carolina	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
South Dakota					
Tennessee	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Texas	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Utah	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Vermont	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Virginia			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Washington	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
West Virginia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Wisconsin					
Wyoming				<input checked="" type="checkbox"/>	
TOTAL	27	24	12	7	4

STATE
GOVERNMENT
AFFAIRS

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN

Table 3: Enacted state legislature for Childhood Obesity Prevention, AAP, 2007

The laws regarding nutrition in Texas public schools are promising. In 2004, the Texas Department of Agriculture (TDA) implemented a very restrictive policy on foods that students receive during school (TDA, 2004). This new policy has been assertively enforced and any schools that have been found in violation of the new rules will lose a day of meal reimbursement funds from the state and will be required to reimburse the food service account for the lost reimbursement (TDA, 2004). The policy covers topics such as foods of minimal nutritional value (FMNV), candy, soft drinks and also foods known as “competitive foods” which are any foodstuffs not provided by official school food services. Additionally, the macronutrient ratio, strictly the number of fat and sugar grams, is limited weekly as is portion size of unhealthy items during meals (TDA, 2004). The policy does allow for certain events such as pizza parties, school birthday parties and classroom snacks through firm exemptions. While the entire Texas Public School Nutritional Policy is available online, Table 4 underscores the most important and poignant highlights of the policy (TDA, 2004). Table 5 expounds on the most important Nutrition Policy Exemptions.

The nutrition policy also provides suggestions and details for healthy snack alternatives such as fruit juice, fruit smoothies, non-fat or low-fat plain or flavored milk, bagel halves, graham crackers, animal crackers, wheat crackers, whole wheat English muffins, flavored rice cakes and mini rice cakes, fig bars, low-fat fruit or grain muffins, individual servings of dry cereal, pretzels, baked tortilla chips with salsa, vanilla wafers, fresh seasonal fruit, carrots, broccoli, cauliflower with low-fat dip or salad dressing, fruit snacks, low-fat string cheese, fruit or grain bars, frozen fruit bars, 94 percent fat-free

popcorn, fruit, nut and/or grain trail mixes, peanut butter and crackers and corn on the cob with paprika or chili powder (TDA, 2004).

POLICY	Elementary Schools (a campus containing a combination of grades early elementary to 6)	Middle/Junior High Schools (a campus containing grades 6, 7 and 8; grades 7 and 8; or grades 7, 8 and 9)	High Schools (a campus containing a combination of grades 9, 10, 11 and 12)
FMNV Soda water Water ices Chewing gum Certain candies	Not allowed at any time during the school day. (certain exemptions are allowed for school nurses, students with special needs and up to three school-wide events pre-approved by campus officials)	Not allowed until after the last lunch period. (certain exemptions are allowed for school nurses, students with special needs and up to three school-wide events pre-approved by campus officials)	Not allowed during meal periods in areas where reimbursable meals are served and consumed.
CANDY (including candy bars and packaged candies not included as FMNVs)	Not allowed at any time during the school day. (certain exemptions are allowed for students with special needs and up to three school-wide events pre-approved by campus officials)	Not allowed until after the last lunch period. (certain exemptions are allowed for students with special needs and up to three school-wide events pre-approved by campus officials)	Allowed.
CARBONATED BEVERAGES	Not allowed at any time during the school day.	Not allowed until after the last lunch period.	Sugared, carbonated beverages cannot be sold in containers larger than 12 oz. and are not allowed during meal periods in areas where reimbursable meals are served and consumed. By the 2005-06 school year, no more than 30 percent of beverages in vending machines should be sugared, carbonated drinks.
COMPETITIVE FOODS (all food and beverages that are not provided by school food service)	Not allowed at any time during the school day. (see exemptions)	Not allowed during meal periods.	Not allowed during meal periods in areas where reimbursable meals are served and consumed.

