

Improving School Leaders' Understanding of School Health

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Because school systems are increasingly expected to provide for the wellbeing of their students, and because health and wellness are extensively intertwined with the academic outcomes of students, the capacity of school leaders to lead such initiatives is critical. However, due to lack of experience in school health roles and gaps in leadership preparation, many school leaders do not possess the knowledge and preparation to identify and champion needed change efforts.

The current study investigates the use of the School Health Index tool within a course project for doctoral-level school leaders and its impact on their understanding of school health topics and capacity to initiate needed change in these areas. The School Health Index is a free, research-based self-assessment tool from the Centers for Disease Control and Prevention designed to help schools identify strengths and areas for improvement in school health domains and create action plans to address needs.

Participants in the study completed a pretest survey prior to being assigned the project (14 respondents) and a posttest survey following the completion of the course project (11 respondents). Survey questions assessed participants' professional experience, self-reported knowledge and preparation levels, perceived self-efficacy to lead change in school health, knowledge of the School Health Index and three of its modules. The posttest included questions to assess participants' experience using the School Health Index, including use of resources and ease of use.

Statistical analysis included descriptive statistics, Mann-Whitney U tests, and Kendall's tau tests. The findings of the study include strong endorsement of the School Health Index tool by

participants, increased self-reported preparation to lead school health initiatives, and differences between school leaders with experience in school health roles and those without such experience. The project produced practical improvement for participants. All participants were able to create a proposal for their school district and used resources embedded in the School Health Index. The School Health Index can serve as an effective tool to help school leaders drive needed change. Including such a project in a course for school leaders provided a greatly-needed opportunity for development in the area of school health.

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Preface

Prior to the COVID-19 pandemic, I became acutely interested in how schools can improve the holistic student experience to the betterment of their wellbeing. Throughout the pandemic, the role of schools in the health and wellness of young people worldwide became abundantly clear. I am hopeful that as the pandemic begins to wane, that schools will continue to seek to care for and improve the health of children everywhere.

The following dissertation in practice was completed under the careful guidance of Dr. Mary Margaret Kerr. Dr. Kerr's advisement, patience, and expertise contributed greatly to both the study itself and my development as a leader through the Ed.D. program. Dr. Kerr, thank you for your commitment to the health of young people and to the role of adviser.

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Statistical support for this dissertation was provided by Mr. P. J. Grosse, and editorial assistance was provided by Ms. Sarah Dugan. I am grateful for their time and collaboration.

My parents, James Dietz and the late Barbara Dietz, set an early example for me about the value of education and the imperative to be a lifelong learner. Their example furthered my intrinsic tendency to seek new knowledge and to ask questions, and I am proud to join them as a Pitt alum.

To my friends and colleagues, especially Leah, Kate, Amy, Sharon, and Cassandra, your friendship and mentorship has meant more to me than you can know.

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1.0 Introduction

Increasing student and family needs and demands in recent years have led to an expectation that schools provide an abundance of programs and services that address all aspects of students' development (Anderson-Butcher et al., 2008). Because the demands on schools are so extensive, school districts should aim to use organizational strategies that assist with efficiency while adhering to best practices that produce quality outcomes (Basch, 2013). School health and wellness is one broad category of development in which many stakeholders have influence and which connects with long-term outcomes for students. If a school system lacks organizational strategies to address health and wellness, its processes and programs will likely become inefficient and ineffective (Anderson-Butcher et al., 2008). By exploring the importance of health and wellness in schools, as well as frameworks and assessment systems that address these issues, school districts can improve the design and delivery of such programs and services.

Schools are in a unique position regarding student health and wellness. Although the primary role and function of K-12 schools is to prepare students academically, the relationship between students' health and wellness and their educational outcomes is well-documented. Michael et al. (2015) conducted a systematic literature review to explore the extent of the relationship between student health and academic outcomes, reviewing existing literature analyses as well as meta-analyses, to include hundreds of scholarly works in total on the subject matter. This review found that overwhelmingly, supporting healthy student behaviors, providing school health services, cultivating safe and positive environments, and engaging families and the community lead to improved academic outcomes, with the most research in the area of physical activity (Michael et al., 2015). Schools continue to adjust academic strategies to meet increasing

demands of student achievement despite continual reports of achievement gaps and lack of academic proficiency (Basch, 2013; Michael et al., 2015). However, school leaders may be missing the key focus area of student wellness as a target of reform.

Healthy student behaviors are linked to improved school attendance, participation, and engagement (Michael et al., 2015). Conversely, behaviors associated with health risks, such as physical inactivity, inadequate nutritional habits, violence, and sexual activity in youth are linked to poorer short-term and long-term educational outcomes. Just as health can be associated with positive educational outcomes, higher educational attainment is predictive of future health (Hunt et al., 2015). Attending to student nutrition and fitness results in higher academic achievement; providing access to school-based or school-affiliated health services has shown to improve attendance, behavior, and achievement (Lewallen et al., 2015). Services from school mental health professionals, such as school counselors, in support of students' emotional wellbeing have also been shown to increase academic performance and improve pro-health behaviors (Reback, 2010). For all of these reasons, schools must address health and wellness in a manner that can produce and sustain desired healthy behaviors and positive school outcomes.

However, many educational leaders have no formal preparation to identify health and wellness issues, much less create policy and processes to address these domains (Caparelli, 2012; McCarty, 2012; Pennsylvania Department of Education, 2008b). The identified problem of practice is: there is some evidence that students' health and wellness is declining, and there is a lack of collective leadership capacity to introduce improvement efforts.

2.0 Review of Supporting Knowledge

2.1 Why Wellness Matters in Schools

The ultimate goal of schools is to educate young people; however, the healthier a student is, the more likely he/she is to learn. Disparities in health affect students in multiple areas, including, but not limited to: “sensory perceptions, cognition, connectedness and engagement with school, absenteeism, and dropping out” (Basch, 2011, p. 651). School leaders seeking improvements in students’ academic achievement, behavior, and attendance must understand the connection to school health components; state and local health agencies can help facilitate this collaboration (Chiang et al., 2015). First and foremost, students’ physical health is critically important to their success in school. Child health expert Charles Basch has identified seven health issues that significantly interfere with academic performance: “poor vision, uncontrolled asthma, teen pregnancy, aggression and violence, low physical activity, skipping breakfast, and inattention and hyperactivity” (Basch, 2013).

Schools and adolescent development are critically intertwined in a number of areas, including drug use, mental health, safety, and social support (Marin & Brown, 2008). Schools become places that both exacerbate and mitigate problems in these areas. For example, students may have access to illicit substances at school, but schools also provide prevention education about the dangers of such substances (Flay, 2000). Similarly, the academic and social pressures at school may create mental health challenges for some students, while specialists such as school counselors, school psychologists, and school social workers are available to identify these challenges and to provide services to support these students (Reback, 2010).

School safety, health, and educational outcomes are connected. Even when controlling for demographic factors, students who attend schools where violence is prevalent are less likely to attain higher levels of education, including graduating from high school (Marin & Brown, 2008). Bullying has also been identified as a cause of problems in youth, such as depressive symptoms, lower self-esteem, health problems, and for bullies, increased alcohol use. Victims of hate speech and other discriminatory acts are also likely to be targets of violence. Students who feel unsafe at school are more likely to miss school, contributing to a lack of school connectedness and academic problems (Eaton et al., 2012; Marin & Brown, 2008).

Aldridge and McChesney (2018) review the literature on interactions between school environments and the wellbeing of adolescents. Not surprisingly, the literature in these areas supports the idea not only that the climate of a school influences the psychosocial and emotional wellness of its students, but also that intentional steps on the part of the school to improve school climate result in improvements in students' wellbeing. Likewise, Marin and Brown (2008) report that a positive school climate where teachers are invested in students and students feel connected to teachers is linked with more positive student health and academic motivation.

Amidst a climate of standards-based reform in education, days of standardized testing, and initiative fatigue, to focus on students' health and overall wellness must be an intentional choice. Although federal mandates require districts to adopt policies regarding school nutrition and physical education programs (Austin et al., 2006; CDC, 2020), these two areas do not fully encapsulate student wellness and school health. However, changes and improvements to school nutrition programs and increased access to physical education and school counseling services led to decreased exclusionary discipline in Denver Public Schools (Chiang et al., 2015), showing that attention to these areas does provide benefits in other outcome areas.

In summary, a number of studies indicate that improved student health and wellness translates to increased learning and higher levels of education. Conversely, students whose health and wellness are compromised are more likely to have academic, behavior, and school engagement problems. Recent research also shows that schools can intervene on behalf of students' health and wellness in ways that contribute to improvements in these problem areas. However, the breadth of contributing factors to students' health and wellness necessitates the use of a coordinated approach to make a meaningful impact for students.

2.2 Organizing and Integrating Structures in Student Health and Wellness

Because the connections between student health and wellness and academic outcomes are so interwoven (Eaton et al., 2012; Flay, 2000; Marin & Brown, 2008; Reback, 2010), it is unlikely that addressing individual areas of health and wellness in isolation will produce the desired positive outcomes, such as school connectivity, academic achievement, and higher levels of educational attainment. Evidence-based resources and practices are available for a multitude of areas of school health; however, independent of coordinating strategies and a cohesive framework, schools may not utilize these resources to their fullest potential, or at all (Basch, 2011). Absent such a framework, programs and practices in schools are likely to be inefficient and inadequate, similar to a "crazy quilt patchwork of programs, services, and strategies" (Anderson-Butcher et al., 2008, p. 164). Collaboration and prioritizing work in the area of school health and wellness are key to fully implementing programs and services in an effective manner.

