Connecting Health and Learning

Health is Vital for Student Success: An Overview of Relevant Research
No matter how well teachers are prepared to teach, no matter what accountability measures are put in place, no matter what governing structures are established for schools, educational progress will be profoundly limited if students are not motivated and able to learn.

—Charles Basch, 2010
For nearly 175 years, leaders in education believed that health and learning were deeply connected and mutually reinforcing. In the past 25 years, researchers have documented what educators and parents have always known: Students who are physically and emotionally well, present, and engaged are better learners. At the same time, those with more education tend to live longer, healthier, and more productive lives. Additionally, gaps in educational achievement fall along similar lines as disparate outcomes in health, with students of color and students from economically disadvantaged homes more likely to have negative health outcomes and lower academic outcomes.

While educational research, practice, and institutions regularly highlight the significance of factors outside of schooling that affect students’ ability to learn, these entities are less likely to intervene in issues that are described as nonacademic despite their clear impact on learning.

All in all, healthy students learn better, and although schools cannot and should not address these factors on their own, school leaders must prioritize how to use scarce resources to address health barriers to learning by implementing school health best practices into their school’s systems, environments, and policies.

This document presents national, peer-reviewed literature and research linking health to indicators of academic achievement (grades, test scores, attendance, and graduation). It also includes recommended actions that can make a difference as well as success stories from Colorado schools and districts that have seen the benefits of addressing health and wellness. In addition, a summary of key findings is provided by health topic: behavioral health, nutrition, physical activity and education, school health, staff wellness, and student health services. This resource can be used to help make the case about the connection between health and student success. Please use key facts, quotes, research, and references that are relevant to your needs and share this information with key stakeholders.

Defining Achievement

Rather than defining achievement solely in terms of academic test scores … a successful learner is knowledgeable, emotionally and physically healthy, civically engaged, prepared for economic self-sufficiency, and prepared for the world beyond formal education.

Source: ASCD, The Healthy School Communities Model: Aligning Health and Education in the School Setting, 2011
Grades and Test Scores

Grades and standardized test scores are clearly related to a student’s likelihood to succeed and eventually graduate from high school. More stringent education accountability measures and scarce resources have also heightened the pressure for schools, students, and staff to exceed on standard indicators of school performance. While many schools may increase instructional time, research indicates that promoting student health can create gains in measures of academic achievement, such as grades and test scores. This section highlights how school health efforts influence grades and test scores by addressing physical activity, nutrition, behavioral health, and health care.

Shrinking budgets, together with the increased emphasis on academic achievement, have made it common practice to increase the amount of instructional time in schools by reducing the number of opportunities for physical education and activity, such as recess, offered to students during the week. However, several studies show that reassigning educational time for school-based physical activity has no negative effect on achievement.\(^4,5,6\) Educationally relevant health disparities, such as vision, asthma, teen pregnancy, aggression and violence, physical activity, breakfast, and inattention/hyperactivity, impede motivation and ability to learn through at least five causal pathways: sensory perceptions, cognition, connectedness and engagement with school, absenteeism, and dropping out.\(^7\)

Aerobic activity has been shown to be especially important, but the actual type of aerobic-based activity does not appear to be a major factor. Many studies have used different interventions and found similar results—that moderate to vigorous physical activity was positively associated with test scores and grades, even with as little as 45 minutes per week.\(^8\) Greatest gains were found among students with greater frequencies of physical activities within a week and the longest durations of activities in a week. Greatest improvements tend to occur in mathematical abilities, followed by verbal abilities and IQ.\(^9\) In fact, studies show that increasing moderate to vigorous physical activity during the school day is actually associated with gains in grades and standardized test scores by influencing cognitive skills, attitudes, and academic behavior.\(^10,11\)

Physical activity improves learning on three levels:

- It optimizes your mindset to improve alertness, attention, and motivation.
- It prepares and encourages nerve cells to bind to one another, which is the cellular basis for logging new information.
- It spurs the development of new nerve cells from stem cells in the hippocampus, which can help with memory forming, organizing, and storing.\(^12\)

In addition to physical education and other physical activity, research indicates that schools have the potential to positively impact the achievement of students through gains in health.

Twenty Student Brains Taking the Same Test

After sitting quietly   After 20 minute walk

Research Scan compliments of Dr. Chuck Hillman University of Illinois
Research also indicates that schools have the potential to positively influence student achievement through gains in health.