Table 4: Texas Public School Nutrition Policy Highlights, TDA, 2004

Nutrition Policy Exemptions

Where & When	Nutrition Policy
Classroom birthday parties	Foods otherwise restricted by the policy are permitted at student birthday parties. It is recommended that such parties be scheduled after the end of the last lunch period so that these celebrations will not replace a nutritious lunch.
Pizza parties, etc.	With the exception of school birthday parties, schools may not allow alternative meals (pizza, BBQ, sandwiches, etc.) to be provided to students in competition with meals made available by the school food service department under the National School Lunch and School Breakfast Programs. However, such items may be provided if they are supplemented with additional food provided by food service to become a reimbursable meal. This allows the addition of fruits and vegetables for a complete nutritious meal, as well as providing federal reimbursement funds to the school.
School Events	Students may be given FMNV, candy items or other restricted foods during the school day for up to three different events each school year to be determined by campus. The exempted events must be approved by a school official. During these events, FMNV may not be given during meal times in the areas where school meals are being served or consumed, and regular meal service (breakfast and lunch) must continue to be available to all students in accordance with federal regulations.
Elementary School Classroom Snacks	Elementary classrooms may serve one nutritious snack per day in the morning or afternoon (not during lunchtime) under the teacher's guidance. The snack must comply with the fat and sugar limits of the Public School Nutrition Policy and may not contain any FMNV or consist of candy, chips or dessert type items (cookies, cakes, cupcakes, pudding, ice cream or frozen desserts, etc.). The classroom snack may be provided by the school food service, the teacher, parents or other groups and should be at no cost to students.
Snacks for TAKS Test Days (Texas Assessment of Knowledge and Skills)	Schools and parents may provide one additional nutritious snack per day for students taking the TAKS tests. The snack must comply with the fat and sugar limits of the Public School Nutrition Policy and may not contain any FMNV or consist of candy, chips or dessert type items (cookies, cakes, cupcakes, pudding, ice cream or frozen desserts, etc.).
Field Trips	Campus-approved field trips are exempt from nutrition policy.
Athletic, University Interscholastic League, Band and Other Competitions	The nutrition policy does not apply to students who leave campus to travel to athletic, UIL, band or other competitions. The school day is considered to have ended for these students. School activities, athletic functions, etc., that occur after the normal school day are not covered by the policy.
Fund-raising activities	For middle and high school campuses, the nutrition policy will apply to food fund-raising during the school day. No food fund-raising will be allowed on an elementary school campus during the school day; however, schools or school-approved organizations may take orders or sell vouchers during the school day for candy or other restricted items and deliver these items after the end of the school day. Students may order or purchase such items during the school day as long as they receive the items after the school day ends.

Table 5: Nutrition Policy Exemptions, TDA, 2004

This section will discuss any Texas laws pertaining to physical activity and physical education. The Texas Education Agency and Texas Education Code are the two entities responsible for creation and implementation of statutes pertaining to these topics as well as the development and oversight of school curriculums concerning physical education and activity. While nutritional laws are more complex and can be subject to open interpretation, laws regarding physical activity and physical education are more straightforward and uncomplicated. Educators may provide additional physical activity and physical education at their discretion but the baseline requirements are clearly outlined. The following is an excerpt from The Texas Education Code, Subtitle F, Chapter 28, Subchapter A, Essential Knowledge and Skills of Curriculum, that outlines the minimum curriculum requirements for public schools for physical activity and physical education:

“...A school district shall require a student enrolled in kindergarten or a grade level below grade six to participate in moderate or vigorous daily physical activity for at least 30 minutes throughout the school year as part of the district's physical education curriculum or through structured activity during a school campus's daily recess. A school district shall require students enrolled in grade levels six, seven, and eight to participate in moderate or vigorous daily physical activity for at least 30 minutes for at least four semesters during those grade levels as part of the district's physical education curriculum. If a school district determines, for any particular grade level below grade six, that requiring moderate or vigorous daily physical activity is impractical due to scheduling concerns or other factors, the district may as an alternative require a student in that grade level to participate in moderate or vigorous physical activity for at least 135 minutes during each school week. Additionally, a school district may as an alternative require a student enrolled in a grade level for which the district uses block scheduling to participate in moderate or vigorous physical activity for at least 225 minutes during each period of two school weeks.” (TEC, 2008, p2).