2.2.1 Coordinated school health programs

Early efforts in creating structures such as the “coordinated school health program” (CHSP) (Allensworth & Kolbe, 1987) approach to acknowledge and emphasize the importance of the role of health in schools raised awareness but lacked evidence of creating meaningful change for systems and students (Hunt et al., 2015). Allensworth and Kolbe (1987) highlight the changing nature of the educational landscape to a point where the impact of student health on educational outcomes could not be denied. They describe a logic model wherein, if multiple components are better coordinated, not only would immediate benefits be apparent, but long-term improvements would be seen in health and educational outcomes as well.

Often, schools and districts do not fully integrate elements of the CSHP, which include: health education; physical education; health services; nutrition services; counseling, psychological, and social services; healthy school environment; health promotion for staff; and family and community involvement into one structure. Physical education and health education may be included in general curricular areas. Health services and counseling, psychological, and social services are often housed in student support services. Nutrition services may be outsourced to an external company. Dividing services in this manner is referred to as a “walled-in” model (Anderson-Butcher et al., 2008, p. 161). When schools keep these programs and services separated from one another, they compromise the ability to create common goals, combine efforts, and streamline services while conserving resources. A different direction is needed to bring student health and wellness to a more integrated position in the education sector (Hunt et al., 2015).

2.2.2 Whole Child approach

In 2006, recognizing that the role of schools extends beyond providing academic instruction, ASCD convened a group of expert researchers and practitioners who redefined a successful student as one “who is knowledgeable, emotionally and physically healthy, civically inspired, engaged in the arts, prepared for work and economic self-sufficiency, and ready for the world beyond formal schooling” (Rasberry et al., 2015, pp. 760-761). The commission then identified five tenets of a Whole Child approach (Rasberry et al., 2015). The five tenets are: *healthy, safe, engaged, supported, and challenged* (ASCD, 2019). The Whole Child approach is meant to encourage schools, parents, and communities to “promote [sic] the long-term development and success of all children” (ASCD, 2019).

2.2.3 Whole School, Whole Community, Whole Child model

Despite a systems-based approach for Coordinated School Health from the Centers for Disease Control and Prevention (CDC) and a student-centered Whole Child approach from ASCD, Lewallen et al. (2015) indicate that neither of these “have resulted in a unified approach supported by both health and education sectors” (p. 730). Therefore, professionals from both the Centers for Disease Control and Prevention and ASCD convened a core group to create an integrated model with an expert consultation group. Leaders from both the education and health spheres comprised the consultation group, including university professors in both disciplines, a superintendent of schools, and an official from a state department of health. In a series of meetings, the Whole School, Whole Community, Whole Child (WSCC) model emerged. Another group of experts from

the school health and education fields served as a review group to provide feedback to the core and consultation groups (Lewallen et al., 2015).

At the center of the WSCC model (see *Figure 1*) is a student encapsulated by an inner ring comprised the tenets of the Whole Child: safe, healthy, engaged, supported, and challenged.



Figure 1. The Whole School, Whole Community, Whole Child Model (CDC, 2015)

The phrases, “coordinating policy, process, & practice” and “improving learning and improving health” circle outside of the inner ring, highlighting the importance of the manner in

which the model is embedded in the actions of a school or school system and toward the end of improving both health and learning outcomes.

The WSCC model defines, broadly, ten areas of education that directly contribute to students' health and wellbeing: health education; nutrition environment and services; employee wellness; social and emotional school climate; physical environment; health services; counseling, psychological, and social services; community involvement; family engagement; and physical education and physical activity (Lewallen et al., 2015).

Health Education – Health education refers to the “formal, structured” approaches to help students develop knowledge and skills to make informed decisions about their health. The education should include students in grades PK-12 and address topics of alcohol, tobacco, and other drugs; nutrition; mental and emotional health; personal health and wellness; safety and injury prevention; sexual health, and violence prevention (CDC, 2015).

Nutrition Environment and Services – Nutrition environment and services refer to the systems and practices in place that give students access to healthy food choices, limit access to unhealthy competing foods, encourage selection of healthy foods, and provide drinking water free of charge (CDC, 2015).

Employee Wellness – This component refers to the coordinated approach to minimizing risk factors and health conditions for all staff who work in schools. Healthy employees serve as role models for students and decrease school district costs related to health insurance premiums, employee turnover, and staff absenteeism (CDC, 2015).

Social and Emotional School Climate – Schools with positive climates are supportive of students' social and emotional dispositions and proactively encourage student engagement and positive relationships across stakeholders (CDC, 2015).

Physical Environment – The physical environment refers to the overall condition of the structure, the area surrounding the school, as well as the safety from threats (including both violence and injury as well as environmental threats like pollution or contaminated water) (CDC, 2015).

Health Services – School health services support both prevention of and treatment for illness and chronic conditions. Additionally, health services promote wellness to all stakeholders and assist with providing notification of the need for and/or access to additional medical attention from other providers (CDC, 2015).

Counseling, Psychological, and Social Services – These services address the prevention of and intervention for issues that interfere with student success and promotion of behaviors and mindsets that improve outcomes for students. Both school-employed professionals as well as community providers can assist in the implementation and administration of these services (CDC, 2015).

Community involvement – Partnerships and collaboration with local agencies, businesses, and organizations create access to additional resources and services for schools. The benefit to schools may be in the form of opportunities for students, volunteers for programs, or input and support for advisory groups (CDC, 2015).

Family Engagement – When schools engage families in multiple ways, families feel more welcome and dedicated to the partnership of supporting students' learning. It also extends the opportunities for families to support students' health outside of school in ways that improve students' experiences in school (CDC, 2015).

Physical Education and Physical Activity – By providing a high-quality physical education curriculum and opportunities for students to be physically active both throughout the

school day and before and after school, schools give students the knowledge and encouragement to maintain a healthy lifestyle that contributes to overall health and, in turn, creates better learners (CDC, 2015).

Michael et al. (2015) categorize the WSCC components into four categories: supporting healthy student behaviors (physical education and physical activity; nutrition environment and services; and health education), supporting school health services (health services; counseling, psychology, and social services; and employee wellness), supporting safe and positive school environments (social and emotional school climate; and physical environment), and supporting the engagement of family and community (family engagement and community involvement).

Hunt et al. (2015) observe that within the component areas, there may be some components that are more readily associated with health than others (health education and health services, for example). The professionals serving in some other components may not identify as part of school health services, such as nutrition services, employee wellness, and support services like counseling and psychological services. However, success in these areas do contribute to school health. When nutritional offerings align with what students are learning through their health education, students have the opportunity to make healthy choices. The wellness of employees creates models of healthy living for students and, through regular teacher attendance, provides a consistent learning environment, which contributes to a positive school climate. Support service professionals attend to barriers that may be interfering in students' learning as well as work to promote a positive school environment.

Family engagement and community involvement may already be strategies used to further educational goals, but these may be underutilized approaches to improving student health (Hunt et al., 2015). Similarly, safe physical environments and positive school climates are likely associated

with creating a culture of learning, but these also contribute to the overall wellbeing of students, making them more apt to learn. These last two components are especially important to consider because *all* stakeholders can contribute to these factors. Aldridge and McKenney's (2018) work supports the notion that schoolwide efforts over time to address school climate are associated with improving outcomes for students and promoting positive mental health. These programs should include teachers, as teachers can have direct impact on school climate.

The use of an orienting framework can be critical to the success of efforts to integrate initiatives in school health areas. Researchers Chiang et al. (2015) conducted a thorough review of states and districts that indicated efforts to align school health services. Prior to the creation of the WSCC, Arkansas implemented the CSHP and used the organizing structure to create new working advisory groups, provide ongoing training from school health services experts to school district employees, and develop strategies to improve policies and programs related to school health (Chiang et al., 2015). Initiatives to introduce screening for Body Mass Index by school nurses and also increase physical education time co-occurred as a result of Arkansas' synergistic operation. In Colorado, the Healthy Schools Collective Impact, also similar to the WSCC model, created four work groups that meet monthly in the areas of physical education and physical activity; nutrition; behavioral health (to include social, emotional, and mental health services); and student health services to further the work of engaging stakeholders, developing capacity, allocating resources, and articulating priorities in needed areas aligned with data (Chiang et al., 2015).

In 2016, ASCD published a resource guide, *The Whole School, Whole Community, Whole Child Model: Ideas for Implementation*, that highlights 13 state-level departments of health or education and seven school districts that have used the WSCC framework to help guide their own work to approach health and education in a more holistic manner. These profiles, written as

narratives, indicate how each department or district has used the WSCC, what additional planning or policy documents have guided their work, and key takeaways from their experiences. The narratives offer a source of motivation and may build enthusiasm for the potential of the model, but they lack true implementation recommendations.

While the WSCC model has many merits, Lewallen et al. (2015) point out, “that the model is a framework and not an intervention” (p. 737). Models such as the WSCC assume the ability of school leaders to evaluate their programs and processes, discern for evidence-based programs, and take action toward necessary changes. For three reasons, most K-12 educational leaders are not prepared in these functions: 1) lacking background in health and wellness fields, 2) lacking comprehensive understanding of the link between wellness and academic outcomes, and 3) lacking experience with evidence-based health and wellness assessment measures (M. M. Kerr, personal communication, July 2, 2019). Additional implementation guidelines and process supports can assist leaders.