- One study found that after implementing a program to improve nutrition and physical activity, an elementary school reported a year-over-year decrease in the number of counseling and disciplinary referrals per 100 students and an increase in standardized test scores.\(^\text{13}\)

- Another study found that students with low nutrient intake were more likely to be absent, experience behavioral trouble in school, and get poorer grades compared to their nutritionally adequate peers. However, six months after implementation of a universal school breakfast program, absenteeism declined, grade-point averages (GPAs) improved, and student- and parent-reported hunger decreased.\(^\text{14}\)

- Researchers generally find that a higher quality diet is associated with better performance on exams. Other studies find that improving the quality of students’ diets leads to students being on task more often, increases math test scores, possibly increases reading test scores, and increases attendance.\(^\text{15,16}\)

- Nearly 2 million—or one in 10—U.S. youths ages 12 to 17 had a major depressive episode; 60 percent of these youths did not receive any treatment.\(^\text{17}\) Students who experience symptoms of depression, anxiety, or substance abuse are more likely to report difficulty concentrating in class and completing homework.\(^\text{18}\) Conversely, students who receive social and emotional learning instruction have academic achievement scores an average of 11 percentage points higher than students who do not participate in social and emotional learning programs.\(^\text{19}\)

- Today’s adolescents are chronically sleep-deprived. Those who sleep more, on average, have higher grades and better behavior in school.\(^\text{20}\) One in four students regularly falls asleep in class and an additional one in five falls asleep while doing homework.\(^\text{21}\) One study found that when students cut into their sleep for extra study time, they have more trouble understanding material taught in class and are more likely to struggle with an assignment or test the following day.\(^\text{22}\)
Attendance

Students who regularly attend school have higher GPAs, standardized test scores, and graduation rates. In fact, a recent review of research found that “academic achievement from kindergarten to high school graduation, and postsecondary enrollment are all highly sensitive to absenteeism. Missing even some school can have negative effects, especially for students who live in or near poverty. Missing a lot of school, at any time, throws students completely off track to educational success.” Chronic absenteeism, generally defined as missing 10 percent or more during the school year, is of greatest concern. Data analyses from multiple states and school districts have consistently found chronic absenteeism to be among the strongest predictors of dropping out of high school—stronger even than suspensions, test scores, and being overage for grade, after having controlled for student demographics and backgrounds.

While absenteeism is a complex issue rooted in individual, environmental, and social factors, health-related issues can be major barriers to students’ ability to make it to school.

Tooth decay is the single most common childhood chronic disease—five times more common than asthma. More than 51 million hours of school time are lost each year to dental disease, with students from economically disadvantaged homes bearing the greatest burden. Approximately one in five students in Colorado has untreated dental decay. Pain from cavities, abscesses, and toothaches often prevents children from being able to focus in class, and in severe cases, can lead to chronic absenteeism. In fact, a recent study found that children who reported good, fair, or poor oral health were nearly three times more likely than their peers with very good or excellent oral health to miss school because of dental pain or infection.

Asthma is a leading chronic disease among school-age youths and a leading cause of absenteeism, accounting for 10.5 million missed school days. In schools that invested in school nurses, absenteeism due to asthma decreased, while comparison schools that did not invest in nurses saw their absenteeism rate increase over the same time period.

Students with diagnosed behavioral health issues miss three times as many school days as those without behavioral health challenges. Additionally, students who perceive school to be physically or emotionally unsafe often choose to avoid school altogether. For example, youths who are bullies or are victims of bullies are more likely to miss school. The relationship is similar for students experiencing cyberbullying and face-to-face bullying.

Kentucky School Improves Attendance

In Kentucky, Breathitt County Schools needed to improve attendance for the 2013-2014 school year. After the district placed a school nurse in every school and established a school policy that all students had to be evaluated by the school nurse before leaving school early because of illness, the number of student absences decreased by 52 percent from the same period of the 2012-2013 school year. This increased attendance also led to a corresponding 3 percent increase in state education funding for the school district.
High School Graduation

Graduating from high school is a major determinant of both future health and prosperity. In general, adults who do not earn a high school diploma tend to have lower paying jobs and are at greater risk for living in poverty, lacking health insurance, being incarcerated, and having poor health outcomes.32,33,34

Only 78.2 percent of American students graduate from high school on time35 and less than 40 percent of 25- to 34-year-olds have a postsecondary degree.36 The likelihood of attaining a high school diploma is not equally distributed among youths. Students of color, from economically disadvantaged backgrounds, with disabilities, and those who are English Language Learners, migrant, or homeless are less likely to graduate from high school in four years and also experience increased health problems.