The Texas Education Code (TEC) also has specific rules regarding exemptions for physical disabilities, illness, middle and high school students who participate in structured extracurricular activities with at least moderate to vigorous activity as a main component, or for students who participate in a school-related activity sponsored by a private league or club given that the student provides proof of participation in the activity (TEC, 2008).

Screening related to obesity among children and adolescents has become a controversial topic. Many parents and teachers disapprove of this sort of screening as they feel labeling a child overweight would lead to unnecessary social stigmatization, isolation and ridicule. Others do not believe that their children should have to “conform” to norms that are outside of a particular race, ethnic group or socio-economic status despite the abundance of information modern science has discovered regarding the health consequences. Finally, there are those who disagree with this screening because they feel this type of attention has created a society obsessed with weight, inches and pounds and is negatively reflected across various media sources. Studies in children as young as 5 years of age find that they have already absorbed a cultural bias against obese people (Musher-Eizenman, 2004).

Despite these contentions, only two clear guidelines have been developed, while a long list of others have been proposed as House and Senate Bills but did not pass due to lack of support and votes. The two currently enforced regulations are screening for type 2 diabetes through detection of a skin marker known as acanthosis nigricans and student height and weight measurements known as Growth and Development Screening (Texas Legislature Online, 2008). Unsuccessful regulations related to obesity screening have

been proposed but failed including House Bills 1259 and 3099 and Senate Bills 467, 545, and 1239, which would have mandated Body Mass Index (BMI) screening for type 2 diabetes and Senate Bill 205 which would have required computing of a student's BMI and then mandatory reporting of the student BMI on their report cards (Texas Legislature Online, 2008).

Acanthosis nigricans is a hyperkeratinization, or darkening of the skin, located at the posterior base of the neck (Bent, et al., 1998; Daniels, et al., 2005). It is a cutaneous marker associated with systemic disorders such as hyperinsulinemia and insulin-resistance (Daniels, et al., 2005). Insulin resistance and the compensatory hyperinsulinemia have been linked to obesity, hyperlipidemia, hypertension, stroke and cardiovascular disease (Reaven, 1998). Ultimately, insulin resistance may result in pancreatic exhaustion, which in turn leads to the development of Type 2 diabetes. This marker is most evident in Hispanics, Native Americans, African Americans, American Indians, Hispanic Americans, and Asian or South Pacific Islanders (Reaven, 1998).

Screening for height and weight is also mandatory, however, it is clearly stated by the Texas Department of State Health Services in the Texas Guide to School Health Programs that this screening is to monitor growth and development and the words "overweight" or "obese" do not appear in the description. Other purposes of growth and development screening as identified by this program include identifying students who are not growing and developing normally, stimulate interest in self-responsibility for growth and development, show a relationship between good health practices and growth, and create awareness among school personnel and parents of the importance of good nutrition to growth (Texas Department of State Health Services, 2002). The program does

mention that those students who have a weight at greater than the 97th percentile for their sex and age should be referred to a physician or public health clinic. It also provides a brief overview of follow up procedures if students are gaining excessive weight.

B. SCHOOL ASSESSMENT:

Currently, 4 of the 29 schools selected to be assessed have fully completed the appropriate sections of the School Health Index. This has provided very useful information about current school policies and procedures related to childhood and adolescent obesity in Galveston County public schools. This knowledge base will continue to grow as more schools complete their assessments. The SHI ranks components of each module within the following four categories: Fully in Place, Partially in Place, Under Development and Not in Place. Because of the sheer volume of information gathered utilizing the school health index and to protect the privacy of the learning organizations that agreed to assist the Galveston County Health District, general comments and conclusions will be made about the schools that have completed their assessments using the aforementioned four categories and divided among the four selected modules. Two of the assessments were completed in person by interviewing assistant principals and two were returned via fax from principals. Components marked in any of the four categories were selected by all four of the schools assessed unless it is otherwise stated that fewer than four schools selected that category.