2.3 Implementation

The issue of human and capital resources often poses a challenge in allocating needed time, attention, and financial inputs to programs focusing on student wellness (Basch, 2011). Where scarcity is a felt experience, leaders using traditional school improvement models may be inclined to dedicate more resources to academics under mounting pressure of test scores (Anderson-Butcher et al., 2008). However, when coordinated and collaborative efforts are in place, investing in student health-centered initiatives can gain dividends in academic performance.

While the WSCC model encompasses the components of school health that, when coordinated, meet students' needs on a holistic level, Hunt et al. (2015) offer specific suggestions for using a systematic approach to making the model actionable. Acknowledging that simply agreeing with the WSCC model does not amount to change, Hunt and colleagues (2015) suggest that having an implementation framework would assist schools in applying the model to their work. In summary, the ten-step process recommends:

1. Forming a committee of those invested in health and wellness outcomes of students;
2. Conducting a needs assessment on the prevalence of health-risk and health-promoting behaviors of students;
3. Identifying the outcomes with the highest priority;
4. Linking those health outcomes to academic achievement;
5. Identifying interventions that have been shown to be effective at achieving those health outcomes;
6. Determining how to involve the committee and other staff in collaboration to achieve the desired outcomes;
7. Inviting community agencies and organizations connected to the health outcome areas to participate;
8. Creating an action plan;
9. Articulating the implementation and evaluation process of the action plan; and
10. Implementing the plan and monitoring the progress.

The School Health Policies and Practices Study (SHPPS) uses a series of questionnaires that align with the components of the WSCC model; in the most recent administration of the questionnaires in 2014, over 500 schools participated in each of the components (Lee et al., 2019).

Researchers Lee et al. (2019) analyzed the data from this study to determine the extent to which schools use 11 key WSCC model implementation strategies and practices as recommended by the Centers for Disease Control and Prevention in published school health guidelines in each of the components of school health. The practices encouraged by the CDC include: maintaining a school health council, identifying a school health coordinator, including school health goals in its school improvement plan, having dedicated staff for school health components, providing professional development on school health topics, requiring specific professional training for the staff implementing school health components, collaborating across program areas, engaging families, involving community groups, collaborating with outside school health agencies, and promoting the programs that are in place.

Lee and colleagues (2019) found that a majority of schools used some implementation strategies. For example, school health-related staff in a majority of schools had collaborated with staff from another component of school health. Other key practices were used by fewer schools. Representative school health councils exist in only between 18.8% (for Counseling, Psychological, and Social Services) and 26.2% (for Nutrition Environment and Services) of schools. The use of a school health council is a foundational practice that can support other recommended practices, such as including school health goals in school improvement planning.

Other practices had less consistent use or non-use. For example, professional development related to the healthy and safe school environment was nearly universal, occurring in 91.4% of schools; by comparison, between 27.6% and 76.9% of schools offered professional development on the remaining components. The use of family engagement strategies varied greatly across components, from 24.8% in Health Services to 97.5% in Nutrition Environment and Services. This may be one practice that the use of a school health council could support.

Government agencies and other organizations create tools and resource guides that help schools align their practices to research-based recommendations, such as health and physical education curriculum analysis guides from the CDC. However, schools and districts may not know about these tools or the extent to which their use would be necessary, absent other coordinated efforts to focus on school health initiatives (Brener et al., 2011).

Even well-intentioned school teams may struggle to successfully enact change through the WSCC model. Hunt et al. (2015) list the following potential barriers: lack of clear leadership; lack of administrative support; lack of understanding and buy-in from school staff; lack of funding resources; and lack of engagement by community health partners. Likewise, Aldridge and McKenney (2018) point to teachers' lack of confidence in supporting students' psychosocial development as a possible barrier to implementing schoolwide programming to address school climate, and thereby, student wellbeing.

2.4 Assessment as a Mechanism for Change

While stakeholders frequently use the terms “assessment” and “accountability” in schools to describe state standardized testing programs and their impact on schools, assessment and accountability related to student health and wellness programming and initiatives may be an avenue to support changes in practice and priorities. Basch (2011) recommends the use of data-collection systems that measure issues affecting student health and wellness, such as school climate and school connectedness, as well as assessing efforts to promote health. Basch (2011) also suggests that these data be part of schools' reported measures in federal and state accountability systems.

Schools or districts that want to apply the WSCC model have to consider the use of data and assessment early in their planning stages. It is important to identify both existing data as well as potential process and outcome data sources (Murray et al., 2015). Rooney et al. (2015) suggest that a combination of data sources that represent academic measures, student health and wellness data, applicable aggregate data from school nurses, and school climate and safety data be included in preliminary data review. For a broader view of student wellness issues, or in the absence of local information, synthesized data sources such as ASCD's statewide Whole Child Snapshots may also inform stakeholders about WSCC component-related data. When working to identify priorities for targeting specific health outcomes for improvement, using data sources that point to high-prevalence risk behaviors is advisable (Hunt et al., 2015). The Youth Risk Behavior Surveillance System (YRBSS) addresses six health-risk behaviors that lead to undesired outcomes and is one resource to review to identify potential focus issues (Eaton et al., 2012).

What remains challenging for schools is knowing what parts of its programs are promoting (or detracting from) student wellbeing and how to best address areas of weakness. The use of assessment tools aligned to both WSCC components as well as the matters of policy and programming will help schools identify priority areas and may give insight to implementation needs. Rooney et al. (2015) offer the following suggestions for aligned assessment tools for schools to use: from ASCD, the Healthy School Report Card and School Improvement Tool; the National Center on Safe Supportive Learning Environments School Climate Survey Compendia; and from the CDC, the School Health Index (SHI).

The School Health Index is designed to be used as a self-assessment tool as part of a process to identify areas for change or as part of a broader school improvement plan while creating a team of engaged stakeholders (CDC, 2019). The SHI reflects the components of the WSCC and is

organized into manageable modules that can be completed separately or in conjunction with other modules. Because the SHI is aligned to the WSCC, it is aligned to what research has shown to be best practices in each area.

The SHI is meant to be a universally-useful tool; it has been incorporated into Colorado's Score Card, and its subsequent iteration, Smart Source, as their foundations. The results from the assessment provide districts and schools with robust information comparative to other schools statewide and are meant to be used in improvement planning (Chiang et al., 2015). The School Health Index can help schools self-assess its programs and practices, but as Basch (2011) points out, it could be improved to link schools directly with existing evidence-based strategies that could be considered.

Austin and colleagues (2006) offer that while it is a comprehensive and empirically-rooted tool, simply using the School Health Index does not create conditions under which a meaningful change process will occur; the *process* by which a school utilizes the SHI makes a difference in the outcomes an institution will experience. Sherwood-Puzello et al. (2007), also using an early version of the SHI, found that implementation strategies played a meaningful role in the extent to which the assessment elicits change. Similarly, in a series of case studies of using the SHI, a group of researchers identified that implementation strategy was critical to the outcomes of the SHI process (Staten et al., 2005). Prior to beginning the self-assessment process using the School Health Index, schools should consider the strategy they intend to employ. *First and foremost, a school must have the support of one or more school leaders who have the agency to carry forward any recommendations for change that come from the review (Austin et al., 2006; Sherwood-Puzello et al., 2007).*

Just as school health councils are an important component of WSCC model implementation (Hunt et al., 2015), including invested parties in the SHI process may yield better process outcomes. These collaborative teams should involve stakeholders who represent multiple areas of student health and wellness services, including members of the community. This diversity allows for greater insight and commitment during the action planning process. Anderson-Butcher and colleagues (2008) describe this process as “building the table” (p. 166). In one study, schools that used a diverse collaborative team had greater fidelity in using the SHI and were more likely to follow through with using the results of the SHI to create action plans (Austin et al., 2006). In another study, the planning of when the committee completed the self-study was a significant factor in the end result of the effectiveness of the process; when the self-study took place during the school day, the participants showed more engagement than participants that reported in the evening after the school day ended (Sherwood-Puzello et al., 2007). The use of school time and willingness to hire substitutes to allow staff to participate may be a signal of commitment to the process from the school leaders.

The SHI also aligns to other types of assessments used to study issues regarding the administration of school health and wellness. One group of researchers conducted a secondary analysis of School Health Policies and Practices Study 2006 data from over 1000 schools to apply the CDC’s 2005 version of the School Health Index assessment, then analyzed the results of each SHI module to identify significant differences that exist between elementary schools and middle and high schools (Brener et al., 2011). Using high standards, the authors only recorded schools that would meet the highest rating on the 1-4 scale of the SHI as having met the requirement. Although in some instances, schools came close to meeting SHI module requirements, there were no schools that met the highest rating on all module items. In fact, the highest average percentage

of module items occurring at the highest rating level was middle and high schools averaging 49% of module items in the school health and safety policies and environment, indicating that for most schools, the School Health Index process would yield a variety of areas for improvement.

The exploration of variance from elementary school to middle and high school showed that older students are more likely to receive direct instruction on health topics such as nutritional eating and tobacco prevention and are more likely to have access to both programs and facilities that promote physical health. In fact, of the eleven statistically significant differences between levels across the modules, elementary schools were more likely to support student health than upper grade levels in only two ways. Elementary schools restrict students' access to non-nutritional foods like candy, baked goods, and snacks more often than middle and high schools. Additionally, elementary schools are more likely to ban the use of physical activity as a form of punishment (Brener et al., 2011). While some of these differences may be developmentally appropriate, the use of the School Health Index may help districts illuminate these differences in policy and practice across school levels in order to address discrepancies and make needed changes.