Student health problems associated with dropout include substance use; teen pregnancy; and psychological, emotional, and behavioral problems.37

- 30 percent of teen girls who have dropped out of high school cite pregnancy or parenthood as a key reason. Rates are even higher for African-American and Latino girls—38 percent and 36 percent, respectively.38 Children of teen parents also start school at a disadvantage, including having lower levels of school readiness at kindergarten.39

- A national survey found that youths who had dropped out of school were more likely than youths of similar age who were still in school to engage in current cigarette use, alcohol use, binge alcohol use, marijuana use, nonmedical use of psychotherapeutic drugs, and use of any illicit drugs.40

- One study found that emotional health challenges influence school completion as early as primary school, and the relationship was even greater in high school. Students with emotional health challenges (anxiety, depression, and conduct disorders) and substance use, abuse, or dependence were more likely to drop out of high school. In fact, students who used drugs or alcohol were nearly three times more likely to drop out of school.41

Reducing Violence One Classroom at a Time

The superintendent of schools in Kansas City, Mo., decided to establish daily physical education throughout the district after seeing how it reduced violence and improved test scores nearly overnight at one of his inner-city elementary schools.

Removing Health Barriers Increases Learning Success

Research confirms that health is a vital learning support, but the sheer number of challenges facing students may seem insurmountable for some schools. However, research from Washington found consistent and strong associations between a number of health factors and student achievement.
Schools are not only important settings for the health of students, but for adults in the building as well. In the United States, public schools employ more than 6.7 million people. The conditions in schools that influence the health and achievement of students also affect school staff.

Protecting the physical and mental health of school employees is integral in protecting the health of students and supporting their academic success. School employee wellness programs can improve staff productivity, reduce absenteeism, and decrease employee health costs.

In fact, school employee wellness programs are a smart financial investment. Research indicates that for every $1 spent on employee wellness programs, an average of $5 is saved.

School Climate and Staff Retention

A 2006 Duke University study looked at first- and second-year teachers in a small urban school district related to teacher retention. Findings suggested that beginning teachers’ decisions to remain at their school site and in the school district were strongly associated with the school climate.
While many schools are implementing evidence-based health-promoting programs, they are not implemented consistently in the education system. Leaders in education research and policy, as well as parents and students, have called for health to be integrated into the core mission of schools. At the same time, high school graduation has emerged as a key priority in health and had been identified as a leading health indicator.

Schools are not expected to address all of the health needs of students alone. Collaboration, coordination, and co-action are required at the federal, state, and local levels among partners in education, public health, health services, and community organizations. There is a broad consensus among education and health stakeholders that a multicomponent, coordinated approach that includes policy, programs, and practices is necessary to effectively address health-related barriers to learning. Indeed, capacity is an often-cited need for schools to adequately address the health needs of students.

To help schools make their environments, staff, and students healthier, numerous stakeholders are engaged in Colorado Healthy Schools Collective Impact. Partners in this work align efforts and resources to help students reach their full potential in school and life. Learn more at coloradoedinitiative.org.
State Actions

- Continue state-level health and education partner co-action to support dissemination of best practices, professional development standards, and inclusion of health and wellness as a priority for grant programs.

- Continue to increase access to evidence-based school health services, which have all been found to give students care when they need it, keeping them in school and out of more costly care settings (like emergency rooms).  

- Integrate school health practices, programs, and policies into education accountability measures (for example, using health data to inform the Unified Improvement Plans and updating the school accountability measures for health and wellness).

- Continue to enhance the collection of health and wellness data in schools, like the Healthy Kids Colorado Survey, and other school health needs assessments and measures through the new Colorado Healthy Schools Smart Source and recognition of the Colorado Healthy School Champions.

District and School Actions

- Identify resources to support a district or school health coordinator. Having a person responsible for this work has shown to help obtain additional funds; update and implement local wellness policies; and support partnerships with families, students, and the community.

- Reach out to community organizations, local public health organizations, local mental health centers, local businesses, and parents to build mutually beneficial partnerships that reinforce, enhance, and support school health efforts.

- Work with a district or school team to regularly assess student and school health needs.

- Develop annual goals, strategies, or plans to address the school’s greatest health needs based on data, and link to the Unified Improvement Plan or other accountability systems.