For Module 2, Health Education, the components marked as “Fully in Place” included presence of a required health education course, required grading for this course, a sequential health education curriculum, credentialed health education teachers,

professional development in both health education and in delivering the curriculum, and covering of essential topics on physical activity and healthy eating. Those marked “Partially in Place” included assignments that encourage interaction of students with family and community, and active learning strategies. The components marked as “Under Development” included opportunities to practice skills, and active learning strategies by one school. There were no marked components in the “Not in Place” category.

For Module 3, Physical Education and Other Physical Activity Programs, the components marked as “Fully in Place” included requirement of 225 minutes of physical education per week, a sequential physical education curriculum, physical education grading, physical fitness that is health related, students active at least 50% of class time, physical education is enjoyable, credentialed physical education teachers, training requirements for coaches, address special health care needs, physical education safety practices, physical activity facility meets safety standards, and athletic safety requirements. Those marked “Partially in Place” included adequate teacher to student ratio, prohibition of substitution for physical education, teachers avoid practices that result in student inactivity, promote community physical activities, professional development for teachers, and participation in extracurricular physical activity programs. The components marked as “Under Development” included individualized physical activity and/or fitness plans by one school and participation in extracurricular physical activity programs by one school. There were no marked components in the “Not in Place” category.

For Module 4, Nutrition Services, the components marked as “Fully in Place” included presence of breakfast and lunch programs, variety of foods in school meals, low-fat and skim milk available, meals include appealing, low-fat items, a la carte offerings include appealing, low-fat items, adequate time to eat school meals, degree and certification of food service manager, professional development for food service manager, and a clean, safe and pleasant cafeteria. Those marked “Partially in Place” included food purchasing and preparation practices to reduce fat content, collaboration between food service staff and teachers, promote healthy food and beverage choices by one school, collaboration between food service staff and teachers by one school, and preparedness for food emergencies by one school. Those components marked as “Under Development” included promotion of healthy food and beverage choices by one school and preparedness for food emergencies by one school. Those marked “Not in Place” included a la carte offerings include appealing, low-fat items by one school. Additionally, three schools did not answer the component sites outside cafeteria offer appealing, low-fat items because no such sites were available on school property.

For Module 7, Health Promotion for Staff, the components marked as “Fully in Place” included health screening for staff by two schools, programs for staff on physical activity and/or fitness by three schools, stress management programs for staff by one school, and promote staff participation by one school. Those marked “Partially in Place” included health screening for staff by one school. Those components marked “Under Development” included stress management programs for staff by one school, promote staff participation by one school, and programs for staff on healthy eating and/or weight management by one school. Those marked “Not in Place” included health screening for

staff by one school, stress management programs for staff by two schools, promote staff participation by two schools, and programs for staff on healthy eating and/or weight management by three schools.

A general summary of the School Health Index results is included in Table 6.

School List by Independent District	Health Education	Physical Education	Nutrition	BMI Testing	Staff Programs
<u>Clear Creek</u>					
Wedgewood Elementary					
Brookside Intermediate					
Clear Creek High	X	X	X		X
<u>Dickinson</u>					
Kenneth E. Little Elementary					
RD McAdams Junior High					
Dickinson High					
<u>Friendswood</u>					
Westwood Elementary					
Windsong Intermediate					
Friendswood Junior High	X	X	X		X
Friendswood High					
<u>Galveston</u>					
Charles B. Scott Elementary					
Weis Middle					
Ball High	X	X	X		X
<u>Hitchcock</u>					
Stewart Elementary					
Crosby Middle					
Hitchcock High					
<u>La Marque</u>					
Westlawn Elementary					
La Marque Middle	X	X	X		
La Marque High					
<u>Santa Fe</u>					
Roy J. Wollam Elementary					
Santa Fe Elementary North					
Santa Fe Elementary South					
Santa Fe Intermediate					
Santa Fe Junior High					
Santa Fe High					
<u>Texas City</u>					
Heights Elementary					
Fry Intermediate					
Blocker Middle					
Texas City High					