2.5 Conclusion and Implications for the Current Study

In summary, the connection between students' health and wellness and their educational experiences is clear across a number of areas. Experts in both health and educational fields have created models to apply to school health, but implementation has been a barrier to successfully applying these models toward meaningful change. The use of self-assessment strategies aligned to school health models may be one avenue to assist schools to methodically identify areas for improvement and include these areas in larger school improvement planning processes.

Successful efforts require strong administrative support. However, school leaders may not be aware of such self-assessment tools and may not have the background knowledge of school health components to be able to champion these efforts. As such, this study will explore exposing school leaders in a doctoral education leadership course to the School Health Index as a mechanism for improving school leaders' understanding of school health and readiness to initiate improvement planning in this area.

3.0 Theory of Improvement and Implementation

3.1 Theory of Improvement and Aim

The current study was created from an improvement science approach. Improvement science utilizes a “theory of improvement” to reach a particular “aim”. With an improvement science approach, one can evaluate either a new or current intervention to an existing problem, then take informed action steps to either reach the aim or set new aims for improvement (Bryk et al., 2015; Mintrop, 2016).

The proposed aim is for 80% of school leaders to be able to identify a needed change in an area of school health, and that 80% of school leaders indicate self-efficacy in enacting that change after using a self-assessment tool. In order to reach that goal, the overall theory of improvement is rooted in the idea of improving school leaders’ understanding of areas of school health.

One specific element, or “change idea”, of the theory of improvement is to increase school leaders’ knowledge of school health best practices and to cultivate capacity in all school leaders to be able to engage teams of stakeholders in a school health self-assessment process. To highlight why this change idea is important, consider the following: a department chair in an area of school health indicated that a former administrator had begun some excellent work leading the district in a coordinated approach, but she was tasked with other assignments and then retired, leaving the work that was started to unravel. By having multiple school leaders with the ability to lead health initiatives, a distributed leadership model can emerge, and the district can have a formalized leadership structure in this area, similar to academic leadership structures that exist within the

district and aligned to research-encouraged practice. This also serves to bring stakeholders together to counter the “walled-in” approach that is currently operating.

3.2 Research Questions and Inquiry Intervention

The current study is an evaluation of an intervention to determine its role in equipping school leaders to lead school health improvement efforts. The initial rationale for the current study was related to a strategic planning process that was delayed due to the COVID-19 pandemic. The school district had been about to develop a new strategic plan that included a focus area of “student wellness”. However, the rationale for the study has shifted as the COVID-19 pandemic has highlighted the importance of the health and wellbeing of young people and the role that schools play. While the study will still inform local strategic planning efforts, it is likely that the study will also inform how schools can identify and respond to needs that have arisen as a result of the pandemic.

The current study is based on the following research questions:

1. What do school leaders already know about school health and improvement strategies?
2. Does the use of a project on the School Health Index lead to improved understanding of school health concepts?
3. Does the use of a project on the School Health Index lead to improved self-efficacy of leading school health improvement initiatives?

The inquiry intervention was embedded in an online course on student services as part of a doctoral-level educational leadership program. Part of one class session was used to introduce school health components and how to use the School Health Index tool from the Centers for

Disease Control and Prevention (2019). Then, the students completed a project as part of the course using School Health Index to support a proposal for a school health initiative.

The School Health Index (SHI) is designed to be used as a self-assessment tool as part of a process to identify areas for change or as part of a broader school improvement plan while creating a team of engaged stakeholders (CDC, 2019). The SHI reflects the ten school health and wellness components of the Whole School, Whole Community, Whole Child (WSCC) model (ASCD, 2019) and is organized into eleven manageable modules that can be completed separately or in conjunction with other modules. Because the SHI is aligned to the WSCC model, it is aligned to what research has shown to be best practices in each area of school health and wellness.

The School Health Index consists of sets of questions for teams of stakeholders to answer about the extent to which the school has specific practices and/or policies in place. At the end of each module, a score and percentage for that module are calculated, where 100% is completely in line with best practices. Next, the team identifies areas for improvement, then identifies priorities among those areas, and assesses the feasibility of making progress in the priority areas. Individually, students in the identified course followed this process, completing three of the SHI modules: School Health & Safety Policies and Environment; Health Education; and School Counseling, Psychological, and Social Services. There are separate SHI protocols for elementary and secondary schools.

The use of the School Health Index on its own is not a specific intervention. However, previous studies have explored how the implementation of the SHI process has impacted outcomes for schools. Specifically, Austin and colleagues (2006), Sherwood-Puzello et al. (2007), and Staten and others (2005) identified key strategies and practices that increase the likelihood of creating

and acting on improvement plans in each area of school health and wellness. The current study focuses on the implementation strategy of establishing clear leadership through the process.

My driver diagram (Appendix A) and theory of improvement identify increasing school leaders' knowledge of school health and intentionally cultivating capacity to lead health initiatives as mechanisms to ultimately improving student health. The study included four research activities, as described in Table 1:

Table 1. Research Activities

Timeframe	Activity
September 2020	Participants completed Pretest
October 3, 2020	Online class session introducing SHI and school health concepts
October – December 2020	Participants completed SHI and developed proposed action plan
December 2020	Participants completed Posttest

3.3 Methods and Measures

The measures that were evaluated for change are: knowledge of school health components, knowledge of the extent to which existing practices align with best practices, and self-efficacy to enact an improvement process in a school health area. Participants were interested doctoral students enrolled in the Fall 2020 Competent Management of Student Personnel Services, which met virtually for the duration of the fall semester. All enrolled students in the course were required to participate in the online class session and complete the course project. Only participants completed the pretest and posttest.

The study utilized surveys with participants to capture the potential change. Individual pretests and posttests aimed to assess participants' knowledge of the extent to which existing practices align with best practices, knowledge of school health best practices, and self-efficacy about one's ability to enact change. Both the pretest and posttest were created and administered with Qualtrics software.

3.3.1 Pretest

Participants first identified a pseudonym to use as an anonymous identifier. After identifying a pseudonym, participants responded to 30 questions. The pretest included two questions about participants' professional background. Two questions asked participants to self-assess their level of knowledge about school health and level of preparation to lead school health initiatives. Three questions assessed participants' experience with self-assessments and prior awareness or use of the School Health Index. Participants were asked to provide their level of agreement with four statements regarding self-efficacy to enact change.

The pretest included 19 knowledge questions about the SHI and the three modules that were completed as part of the course project. These knowledge questions were a combination of true/false, multiple choice, and checklist response. Five questions were about the SHI itself. Six questions addressed Module 1: School Health & Safety Policies and Environment. Four questions addressed Module 2: Health Education. Four questions addressed Module 6: Counseling, Psychological, and Social Work Services.

3.3.2 Posttest

The posttest first asked for participants to recall the pseudonym that was selected during the pretest. Then, participants responded to the same 19 knowledge questions about the SHI and the completed modules. The posttest included three questions about the extent to which they utilized additional resources available through the online tool. Participants were again asked to self-assess their level of knowledge about school health and level of preparation to lead school health initiatives. Finally, participants were again asked to provide their level of agreement with four statements regarding self-efficacy to enact change as well as two additional statements regarding the ease of use of the SHI and whether they would recommend the SHI to their school.

Copies of the pretest and posttest are included as Appendices B and C. The study used the design seen in Table 2 to collect the information:

Table 2. Study Design

Timeframe	Method	Construct(s) Assessed / Type of Measure
September 2020	Individual Pretest	<ul style="list-style-type: none">• Knowledge of school health and wellness practices (leading measure)• Knowledge of necessary changes to improve student wellness (leading measure)• Self-efficacy to create and sustain change (leading measure)
December 2020	Individual Posttest	<ul style="list-style-type: none">• Knowledge of school health and wellness practices (leading measure)• Knowledge of necessary changes to improve student wellness (leading measure)• Self-efficacy to create and sustain change (leading measure)

4.0 Results

4.1 Sample

4.1.1 Response rate

Twenty-eight students were enrolled in the course. All were invited to participate in the study. Fourteen pretest surveys were submitted by participants for a 50% response rate. Of the fourteen pretests submitted, eleven surveys, or 78.6%, of them were completed.

Because both surveys were anonymous, the posttest was offered to all twenty-eight students with instructions to take the posttest only if they took the pretest. Fifteen posttest surveys were submitted and twelve posttests, or 80%, were complete. Only six participants entered a pseudonym on the posttest that matched a pseudonym entered on the pretest, which limited the ability to conduct meaningful paired analyses of pretest and posttest responses. Therefore, independent sample analyses were conducted.

4.1.2 Professional roles/experiences

Participants were asked during the pretest to select the option most aligned with their current professional role. Of the 14 respondents, five (35.7%) are district-level administrators, four (28.6%) are middle or high school administrators, two (14.3%) are elementary administrators, and three participants (21.4%) responded *Other*.

Participants were also asked if they currently serve, or ever had served, in a position directly related to student health. The question provided the following examples of such roles: health/physical education teacher, school nurse, school counselor, school psychologist, school social worker, and director of nutrition services. Of the fourteen responses, three participants (21.4%) endorsed current or past experience in an area of student health. This finding is consistent with existing literature that most school leaders are not experienced in areas of student health.

While most participants had some experience with self-assessment protocols, few had prior experience with the SHI. Eleven of fourteen respondents (78.6%) indicated that they have had experience using structured self-assessment tools in their professional careers. Four respondents (28.6%) indicated that they had existing awareness of the SHI, and five respondents (35.7%) indicated that they had previously completed any portion of the SHI. These findings are provided in Table 3.