- Implement and evaluate the plans regularly with the district or school team.
Teachers Understand Social and Emotional Connection to Student Achievement

A national survey of teachers found that three out of four teachers believe social and emotional learning will improve student academic achievement. Those who reported successful social and emotional learning programs in their schools were half as likely to say their school has a negative school climate.


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Linking Health and Learning Success Stories

Center Consolidated Schools: San Luis Valley, Colorado

Center Consolidated Schools, located in Colorado’s San Luis Valley, has collected student health and risk behavior data for over a decade. Knowing that teen pregnancy and drug and alcohol abuse rates were high, the district started a youth engagement process to give all students a voice in health and wellness. Students focused on bettering the school climate, which included addressing bullying, and made great strides.

<table>
<thead>
<tr>
<th>Reports of bullying on school property</th>
<th>Students reporting a low commitment to school</th>
<th>The graduation rate</th>
<th>Students reporting being absent from school because of safety concerns</th>
</tr>
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<tbody>
<tr>
<td>decreased from 33% to 18% (2007 to 2012)</td>
<td>decreased from 65% to 30% (2007 to 2012)</td>
<td>increased from 81% to 90% (2010 to 2012)</td>
<td>decreased from 12% to 4% (2007 to 2012)</td>
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Rangeview High School: Aurora, Colorado

Rangeview High School in Aurora, Colo., has worked hard to become a No Place For Hate® school. Its student body was growing more and more diverse, and data showed students had a decreased connection to school. To ensure all students felt accepted and respected, the school expanded a student club, the Diversity Student Alliance, to a credit-bearing class in multiculturalism. Students design and deliver lessons in religious tolerance, the power of words to hurt and heal, understanding sexuality and gender nonconformity, personality differences and understanding life for students with disabilities.

Students also lead professional development sessions with teachers and organize monthly activities that culminate in students pledging to respect and celebrate diversity. The school has earned a 9News Health Advocacy Award for the student-led Find Your Voice Campaign.

| Students feeling safe at school increased by 15% (2007 to 2011) | Cultural-based harassment decreased by 17% (2007 to 2011) | The dropout rate decreased from 7% to 4% (2007 to 2011) | The graduation rate increased to 79% (2007 to 2011) |
Red Hawk Elementary School: Erie, Colorado

Red Hawk Elementary School in Erie, Colo., is committed to improving student health and ensuring physical activity is a part of every day for every student. In addition to providing daily recess and physical education, Red Hawk uses a movement calendar and includes physical activity breaks in the master schedule. Students gain an extra 40 minutes of moderate to vigorous physical activity daily.

91% proficient and advanced third-grade reading TCAP
47% of 3rd graders
40% of 4th graders, and
45% of 5th graders scored “advanced” in math

87% of 3rd through 5th graders look forward to coming to school
98% of parents indicate they are satisfied with their child’s education

A Broader Definition of Achievement

Rather than defining achievement solely in terms of academic test scores, a successful learner is knowledgeable, emotionally and physically healthy, civically engaged, prepared for economic self-sufficiency, and prepared for the world beyond formal education.

Source: ASCD, The Healthy School Communities Model: Aligning Health and Education in the School Setting, 2011
Pueblo City Schools: Pueblo, Colorado

Pueblo City Schools (PCS) and partners from community mental health centers, the police department, justice systems, community organizations, and families used a Safe Schools/Healthy Students federal grant to create the System of Care.

PCS bolstered its behavioral health services by placing school-based mental health therapists at four wellness centers—two at middle schools and two at high schools in the district. School leaders trained staff to implement Positive Behavioral Interventions and Supports (PBIS) and a bullying prevention program. Through the PBIS efforts, schools reduced office discipline referrals significantly, which increased student classroom time and reduced administrative time spent on discipline issues.

Over 600 students received services per year during approximately 3,000 encounters. The number of youth clients at the community mental health centers and other community-based outpatient facilities did not decrease, indicating that the services in the school reached a population of youths who were not previously accessing services. The system also saved the community an estimated $239,000 because of decreased visits by students to emergency rooms.
If we are going to see significant improvement in the learning success of Colorado students, we must pay careful attention to research that is making the clear connection between student health and academic performance. The following key facts make the case for action to ensure healthy schools, communities, and children.

**Students who are physically and emotionally well, present, and engaged, are better learners.**

- **SCHOOL HEALTH**
  Schools by themselves cannot, and should not be expected to, solve the nation’s health and social problems. Families, health care workers, the media, community organizations, and young people also must be involved. Schools can provide a critical connections in which many agencies might work together to maintain the well-being of young people.