Table 6: School Health Index Results Summary

CHAPTER 4: IMPLICATIONS

A. DISCUSSION AND FUTURE DIRECTIONS

The implications of this Capstone are extensive and apply to nearly every arena of public health. As mentioned above, obesity in children and adolescents has become one of, if not the biggest, U.S. public health threats of our time. The morbidity and costs associated with this disease dwarf those of any other public health concern currently. As this is a pilot study, further work will need to be accomplished before the substantial intended impact of this project is actually realized. At present, this pilot data still provides insight into this endemic disease and what is currently being done to slow and even reverse its progression.

The legal standards that have been developed and implemented in the Texas public school system are an excellent starting point. As has been shown, public interventions that make changes to systems rather than individual behaviors have unparalleled levels of success. Two poignant examples of this include military vaccinations (Grabenstein, et al., 2003) and the fluoridation of the public water supply (CDC, 1999). By changing policy, we can be assured of what our children are eating at school, what they are being taught in terms of physical activity, physical education, nutrition and obesity and how much physical activity they are performing. While the legislature still has a long road filled with obstacles, the simple fact that obesity in school children is being addressed is a step in the right direction.

The federal and state level governments have made excellent strides in terms of legislation focused on obesity, but there exists a multitude of avenues and subject areas that require attention. The two main areas requiring further concentration and consideration are food policies and screening policies. Many successful steps have been made in regards to school nutrition. In fact, the current policy guidelines are a significant improvement over the school cafeteria guidelines of the 1980's and 1990's. There remains, however, a great potential for improvement. The main achievements germane to nutrition are the disallowance of "competitive foods" and "foods with minimal nutritional value" in grade and middle schools (TDA, 2004). This age group is an effective target of opportunity to teach children healthy eating habits and an essential baseline level of knowledge they will continue to expand during later years. Just because healthy and low-fat options are offered, however, does not mean that is what our students are eating. Furthermore, there is a large body of evidence that supports increased refined sugar and carbohydrate intake, not dietary fat intake, as the main culprit behind expanding waistlines in both children and adults (Reaven, 1998; Mokdad, et al., 2001). This idea is further supported by the advances in modern medicine that link high carbohydrate intake, micro-vascular damage, heart disease and insulin resistance to obesity and unhealthy deposition of abdominal and visceral adipose tissue (Ludwig, 2002). Unfortunately, many of these ideas that were mere conjecture and speculation just 10 years ago are only now crossing into the realm of accepted fact within the scientific community. What good are policies that limit soda intake but allow "healthy" fruit juices that are often more calorie dense than their carbonated counterparts? The regulation of nutrition is in its infancy, nonetheless, and only time will tell if this legislation can retard

the progression of this disease. By assembling and chronicling these mandates with this Capstone, one concise database of the minimum legal requirements of Texas public schools will now exist. Galveston County Health District can further utilize this information to assess whether these laws are in fact enough and if these standards are making a difference or even worsening the problem.

The information provided by the School Health Index evaluations helps illuminate strengths and weaknesses and address gaps between what the laws say schools should be doing and what is actually happening at these schools. These responses also have practice and public health implications. Are schools truly helping or hurting matters with childhood and adolescent obesity? Since the majority of responses are marked “Fully in Place” at all of these evaluated schools, this author would conclude that they are already basically doing everything that can be done and that is allowable within the school environment to attend to obesity. If this is the case, the question of why obesity rates are still climbing can be raised. Perhaps the laws are so new, that there exists a lag time between implementation of them and any apparent changes in student health. Moreover, perhaps the regulations are impotent to affect change because of the laxity of choice students are offered during meals or a lack of oversight during physical education resulting in very little exercise. Furthermore, students only spend roughly 30% of their time at school so changes made there may be foiled by inactivity and unhealthy eating habits during hours spent at home and during weekends and summer breaks. This could possibly lead to more strict legislation being passed because of an apparent failure of implemented policy, when in fact the policy is sound but being undermined by the home environment. The practice implications will be the development of diseases such as heart

disease and type 2 diabetes in a population where these diagnoses were almost non-existent just a few decades ago (Engelmann, et al., 2004; Hossain, et al., 2007). This will stress an already overburdened and underfunded system in public health, primary care and mental health because of the significant morbidity associated with obesity.