Table 3. Participants' Experience with Self-Assessment Tools

Experience	Yes		No	
	Frequency	%	Frequency	%
Any Self-Assessment Tool	11	78.6	3	21.4
Awareness of SHI	4	28.6	10	71.4
Experience Using SHI	5	35.7	9	64.3

4.2 Self-Reported Knowledge and Preparation Levels

4.2.1 Knowledge level

Participants were asked, “How knowledgeable do you believe you currently are about school health topics?” Response options were a five-point Likert scale from *not knowledgeable at all* to *extremely knowledgeable*. This question was included in both the pretest and the posttest. Table 4 presents the participants’ responses to this question.

Fourteen participants responded to this question on the pretest. One participant (7.1%) selected *slightly knowledgeable*. Eleven participants (78.6%) selected *moderately knowledgeable*. Two participants (14.3%) selected *very knowledgeable*. No participants selected either *not knowledgeable at all* or *extremely knowledgeable*.

Eleven participants responded to this question on the posttest. Posttest responses shifted slightly toward less knowledgeable. Two participants (18.2%) selected *slightly knowledgeable*. Nine participants (81.8%) selected *moderately knowledgeable*. No participants selected *not knowledgeable at all*, *very knowledgeable*, or *extremely knowledgeable*.

Table 4. Participants' Self-Reported Knowledge Level

Knowledge Level	Pretest		Posttest	
	Frequency	Percentage	Frequency	Percentage
Extremely knowledgeable	0	0.0	0	0.0
Very knowledgeable	2	14.3	0	0.0
Moderately knowledgeable	11	78.6	9	81.8
Slightly knowledgeable	1	7.1	2	18.2
Not knowledgeable at all	0	0.0	0	0.0
Total	14	100	11	100

4.2.2 Preparation level

Both the pretest and posttest asked participants to respond to the question, “How well prepared do you believe you currently are to lead an improvement planning effort in an area of school health?” Response options were a five-point Likert scale from *not well at all* to *extremely well*.

Thirteen participants responded to this question on the pretest. Three participants (21.4%) responded *slightly well*, nine participants (64.3%) responded *moderately well*, and one participant (7.1%) responded *very well*.

Eleven participants responded to this question on the posttest. Posttest responses had a noticeable shift toward more prepared. Two participants (18.2%) responded *slightly well*, five participants (45.5%) responded *moderately well*, and four participants (36.4%) responded *very well*. Table 5 presents participants' responses to this question on both the pretest and posttest.

Table 5. Participants' Self-Reported Preparation Level

Preparation Level	Pretest		Posttest	
	Frequency	Percentage	Frequency	Percentage
Extremely well	0	0.0	0	0.0
Very well	1	7.1	4	36.4
Moderately well	9	64.3	5	45.5
Slightly well	3	21.4	2	18.2
Not well at all	0	0.0	0	0.0
Total	13	100	11	100

4.2.3 Self-efficacy

Both the pretest and posttest included four items related to the participant's self-efficacy to enact change. Participants were asked to indicate their level of agreement using a five-point Likert scale (from *strongly disagree* to *strongly agree*) with the following statements; keywords have been added for ease of abbreviation in tables/figures: "I believe I can be part of making changes to my school's health policies, procedures, and practices" (Believe); "I have at least one idea about my school's health policies, procedures, and practices that should change" (Idea); "I know whether or not my school's health policies, procedures, and practices align with best practices" (Align); and "I am aware of specific resources that can help my school improve" (Aware). Table 6 depicts participants pretest and posttest responses to these items.

Table 6. Participants' Self-Efficacy Perceptions

Question	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Believe					
Pretest	10 (71.4)	4 (28.6)	0 (0.0)	0 (0.0)	0 (0.0)
Posttest	6 (54.4)	4 (36.4)	1 (9.1)	0 (0.0)	0 (0.0)
Idea					
Pretest	6 (42.9)	6 (42.9)	2 (14.3)	0 (0.0)	0 (0.0)
Posttest	5 (45.5)	5 (45.5)	1 (9.1)	0 (0.0)	0 (0.0)
Align					
Pretest	2 (14.3)	7 (50)	5 (35.7)	0 (0.0)	0 (0.0)
Posttest	6 (54.5)	2 (18.2)	3 (27.3)	0 (0.0)	0 (0.0)
Aware					
Pretest	2 (14.3)	6 (42.9)	4 (28.6)	2 (14.3)	0 (0.0)
Posttest	4 (36.4)	6 (54.5)	1 (9.1)	0 (0.0)	0 (0.0)

Note. Questions are abbreviated with a designated keyword from the full question.

4.2.4 Comparisons and correlations

Several non-parametric statistical tests were conducted to measure whether self-reported knowledge level, preparation level, and self-efficacy indicators differed significantly from pretest to posttest. Additionally, analyses were completed to determine if associations exist between knowledge level, preparation level, and self-efficacy indicators and experience in school health roles, existing awareness of the SHI, and prior experience using the SHI. Non-parametric statistical

analyses were used due to the small sample size and the distributions of outcome variables violated the assumptions of parametric tests.

First, a series of Mann-Whitney U tests were conducted to explore whether participants’ level of agreement with statements on knowledge level, preparation level, and self-efficacy indicators changed significantly after the course project. Mann-Whitney U tests were appropriate in this study so as to use non-parametric tests, and due to the fact that a match-paired test was not possible due to the small number of pseudonym matches. Table 7 reports the results of these tests. While no statistically-significant differences emerged, it is worth noting that the comparison of self-reported preparation to lead an initiative in school health approached significance ($U = 44, p = 0.53$).

Table 7. Comparison of Participants’ Self-Perceptions Across Time

	Item					
	Self-report Knowledge	Self-report Preparation	Believe	Idea	Align	Aware
Mann-Whitney U	62	44	59.5	53.5	51.5	73
Z	-.977	-1.939	-1.373	-1.435	-1.480	-.240
P	.328	.053	.170	.151	.139	.810

Kendall’s tau was used to measure association between participants’ responses to self-efficacy perception items and prior experience in a school health role, awareness of the SHI tool, and experience using the SHI tool. As shown in Table 8, prior experience in a school health role was significantly correlated ($p = 0.048$) to higher agreement with the statement “I have at least one

idea about my school’s health policies, procedures, and practices that should change” during the pretest. Those who had served in a school health role were more uniform in their strong agreement of having an idea for change, whereas those who had not served in such a role had more varied levels of agreement with having an idea for change.

Table 8. Kendall’s tau Correlation between Prior Experience and Perceived Self-Efficacy

Experience Indicator	Self-Efficacy Factor				
	Believe	Idea	Align	Aware	
School Health Role	Kendall’s τ	-.340	.507*	.330	-.084
	<i>p</i>	.200	.048*	.234	.742
	N	14	14	14	14
Aware of SHI	Kendall’s τ	.000	-.077	-.300	.077
	<i>p</i>	1.000	.765	.279	.765
	N	14	14	14	14
SHI Experience	Kendall’s τ	.204	-.253	-.440	.000
	<i>p</i>	.442	.324	.112	1.000
	N	14	14	14	14

Note. Correlation is significant at the 0.05 level

4.3 School Health Index Knowledge

As described earlier, participants were asked 19 knowledge questions about the SHI itself and three of the modules. Items with responses were scored as either correct or incorrect. Six questions were true/false. Eight questions were multiple choice with only one correct answer. Five questions were checklist-style questions prompted with “select all that apply.” To be scored as correct, the responses to these questions had to include exactly the correct selections. No partial credit was given. Items that were left blank were omitted from analysis.

4.3.1 Pretest and posttest scores

Total correct responses on the pretest ranged from 2 to 13, with a mean score of 8.8, or 46.2% correct. The mean score on the posttest was 10.4 correct responses, or 54.7% correct. Table 9 provides a summary of item level performance from pretest and posttest responses, including the percentage change in correct responses from pretest to posttest.

Table 9. Item-Level Performance on Pretest and Posttest

Subsection	Item	Question Type	Pretest		Posttest		% Change
			Responses	% Correct	Responses	% Correct	
SHI Knowledge	1	MC	13	15.4	14	42.9	27.5
SHI Knowledge	2	MC	12	41.7	14	57.1	15.5
SHI Knowledge	3	Checklist	12	16.7	13	30.8	14.1
SHI Knowledge	4	Checklist	13	76.9	13	84.6	7.7
SHI Knowledge	5	T/F	13	84.6	13	100.0	15.4
Module 1	1	MC	12	66.7	13	76.9	10.3
Module 1	2	MC	12	33.3	13	53.8	20.5
Module 1	3	T/F	12	50.0	13	46.2	-3.8
Module 1	4	Checklist	12	91.7	13	84.6	-7.1
Module 1	5	MC	12	83.3	13	84.6	1.3
Module 1	6	MC	12	41.7	13	76.9	35.3
Module 2	1	T/F	11	45.5	11	27.3	-18.2
Module 2	2	Checklist	11	0.0	11	0.0	0.0
Module 2	3	Checklist	11	18.2	11	18.2	0.0
Module 2	4	T/F	11	90.9	11	90.9	0.0
Module 6	1	T/F	11	9.1	11	0.0	-9.1
Module 6	2	MC	11	9.1	11	36.4	27.3
Module 6	3	MC	11	100.0	11	90.9	-9.1
Module 6	4	T/F	11	90.9	11	81.8	-9.1
Group Mean			8.8*	42.2	10.4*	54.7	8.5

Note. *Denotes mean score

4.3.2 Comparisons and correlations

While some items show double-digit percentage improvement in the posttest, performance on other items declined in the posttest, and other items showed no change. A Mann-Whitney U test was conducted to determine if posttest knowledge scores differed significantly from pretest scores. The scores were found to not significantly differ ($U = 71, p = .338$), as shown in Table 10.

