



Supporting Learners & Leaders

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School Construction Testimony Notes

House Education Committee

February 2, 2021

From: Jay Nichols, VPA

The Impact of School Infrastructure On Learning: A Synthesis of the Evidence:

“Recent studies have shown that students’ performance is enhanced in schools with better physical learning environments. The empirical argument for investing in learning environment is strong. The Impact of School Infrastructure on Learning demonstrates improved learning outcomes even after controlling for students’ socioeconomic background and other relevant covariates. New technologies and emerging pedagogical practices have created new requirements for educational buildings. As a result, new approaches to building learning environments must be developed that both create better spaces for children and increase the efficiency of investments in educational infrastructure.” You can read the full report here: <https://files.eric.ed.gov/fulltext/ED604388.pdf>

Performance Linked to Facility Conditions – Key Findings

Students' performance relies on a variety of factors, such as aptitude, motivation and morale, environment, attendance and alertness. The condition of our nation's learning facilities can affect student performance in several of these areas.

Educational institutions that are in disrepair have a negative impact on students' ability to retain and recall information. A study performed in Germany examined how noise and acoustics influenced students' short-term memory and speech perception. Those students in classrooms with poor acoustic conditions performed significantly worse. Not only that, but those same students judged their relationships with their peers and teachers less positively than the students in classrooms with good acoustics.

A similar study on student performance and building conditions found a parallel between the amount of sunlight, or "daylighting" in classrooms, and the students' performance on standardized math and reading tests. Students in classrooms that were the most exposed to windows or skylights that allowed more natural light to flow into the classroom progressed 20% faster on math tests and 26% on reading tests than those students who were exposed the least.

Proper heating, cooling and ventilation affects not only student performance, but their health, which may in turn affect their attendance and ability to keep up. Properly ventilated educational facilities have been found to reduce asthma symptoms and allergies. Asthma is the number one cause of school absenteeism in America. A focus on updating and maintaining an education facility's heating, cooling and ventilation units is shown to reduce asthma symptoms, allowing students to spend more time in school learning. "In Maryland, we've made record investments in school construction and renovation because it is difficult to learn or to teach if you're shivering." - Maryland Gov. Martin O'Malley

Likewise, researchers at Lawrence Berkeley National Laboratories found that when ventilation rates are at or below minimum standards, student performance decreases by 5-10% as well. Other research has found that even small changes in temperature can have an impact on student performance.

Investing in our Students and Teachers

While deterioration and disrepair of facility walls, floors, HVAC units and windows can affect the health and performance of our students, increasing student and teacher morale is another factor that can foster a more productive learning environment.

A 2011 study conducted in Connecticut found that in a public school system that typically endured high school dropout rates triple the state average and test scores substantially lower than the rest of the state, an investment in the school infrastructure made a dramatic impact. The changes to the school affected the heating and air conditioning, classroom technology and energy efficiency upgrades. In the years leading up to construction, reading scores remained flat. One year into construction, the scores rose, and continued this incline for at least the next six years.

Why? Principals in the schools during the construction period reported that the investment largely affected student motivation, and had moderate or large effects on teacher motivation.

Conversely, education facilities with inadequate lighting, poor air quality and buildings that are in general disrepair may cause low teacher morale, and make it more difficult to retain high quality, motivated teachers.

Deferring repairs and renovations can lead to worsening conditions, reduced equipment efficiency, and an increase in repair expenses.

Facility deterioration, improper lighting and air quality and high noise levels can lead to health issues, inattention and low morale for the teachers and students that spend time in the buildings. Our nation's education facilities are in critical shape, with 74% in need of immediate repair and replacement and another 12% labeled unsatisfactory or inadequate for learning.

Source: "Quality Education Facilities Foster Better Learning" by Christine Quinn.

A quick story:

I teach a course entitled Leading Vermont Schools that most new and new to Vermont school leaders take in their first couple of years of the principalship. One key aspect of this course, that meets for a full day once a month during the year, is to work on problem solving. We do this through participants in a confidential setting sharing dilemmas and I teach them various protocols for this work. Two years ago, a new principal brought the following dilemma, a class was meeting in her school. Students were sitting at their desk while the teacher was teaching a mini lesson through direct instruction. All of the sudden, a ceiling tile broke as a dead bird fell through the ceiling and hit the corner of a student's desk and very nearly hit the student. The principal found out from staff and faculty that situations of this type had occurred before in this old building because there were lots of roof/attic problems and the community was not willing/able to pass a bond or provide the resources to address the issue. Years and years of deferred maintenance make situations like this all too common in Vermont.