The future directions of this Capstone are unambiguous and clear. Recommendations based on the results found in this pilot study must first include completion of the School Health Index by all schools selected as the representative population for Galveston County. After all 29 schools are assessed and SHI responses examined, gaps between law and application in schools can be verified or debunked. Additional study should be accomplished by examining rates of student Body Mass Index and perhaps other body composition measurements, before and after the implementation of the aforementioned legal standards. By comparing these rates, Galveston County Health District can determine if change is taking place and if so, in a positive or negative direction. The study may also be expanded to include all Galveston County schools, a different sub-population thereof or perhaps other counties within the state. Additionally, contributing factors such as school location, student socio-economic status, and ethnicity and race should be studied to assess their role, if any, in the development of obesity. Lastly, despite being thorough and comprehensive, executing this Capstone using the School Health Index was not without obstacles, which will be discussed in the following section. A different tool may be better suited to properly address obesity in our schools or more accurately assess what schools are doing to combat the disease.

B. LIMITATIONS AND BARRIERS

The completion of this project was personally and professionally satisfying but some limitations and barriers were encountered throughout the process. The limitations related to the first specific aim were minor and included obscurity because of a wide array of governing bodies pertaining to what is practiced and enforced within the Texas public school system. These bodies interact and interrelate legally, professionally and across a gamut of areas and specialties making it challenging to identify which organization supersedes another and who has the ultimate authority.

Limitations pertinent to the second specific aim were more numerous. Notably, the first limitation was the selection of the SHI as the assessment tool for current obesity-related programs. The author selected this tool because it identified “best practices” as defined by the CDC and was meticulous and inclusive of all aspects related to obesity fathomable within the school environment. While this is true, the SHI was designed to be completed by a team of teachers, nurses, administrators, coaches, and parents. A major disadvantage noted was the difficulty in setting up appointments with even just one school official, let alone a team of five from their respective areas of specialization. While these team meetings would have provided an unparalleled level of insight into school programs, organizing conferences with five or more individuals at 29 different schools fell well outside the timeframe of this Capstone. The four surveys that were completed were done so by either principals or assistant principals, whom, out of all school officials with which interviews were possible, were arguably, the most appropriate to answer the survey. Still, these individuals had large knowledge gaps between the

policies they are enforcing and actual practice, such as what coaches are doing during physical education classes and what students are eating out of vending machines.

Considerable resistance and ambivalence was also encountered during the second specific aim of this pilot study. As mentioned earlier, letters as well as emails, several of which received “undeliverable notifications” electronically, were sent to the eight independent school districts in Galveston County with no responses. Moreover, when visiting schools to attempt completion of the SHI in person, administrative assistants were reluctant to provide contact information and administrators that were spoken to directly were non-committal and not forthcoming. Lastly, when principals and assistant principals were emailed with attachments for the SHI and thorough instructions for its completion, only two completed surveys were returned out of the 27 schools contacted (two were completed via physical visits in person with a school official).

All officials contacted were provided with substantial information regarding the scope of this study, the stakeholders involved with its completion and the myriad of benefits for our school children and public health in general that would come to bear given successful conclusion of the project. While the information gathered is helpful and will provide a solid bedrock for future researchers to build upon, a more complete data goal of the 29 selected schools was initially sought. Several factors may have contributed to achieving less than an optimal amount of survey responses. These include concerns by school officials that despite thorough discussion and explanation to the contrary, this author’s goals were not consistent with what was in the best interest of the school children they represent. These officials may also have surmised that giving less than ideal responses while completing the SHI could bring negative media or legal attention

by local partners, parents and community members. Lastly, the points of contact selected may have determined that completing the SHI may negatively impact staffing and/or budgeting decisions that could adversely affect their respective schools.