Table 10. Comparison of Pretest and Posttest Scores

	Number Correct
Mann-Whitney U	71.000
z	-.984
p	.325

Of interest was the extent to which participants could accurately assess their prior school health knowledge level. The association between participants' pretest knowledge scores and their perceived level of knowledge was assessed using Kendall's tau. Table 11 presents the raw data of participants' response to the perceived knowledge item with their pretest knowledge scores. There was not a significant association between perceived knowledge and pretest performance ($p = 0.795$), indicating that higher reported knowledge levels were not associated with higher scores on the pretest.

Table 11. Participants' Self-Reported Levels of Knowledge and Pretest Scores

Knowledge Level	Total Correct on Pretest
Moderately knowledgeable	13
Moderately knowledgeable	11
Moderately knowledgeable	10
Moderately knowledgeable	10
Very knowledgeable	9
Moderately knowledgeable	9
Moderately knowledgeable	9
Moderately knowledgeable	9
Moderately knowledgeable	9
Slightly knowledgeable	8
Moderately knowledgeable	8
Very knowledgeable	7
Moderately knowledgeable	2

4.3.3 Questions with few correct responses

Several items included in the knowledge questions had extremely low numbers of correct responses in both the pretest and posttest, without noticeable improvement. Participants seemed to have the most difficulty with the checklist-style items. Another question that posed a challenge for participants was a true/false question (presented as Item 1 in the Module 6 subsection in Table 9) that stated: “A school should have either a full-time school counselor, school psychologist, or

school social worker at the recommended ratio.” The correct answer to this question was *false*, because a school must have all three of these professionals at the recommended ratio to earn full credit on the SHI. The wording of this question with the “either” operator may have made this a difficult question.

Additionally, one checklist question (Item 2 in Module 2, as shown in Table 7) asked participants to identify health topics that should be covered in both elementary and secondary health courses. Because the course project required students to only complete one of the SHI protocols (elementary or secondary), it is unlikely that participants were exposed to enough information during the course project to correctly respond to this question.

4.4 Use of Resources and SHI Tool Perceptions

Three questions in the posttest referred to supplemental resources and information that were available to participants. Participants were asked whether or not they accessed any of the embedded SHI resources within any of the completed SHI modules. Ten of the eleven participants (90.9%) responded affirmatively to this question. Likewise, when asked whether they referred to the CDC website at any point during the course of completing their project to access information about the SHI or WSCC Model, ten participants (90.9%) indicated that they had done so. One question asked to what extent the participant used the glossary tool included in the SHI using a five-point Likert scale from *none at all* to *a great deal*. Of eleven respondents to this question, three (27.3%) responded *none at all*, three (27.3%) responded *a little*, four (36.4%) responded *a moderate amount*, and one (9.1%) responded *a lot*. Responses to these questions are provided in Table 12.

Table 12. Participants' Use of Supplemental Resources

Resource	Extent of Use				
	Did Use (%)		Did Not Use (%)		
Embedded SHI Resources	10 (90.9)		1 (9.1)		
CDC Website	10 (90.9)		1 (9.1)		
	A Great Deal (%)	A Lot (%)	A Moderate Amount (%)	A Little (%)	None at All (%)
Glossary	0 (0.0)	1 (9.1)	4 (36.4)	3 (27.3)	3 (27.3)

Two questions asked participants to respond using a five-point Likert scale of *strongly disagree* to *strongly agree* to statements about their experience using the SHI. Responses to these questions (shown in Table 13) support a favorable opinion of the SHI as a feasible resource for school leaders. For the statement, “The School Health Index self-assessment tool was easy to use,” five out of eleven respondents (45.5%) responded *somewhat agree*. The remaining six respondents (54.5%) answered *strongly agree*. For the statement, “I would recommend the School Health Index self-assessment tool to my school,” one participant (9.1%) responded *neither agree nor disagree*, three participants (27.3%) responded *somewhat agree*, and seven participants (63.6%) responded *strongly agree*.

Table 13. Participants' Perceptions of SHI

Question	Response				
	Strongly Agree (%)	Somewhat Agree (%)	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
Easy to Use	6 (54.5)	5 (45.5)	0 (0.0)	0 (0.0)	0 (0.0)
Recommend SHI	7 (63.6)	3 (27.3)	1 (9.1)	0 (0.0)	0 (0.0)

4.5 Summary

The use of the School Health Index as part of a course project for school leaders produced practical improvement for participants. School leaders' assessment of their own knowledge was not related to their pretest knowledge scores. While knowledge scores overall did not improve significantly at posttest, some modules had greater posttest gains than others. School leaders' perception of their preparation level to lead a school health change initiative approached significant improvement, and results demonstrated increased capacity from a practical standpoint. School leaders with experience in school health roles were more consistent in their strong endorsement of having at least one change idea prior to completing the project. Participants overwhelmingly found the SHI easy to use and accessed the embedded resources to a great extent.

5.0 Discussion

5.1 Limitations of the Current Study

5.1.1 Protocol design

The pretest and posttest included 19 knowledge questions related to the SHI and three of its modules. As previously stated, a few questions had very low correct response rates. The extent to which the questions in the protocol accurately measured what the participants knew about school health is unknown. The knowledge questions could be rewritten and more thoroughly tested prior to administration, or exploration of existing school health knowledge assessment tools could be considered.

Additionally, the pretest and posttest were designed to be individual tasks during the current study. However, the SHI is intended to be used by a team. The completion of a set of knowledge questions in small groups of school leaders could provide new insight into the value of collaboration on the SHI versus individual use. Such adaptation could also be used to compare what an individual knows to what a multidisciplinary team knows collectively.

5.1.2 Limitations in analysis

The planned analysis included matched pair tests to determine if, on an individual level, the project yielded statistically-significant improvement. However, only six participants correctly recalled their pseudonyms on the posttest. As a result, the analysis had to be done as group-level analysis.

5.1.3 Limitations in scope

The body of literature on the topic of school leaders' understanding of and capacity to lead in the area of school health would be enhanced by additional research. The current study addressed only three of eleven SHI modules; research about school leaders' understanding of additional school health concepts is needed. Additionally, the study was conducted within a course for superintendents-in-training. Conducting similar research among other levels of school leaders and school health professionals could yield more robust insight into the problem.

5.2 Key Findings

Initial research questions for the current study included:

1. What do school leaders already know about school health and improvement strategies?
2. Does the use of a project on the School Health Index lead to improved understanding of school health concepts?

3. Does the use of a project on the School Health Index lead to improved self-efficacy of leading school health improvement initiatives?

Current findings suggest that, overall, school leaders have varied knowledge about school health and improvement strategies. Given the limitations of the knowledge question section, there is not a clear answer to this question. However, some questions had very high correct response rates on both the pretest and the posttest, indicating that some elements of school health are more broadly known to school leaders. Such questions included content related to tobacco use policies, the value of personal commitments to avoid harmful substances, and the role of school counselors, psychologists, and social workers.

The results of the current study indicate that completion of a course project on the SHI does not lead to statistically-significant improvement of knowledge regarding school health or self-efficacy of leading school health improvement initiatives. However, the practical implications of the course project are also important to consider. While the current study did not include evaluation of the quality of the projects themselves, the course instructor indicated in post-study conversation that the projects were done well. Using data gleaned from the SHI exercise allowed every member of the course to create a school district initiative proposal in a new area for their district. The SHI data were included in each project and resources linked to the School Health Index appeared in the initiatives' recommendations, consistent with survey data that showed that 90.9% of participants accessed the embedded resources in the SHI modules. Furthermore, the course instructor provided an update in the months following the course that several of the students had begun to implement the very initiative that was proposed or had selected the topic for their own dissertation in practice.

Higher levels of pretest self-assessment of school health knowledge were not associated with higher pretest knowledge scores. Perhaps participants “didn’t know what they didn’t know”

prior to completing the project. Responses to perceived knowledge about school health shifted slightly lower on posttest results compared to pretest results, indicating that school leaders may have recognized after the project that they over-estimated their prior knowledge about school health. Additionally, the survey question may have heightened their consciousness to their lack of knowledge. School leaders' awareness of their own areas for further development is a critical leadership trait.

The project did expose school leaders to a resource that can be added to their professional toolkits. On the posttest, all participants responded either *somewhat agree* or *strongly agree* that the SHI was easy to use, and 90.9% of participants responded either *somewhat agree* or *strongly agree* that they would recommend the SHI tool to their school or district. Given that schools are increasingly expected to provide for the entire wellbeing of the students in their care, a specialized tool to address student health and wellness needs is an essential for school leaders.

5.3 Results Versus Aims

The stated aims for the study were that 80% of school leaders could propose a change effort in an area of school health and that 80% of school leaders would indicate self-efficacy to enact change in an area of school health. On the pretest, 85.8% of participants endorsed having an idea for a change effort, and 71.4% of participants indicated they were either *moderately well* or *very well* prepared to lead a change effort. On the posttest, 90.9% of participants endorsed having an idea for a change effort, and 81.9% of participants indicated they were either *moderately well* or *very well* prepared to lead a change effort. While neither of these differences were statistically significant, the improvement in self-reported preparation level approached significance ($p =$

0.053). School leaders who had a background in an area of school health more consistently endorsed having a least one idea for an improvement initiative at a statistically significant level on the pretest ($p = 0.048$). One conclusion about this finding is that school districts would benefit from a leadership team with diverse experiences, including leaders who have direct school health experience.