- **BEHAVIORAL HEALTH**
  Students who receive instruction related to social and emotional learning have higher academic achievement scores.

- **PHYSICAL ACTIVITY & PHYSICAL EDUCATION**
  Moderate to vigorous physical activity is positively associated with test scores and grades, even with as little as 45 minutes per week.

- **NUTRITION**
  Students with a higher quality diet are found to be on task more often and have higher test scores and attendance rates.

- **STAFF WELLNESS**
  Protecting the physical and mental health of school employees is integral in protecting the health of students and supporting their academic success.

- **STUDENT HEALTH SERVICES**
  Attention to adequate sleep, oral health, and chronic health conditions such as asthma can reduce absenteeism and help students to be healthy and ready to learn.
Connecting Health and Learning
Talking Points You Should Use to Make the Case

Behavioral Health

- Students with diagnosed behavioral health issues miss three times as many school days as those without behavioral health challenges.³⁰
- Students with emotional health challenges (anxiety, depression, and conduct disorders) and substance use, abuse, or dependence were more likely to drop out of high school. Students who used drugs or alcohol were nearly three times more likely to drop out of school.⁴¹
- Nearly 2 million—or one in 10—U.S. youths ages 12 to 17 had a major depressive episode; 60 percent of these youths did not receive any treatment.¹⁷ Students who experience symptoms of depression, anxiety, or substance abuse are more likely to report trouble concentrating in class and completing homework. Conversely, students who receive social and emotional learning instruction have academic achievement scores an average of 11 percentage points higher than students who do not participate in social and emotional learning programs.¹⁸

Nutrition

- Students with low nutrient intake were more likely to be absent, experience behavioral trouble in school, and get poorer grades compared to their nutritionally adequate peers. However, six months after implementation of a universal school breakfast program, absenteeism was reduced, GPAs improved, and student- and parent-reported hunger decreased.¹⁴
- A higher quality diet is generally associated with better performance on exams. Other studies find that improving the quality of students’ diets leads to students being on task more often, increases math test scores, possibly increases reading test scores, and increases attendance.¹⁵,¹⁶

Physical Activity & Physical Education

- Physical activity improves learning on three levels: First, it optimizes your mindset to improve alertness, attention, and motivation; second, it prepares and encourages nerve cells to bind to one to another, which is the cellular basis for logging in new information; and third, it spurs the development of new nerve cells from stem cells in the hippocampus.¹²

School Health

- Research confirms that health is a vital learning support, but the sheer number of challenges facing students may seem insurmountable for some schools. However, research from Washington state show that there are consistent and strong associations between a number of health factors and achievement.³²

Staff Wellness

- School employee wellness programs can improve staff productivity, reduce absenteeism, and decrease employee health costs.⁴⁴ In fact, school employee wellness programs are a smart financial investment. Research indicates that for every $1 spent on employee wellness programs, an average of $5 is saved.⁴⁵

Student Health Services

- Adolescents today are chronically sleep-deprived. Those who sleep more, on average, have higher grades and better behavior in school.²⁰ One in four students regularly falls asleep in class and an additional one in five falls asleep while doing homework.²¹
- Tooth decay is the single most common childhood chronic disease—five times more common than asthma. More than 51 million hours of school time are lost each year to dental disease, with students from economically disadvantaged homes bearing the greatest burden.²⁵ Approximately one in five students in Colorado has untreated dental decay.
- Asthma is a leading chronic disease among school-age youths and a leading cause of absenteeism, accounting for 10.5 million missed school days.²⁸
End Notes


13See note 6.


22Gillen-O’Neel C, Huynh VW, Fulgini AH. (2013). To study or to sleep? The academic costs of studying at the expense of sleep. Child Development, 84(1): 133-142.


In the great work of education, our physical condition, if not the first step in point of importance, is the first in order of time. On the broad and firm foundation of health alone can the loftiest and most enduring structures of the intellect be reared.

-Horace Mann, 1843
The Colorado Education Initiative is an independent nonprofit working in partnership with the Colorado Department of Education to unlock the unique potential of every student by incubating innovation, shining a spotlight on success, and investing in sustainable change that improves outcomes for all students. CEI envisions that every student in Colorado is prepared and unafraid to succeed in school, work, and life, and ready to take on the challenges of today, tomorrow, and beyond.

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