Even though these limitations and barriers were exposed, their impact was not overly detrimental to the completion of this project. It is this author's hope that future scholars attempting to expand and further develop this pilot study can thoroughly exploit the information gathered and also be wary of the obstacles and impediments faced and suitably plan for them well in advance of initiating their endeavors. The morbidity, mortality, and social and economic consequences of obesity are grave and any efforts made in pursuit against them will now be set up for success.

Appendix A

Selected School Health Index Modules

Module 2. Health Education

Print this page. Circle the appropriate score (3–0) for each item and calculate the total.

		Fully in Place	Partially in Place	Under Development	Not in place
CC.1	Required health education course	3	2	1	0
CC.2	Health education grading	3	2	1	0
CC.3	Sequential health education curriculum consistent with standards	3	2	1	0
CC.4	Active learning strategies	3	2	1	0
CC.5	Opportunities to practice skills	3	2	1	0
CC.6	Culturally appropriate examples and activities	3	2	1	0
CC.7	Assignments encourage student interaction with family and community	3	2	1	0
CC.8	Credentialed health education teachers	3	2	1	0
CC.9	Professional development in health education	3	2	1	0
CC.10	Professional development in delivering curriculum	3	2	1	0
CC.11	Professional development in classroom management techniques	3	2	1	0
PA.1	Essential topics on physical activity	3	2	1	0
N.1	Essential topics on healthy eating	3	2	1	0
For each column, add up the numbers that are circled and enter the sum in this row.					
		TOTAL POINTS: Add the four sums above and enter the total to the right.			
		MODULE SCORE = (Total Points / 39) X 100			%

Module 3. Physical Education and Other Physical Activity Programs

Print this page. Circle the appropriate score (3–0) for each item and calculate the total.

		Fully in Place	Partially in Place	Under Development	Not in place
PA.1	225 minutes of physical education per week	3	2	1	0
PA.2	Adequate teacher/student ratio	3	2	1	0
PA.3	Sequential physical education curriculum consistent with standards	3	2	1	0
PA.4	Physical education grading	3	2	1	0
PA.5	Prohibit substitution for physical education	3	2	1	0
PA.6	Individualized physical activity/fitness plans	3	2	1	0
PA.7	Health-related physical fitness	3	2	1	0
PA.8	Students active at least 50% of class time	3	2	1	0
PA.9	Teachers avoid practices that result in student inactivity	3	2	1	0
PA.10	Physical education is enjoyable	3	2	1	0
PA.11	Promote community physical activities	3	2	1	0
PA.12	Credentialed physical education teachers	3	2	1	0
PA.13	Professional development for teachers	3	2	1	0
PA.14	Participation in extracurricular physical activity programs	3	2	1	0
PA.15	Training requirements for coaches	3	2	1	0
PA.16/A.1	Address special health care needs	3	2	1	0
S.1/PA.17/A.2	Physical education safety practices	3	2	1	0

S.2/PA.18	Physical activity facilities meet safety standards	3	2	1	0
S.3/PA.19	Athletics safety requirements	3	2	1	0
For each column, add up the numbers that are circled and enter the sum in this row.					
		TOTAL POINTS: Add the four sums above and enter the total to the right.			
		MODULE SCORE = (Total Points / 57) X 100			

Module 4. Nutrition Services

Print this page. Circle the appropriate score (3–0) for each item and calculate the total.