5.4 Implications for Practice

Prior research has shown that applying a framework and using a structured tool, along with adhering to specific implementation strategies, yields better results for enacting sustained change (Austin et al., 2006; Sherwood-Puzello et al., 2007; Staten et al., 2005). Administrative leadership and support are key implementation strategies of such change efforts.

The stated problem of practice underlying the current study is the lack of capacity among school leaders to enact needed change in school health. The finding that school leaders with experience in school health did differ from school leaders without such experience is important for leadership teams to consider. Professionals with school health background are critical to include and engage before beginning any improvement effort. Additionally, as is recommended in the WSCC implementation strategies (Hunt et al., 2015), including community health experts in the development of multidisciplinary teams may increase the collective capacity of the group (Austin et al., 2006).

As stated earlier, frameworks such as the WSCC model assume the capacity of leaders to use evidence-based tools to assess for needed changes. Because it is a free tool, can be used flexibly to target specific school health needs, and provides reference to additional research-based

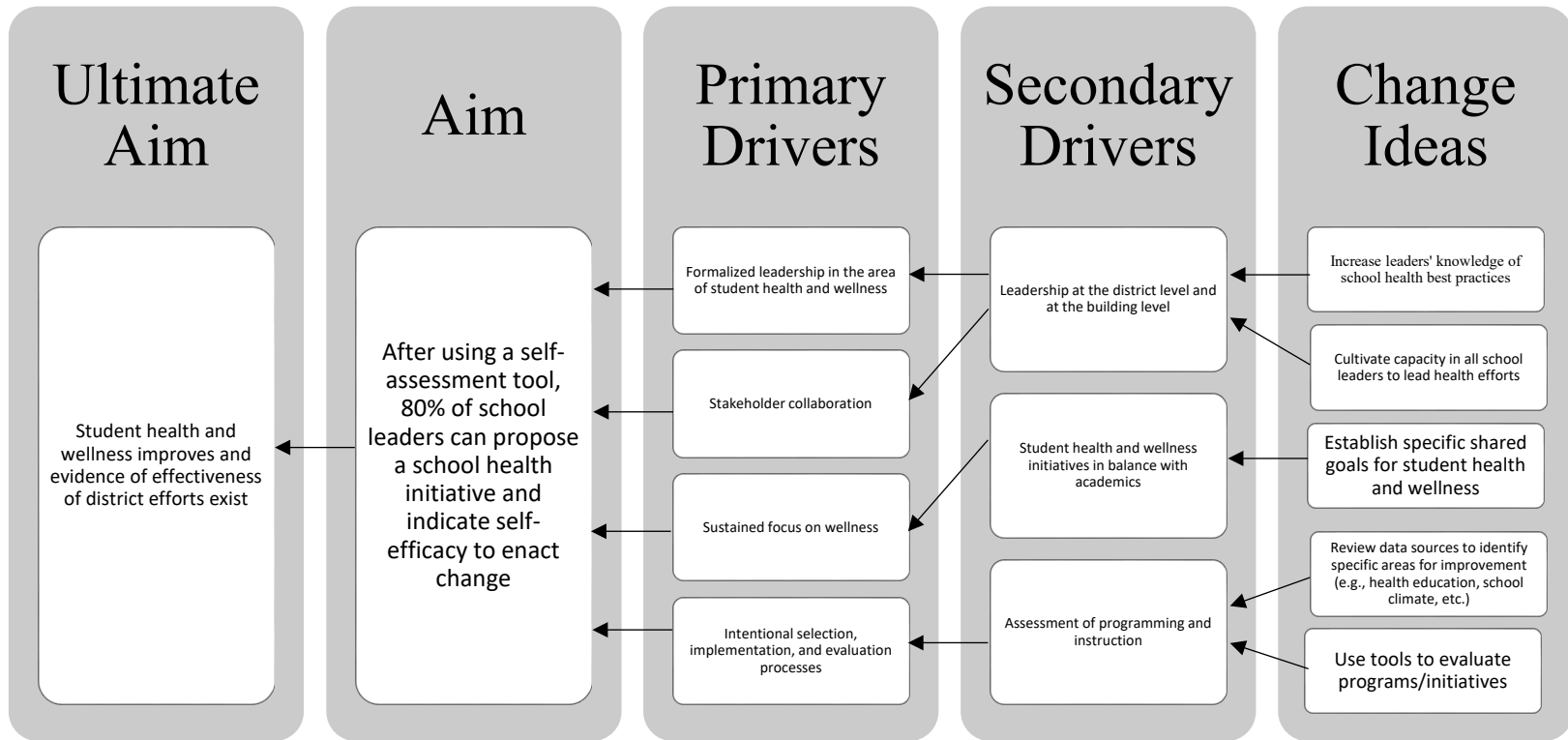
resources, the SHI is a cost-effective and manageable method for all school districts to use in improvement processes. School districts would benefit from the opportunity for its leaders and identified team members to learn about and practice using the School Health Index if they are considering an initiative to improve school health. However, as most school leaders have concluded their formal education, informal professional education may be an appropriate setting for this experience. Such an opportunity could be provided at the regional level, perhaps through existing collaborative meetings or an established professional development series. The results of the current study could be used to encourage districts to consider the SHI, particularly the near-unanimous endorsement of the tool by participants.

This study was conducted in a course within a doctoral educational leadership program. Few school leadership programs and certifying bodies require coursework or competency related to school health. Pennsylvania's *Framework for Principal Preparation Program Guidelines* (Pennsylvania Department of Education, 2008a) contains zero references to the term "health". Pennsylvania's *Framework for Superintendent Preparation Program Guidelines* (Pennsylvania Department of Education, 2008b) contains exactly one reference to health among the forty-five core and corollary standard skills and knowledge: "Knows federal, state, and local laws, regulations, and policies that define parameters for the education, health, and welfare of all children" (p. 13). Because student health, school performance, and student outcomes are known to be interconnected, school leaders should be prepared during certification programs to understand and engage in work related to improving the health and wellbeing of students. Additionally, school districts should encourage school health professionals' leadership development and include these professionals in leadership teams.

5.5 Conclusion

School leaders are critical to the initiation and implementation of improvement efforts, including efforts in the area of school health. However, because many school leaders lack experience and knowledge in areas of school health, specific training and resources are needed to bridge the gap between capacity and need. Exposure to the School Health Index, including completion of a course project in a doctoral educational leadership program, did not produce statistically-significant improvement in school leaders' knowledge and preparation. However, the intended aims of the study were met, and over 80% of participants identified an area for change *and* indicated feeling prepared to lead that effort. Practical outcomes such as providing a new resource for leaders to use and the opportunity to expose an area for continued development of most leaders, are additional benefits of the course project.

Appendix A Driver Diagram



Appendix B Pretest

School Health Pre-Test

Start of Block: Introduction

Q1 Thank you for your participation in this study. Your contributions will help me better understand how to develop school leaders' understanding of school health and how to cultivate a healthy school.

Q2 First, please select a pseudonym (research nickname to keep you anonymous) and enter it below.

Please also record it in a safe place (like your phone's notes section) so you can use it for additional surveys, too.

End of Block: Introduction

Start of Block: Background Information

Q3 Please select the role that best describes your current position:

- Elementary School Administrator
 - Middle or High School Administrator
 - K-12 District Administrator
 - Other
-

Q4 Do you currently serve, or have you ever served, in a position directly related to student health, such as health/physical education teacher, school nurse, school counselor, school psychologist, school social worker, director of nutrition services, etc.?

- Yes
 - No
-

Q5 How knowledgeable do you believe you currently are about school health topics?

- Extremely knowledgeable
 - Very knowledgeable
 - Moderately knowledgeable
 - Slightly knowledgeable
 - Not knowledgeable at all
-

Q6 How well prepared do you believe you currently are to lead an improvement planning effort in an area of school health?

- Extremely well
 - Very well
 - Moderately well
 - Slightly well
 - Not well at all
-

Q7 Have you used structured self-assessment tools as part of your professional practice previously? (This could have occurred for any reason: improvement planning, applications for special designations such as accreditation, etc.)

- Yes
 - No
-

Q8 Are you aware of the School Health Index self-assessment tool from the Centers for Disease Control and Prevention?

- Yes
 - No
-

Q9 To what degree do you agree with the following statements:

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I know whether or not my school's health policies, procedures, and practices are aligned with best practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have at least one idea of something about my school's health policies, procedures, and practices that should change.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe I can be part of making changes to my school's health policies, procedures, and practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of specific resources that can help my school improve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10 Have you ever completed any portion of the School Health Index?

- Yes
- No

End of Block: Background Information

Start of Block: Existing Knowledge about the School Health Index

Q11 The Centers for Disease Control and Prevention and ASCD have identified discrete components of school health, which are reflected in the Whole School, Whole Community, Whole Child model. These components are elements that, when effectively implemented, are likely to

result in healthier students and improved health and academic outcomes. The School Health Index modules are based on these components. Which of the following is one of the components?

- Mental Health
 - Social-Emotional Learning
 - Employee Wellness
 - Facilities Management
-

Q12 How many modules does the School Health Index have?

- 9
 - 10
 - 11
 - 12
-

Q13 Select all that apply. Using the School Health Index will enable a school to:

- Reduce absenteeism
 - Engage stakeholders to identify strengths and weaknesses
 - Implement school-based mental health services
 - Develop an action plan for improvement
-

Q14 Select all that apply. Who could be part of a School Health Index team?

- Administrator
 - Bus Driver
 - Teacher
 - Custodian
 - Parent
 - Student
-

Q15 The School Health Index Team needs to complete all modules of the School Health Index to be able to make improvements.

- True
- False

End of Block: Existing Knowledge about the School Health Index

Start of Block: Module 1: School Health and Safety Policies and Environment

Q16 The next six questions refer to Module 1: School Health and Safety Policies and Environment of the School Health Index.

Q17 Why must a school district maintain a local wellness policy?

- It is part of the Student Assistant Program requirements
 - It is part of the federal meal program requirements
 - It is part of Act 71 Suicide Prevention requirements
-

Q18 A standard precautions policy describes how to prevent and respond to which of the following:

- Exposure of bodily fluids
 - Unintentional injuries, such as slip and falls or mishandling heavy furniture/equipment
 - School intruders
-

Q19 Smart Snacks in Schools requirements apply to food and beverages sold in schools during the school day, but do not apply to food and beverages sold after school or as fundraisers.

- True
 - False
-

Q20 Select all that apply. Policies regarding tobacco use at school-sponsored events off school grounds should apply to:

- Students
 - Staff
 - Visitors
-

Q21 Students should be permitted to bring filled containers of water to class.

- True for elementary schools, but not for middle/high schools
 - True for middle/high schools, but not for elementary schools
 - True for both elementary and middle/high schools
 - False for both elementary and middle/high schools
-

Q22 Regular testing of what should be part of a school's health and safety practices?

- Lead levels in water
- Air quality / ventilation
- Emergency communication methods

End of Block: Module 1: School Health and Safety Policies and Environment

Start of Block: Module 2: Health Education

Q23 The next four questions will ask you about Module 2: Health Education of the School Health Index. For the purposes of this study, health education is defined as: “any combination of planned learning experiences that provide the opportunity to acquire information and the skills students need to make quality health decisions.”

Q24 A school's health education curriculum must align to National Health Education Standards, even if a state has its own health education standards.

True

False

Q25 Select all that apply. At both the elementary and secondary levels, essential health education topics include:

Motor vehicle safety

Anger management

How to seek help for suicidal ideation

How to resist peer pressure

Gangs

First aid and CPR

Respecting all individuals regardless of gender identity and expression

Understanding how the media influences healthy eating habits

Q26 Select all that apply. Which of the following is/are NOT part of the School Health Index assessment of health education?

The length of health education classes

How many years of health education is required

Professional development for health educators

Whether health education activities/assignments encourage interaction with family members

Whether the school has used the CDC's Health Education Curriculum Analysis Tool

Q27 Making a personal commitment to not use tobacco, alcohol, and other drugs is a recommended practice in health education classes.

True

False

End of Block: Module 2: Health Education

Start of Block: Module 6: School Counseling, Psychological, and Social Services

Q28 The next four questions refer to Module 6: School Counseling, Psychological, and Social Services of the School Health Index.

Q29 A school should have either a full-time school counselor, school psychologist, or school social worker at the recommended ratio.

True

False

Q30 What is the recommended school social worker-to-student ratio?

1:250

1:400

1:500

1:1000

Q31 Which of the following is NOT a recommended way for the counseling, psychological, and/or social services provider to collaborate with other staff?

Developing plans to address student health problems

Providing professional development about trauma-informed practices

Developing policy

All of the above are recommended collaboration practices

Q32 The counseling, psychological, and/or social services provider should be responsible for providing 1-on-1 sessions and small group counseling only.

True

False

End of Block: Module 6: School Counseling, Psychological, and Social Services

Appendix C Posttest

School Health Post-Test

Start of Block: Introduction

Q1 Thank you for your participation in this study. Your contributions will help me better understand how to develop school leaders' understanding of school health and how to cultivate a healthy school.

Q2 First, please recall the pseudonym (research nickname to keep you anonymous) you selected during the pre-test and enter it below.

*You may have recorded it in a safe place (like your phone's notes section).

End of Block: Introduction

Start of Block: Knowledge About the School Health Index

Q3 The Centers for Disease Control and Prevention and ASCD have identified discrete components of school health, which are reflected in the Whole School, Whole Community, Whole Child model. These components are elements that, when effectively implemented, are likely to result in healthier students and improved health and academic outcomes. The School Health Index modules are based on these components. Which of the following is one of the components?

- Mental Health
 - Social-Emotional Learning
 - Employee Wellness
 - Facilities Management
-

Q4 How many modules does the School Health Index have?

- 9
 - 10
 - 11
 - 12
-

Q5 Select all that apply. Using the School Health Index will enable a school to:

- Reduce absenteeism
 - Engage stakeholders to identify strengths and weaknesses
 - Implement school-based mental health services
 - Develop an action plan for improvement
-

Q6 Select all that apply. Who could be part of a School Health Index team?

- Administrator
 - Bus Driver
 - Teacher
 - Custodian
 - Parent
 - Student
-

Q7 The School Health Index Team needs to complete all modules of the School Health Index to be able to make improvements.

- True
- False

End of Block: Knowledge About the School Health Index

Start of Block: Module 1: School Health and Safety Policies and Environment

Q8 The next six questions refer to Module 1: School Health and Safety Policies and Environment of the School Health Index.

Q9 Why must a school district maintain a local wellness policy?

- It is part of the Student Assistant Program requirements
 - It is part of the federal meal program requirements
 - It is part of Act 71 Suicide Prevention requirements
-

Q10 A standard precautions policy describes how to prevent and respond to which of the following:

- Exposure of bodily fluids
 - Unintentional injuries, such as slip and falls or mishandling heavy furniture/equipment
 - School intruders
-

Q11 Smart Snacks in Schools requirements apply to food and beverages sold in schools during the school day, but do not apply to food and beverages sold after school or as fundraisers.

- True
 - False
-

12 Select all that apply. Policies regarding tobacco use at school-sponsored events off school grounds should apply to:

- Students
 - Staff
 - Visitors
-

Q13 Students should be permitted to bring filled containers of water to class.

- True for elementary schools, but not for middle/high schools
 - True for middle/high schools, but not for elementary schools
 - True for both elementary and middle/high schools
 - False for both elementary and middle/high schools
-

Q14 Regular testing of what should be part of a school's health and safety practices?

- Lead levels in water
- Air quality / ventilation
- Emergency communication methods

End of Block: Module 1: School Health and Safety Policies and Environment

Start of Block: Module 2: Health Education

Q15 The next four questions will ask you about Module 2: Health Education of the School Health Index. For the purposes of this study, health education is defined as: “any combination of planned learning experiences that provide the opportunity to acquire information and the skills students need to make quality health decisions.”

Q16 A school's health education curriculum must align to National Health Education Standards, even if a state has its own health education standards.

- True
 - False
-

Q17 Select all that apply. At both the elementary and secondary levels, essential health education topics include:

- Motor vehicle safety
 - Anger management
 - How to seek help for suicidal ideation
 - How to resist peer pressure
 - Gangs
 - First aid and CPR
 - Respecting all individuals regardless of gender identity and expression
 - Understanding how the media influences healthy eating habits
-

Q18 Select all that apply. Which of the following is/are NOT part of the School Health Index assessment of health education?

- The length of health education classes
 - How many years of health education is required
 - Professional development for health educators
 - Whether health education activities/assignments encourage interaction with family members
 - Whether the school has used the CDC's Health Education Curriculum Analysis Tool
-

Q19 Making a personal commitment to not use tobacco, alcohol, and other drugs is a recommended practice in health education classes.

- True
- False

End of Block: Module 2: Health Education

Start of Block: Module 6: School Counseling, Psychological, and Social Services

Q20 The next four questions refer to Module 6: School Counseling, Psychological, and Social Services of the School Health Index.

Q21 A school should have either a full-time school counselor, school psychologist, or school social worker at the recommended ratio.

- True
 - False
-

Q22 What is the recommended school social worker-to-student ratio?

- 1:250
 - 1:400
 - 1:500
 - 1:1000
-

Q23 Which of the following is NOT a recommended way for the counseling, psychological, and/or social services provider to collaborate with other staff?

- Developing plans to address student health problems
 - Providing professional development about trauma-informed practices
 - Developing policy
 - All of the above are recommended collaboration practices
-

Q24 The counseling, psychological, and/or social services provider should be responsible for providing 1-on-1 sessions and small group counseling only.

- True
- False

End of Block: Module 6: School Counseling, Psychological, and Social Services

Start of Block: Overall Process

Q25 During the course unit and project on the School Health Index, did you at any point refer to the CDC website, such as to review the Whole School, Whole Community, Whole Child model or to review the School Health Index site?

- Yes
 - No
-

Q26 During the course unit and project on the School Health Index, did you use the Glossary tool?

- A great deal
 - A lot
 - A moderate amount
 - A little
 - None at all
-

Q27 During the course unit and project on the School Health Index, did you review any of the SHI Resources for any module?

- Yes
 - No
-

Q28 How knowledgeable do you believe you currently are about school health topics?

- Extremely knowledgeable
 - Very knowledgeable
 - Moderately knowledgeable
 - Slightly knowledgeable
 - Not knowledgeable at all
-

Q29 How well prepared do you believe you currently are to lead an improvement planning effort in an area of school health?

- Extremely well
 - Very well
 - Moderately well
 - Slightly well
 - Not well at all
-

Q30 To what degree do you agree with the following statements:

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The School Health Index self-assessment tool was easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would recommend the School Health Index self-assessment tool to my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know whether or not my school's health policies, procedures, and practices are aligned with best practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have at least one idea of something about my school's health policies, procedures, and practices that should change.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe I can be part of making changes to my school's health policies, procedures, and practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of specific resources that can help my school improve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Overall Process

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