		Fully in Place	Partially in Place	Under Development	Not in place
N.1	Breakfast and lunch programs	3	2	1	0
N.2	Variety of foods in school meals	3	2	1	0
N.3	Low-fat and skim milk available	3	2	1	0
N.4	Meals include appealing, low-fat items	3	2	1	0
N.5	Food purchasing and preparation practices to reduce fat content	3	2	1	0
N.6	A la carte offerings include appealing, low-fat items	3	2	1	0
N.7	Sites outside cafeteria offer appealing, low-fat items	3	2	1	0
N.8	Promote healthy food and beverage choices	3	2	1	0
N.9	Adequate time to eat school meals	3	2	1	0
N.10	Collaboration between food service staff and teachers	3	2	1	0
N.11	Degree and certification	3	2	1	0

	of food service manager				
N.12	Professional development for food service manager	3	2	1	0
S.1/N.13	Clean, safe, pleasant cafeteria	3	2	1	0
S.2/N.14	Preparedness for food emergencies	3	2	1	0
For each column, add up the numbers that are circled and enter the sum in this row.					
		TOTAL POINTS: Add the four sums above and enter the total to the right.			
		MODULE SCORE = (Total Points / 42) X 100			%

Module 7. Health Promotion for Staff

Print this page. Circle the appropriate score (3–0) for each item and calculate the total.

		Fully in Place	Partially in Place	Under Development	Not in place
CC.1	Health screening for staff	3	2	1	0
CC.2	Stress management programs for staff	3	2	1	0
CC.3	Promote staff participation	3	2	1	0
PA.1	Programs for staff on physical activity/fitness	3	2	1	0
N.1	Programs for staff on healthy eating/weight management	3	2	1	0
For each column, add up the numbers that are circled and enter the sum in this row.					
		TOTAL POINTS: Add the four sums above and enter the total to the right.			
		MODULE SCORE = (Total Points / 15) X 100			%

Appendix B

Selected Galveston County School List

Clear Creek

Wedgewood Elementary School
Brookside Intermediate School
Clear Creek High School

Dickinson

Kenneth E Little Elementary School
R D McAdams Junior High School
Dickinson High School

Friendswood

Westwood Elementary School
Windsong Intermediate School
Friendswood Junior High School
Friendswood High School

Galveston

Charles B Scott Elementary School
Weis Middle School
Ball High School

Hitchcock

Stewart Elementary School
Crosby Middle School
Hitchcock High School

La Marque

Westlawn Elementary School
La Marque Middle School
La Marque High School

Santa Fe

Roy J Wollam Elementary School
Santa Fe Elementary North School
Santa Fe Elementary South School
Santa Fe Intermediate School
Santa Fe Junior High School
Santa Fe High School

Texas City

Heights Elementary School
Fry Intermediate School
Blocker Middle School
Texas City High School

Appendix C

Galveston County Independent School District Information

ISD	Total Student Population	Minority	English as 2 nd Language	Free or Reduced Lunch	Single Parent Households
Clear Creek	35378	37.7%	6.4%	18.6%	10.0%
Dickinson	7332	42.6%	14.3%	59.4%	13.5%
Friendswood	5709	14.9%	1.0%	4.2%	8.6%
Galveston	9045	73.9%	11.9%	66.4%	14.3%
Hitchcock	1143	61.8%	6.8%	67.5%	16.0%
La Marque	3872	87.1%	3.0%	65.7%	16.2%
Santa Fe	4554	13.3%	2.2%	26.6%	12.3%
Texas City	5965	55.0%	6.8%	56.6%	17.0%

Texas Education Agency, 2008

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Vita

Jon Roger Gray was born on September 27, 1977 in Nashua, New Hampshire to his mother Janet Chagnon. After graduating from Merrimack High School in 1995 he enlisted in the United States Army at age 17. He served on active duty as a combat medic for 4 years and was then honorably discharged after receiving a Reserve Officer Training Corps scholarship. He attended the University of New Hampshire earning his Bachelor of Science in General Biology in 2002. He attended medical school at The Uniformed Services University of the Health Sciences earning a Doctor of Medicine degree in 2006. He completed a transitional year internship at Dwight D. Eisenhower Army Medical Center at Fort Gordon, Georgia in 2007 and is currently a resident in the combined Army/Navy Aerospace Medicine program. He and his wife, Diane, were married in August 2007 and currently live in Pensacola, Florida.

Permanent address: 3328 Tiller Court, Pensacola, FL 32507

This dissertation was typed by Jon R. Gray, M.D.