

What Infrastructure Grade is Your Child's School Receiving?

By Deborah D. Keller, PE

Our nation's school children are precious to us. They are our future, they are our family and friends and neighbors. From the moment they leave home each school day there is the expectation that they will be safe and properly cared for. That includes the transportation they use, the roads and bridges they cross, and the water, sewerage, drainage and power systems their schools need to operate. For K-12 education, school is the home away from home for students and teachers for nearly two hundred days each year.

Power outages, broken water pipes, flooding, and other infrastructure disruptions can prompt school closures. This is an example of the interconnectedness of our infrastructure. It works as a system. When one part has a failure, other parts get disrupted. Because much of our infrastructure is deteriorating, disruptions happen more frequently. This is costly to the economy, and in the case of schools, to students' learning.

K-12 educational facilities are not immune to the deterioration that comes from aging infrastructure. Nationally, public school facilities received a "D+" grade because more than half are in need of investments for repairs, renovations, and modernizations to be considered in "good" condition. Schools especially should be able to provide an environment conducive to students learning and teachers teaching. This has been proven to impact student performance. If the HVAC can't provide a comfortable temperature, or the lighting is poor, or the restrooms don't work properly, or the equipment is broken, what's the impact on effective education under those circumstances? Those are visible signs of infrastructure conditions, but what about the not so obvious signs of lead paint, contaminated soil, asbestos tiles, toxic mold, poor drinking water and air quality, deadly bacteria, and building code violations?

A more recent concern that is certainly not obvious is the threat of a random act of violence on campus. Hardening the infrastructure, re-design of entries and exits, etc. require expensive retrofitting in older schools. But what price is paid for daily anxiety that can affect the mental health of both students and teachers in an environment targeted for violence where security is still lax?

U.S. K-12 enrollment is projected to grow by 3% over the next decade. As student population grows, many school systems have to choose between "temporary buildings", such as portable trailers, or adding students into already crowded classrooms. Both can restrict learning activities when the maximum occupancy is reached. Furthermore, temporary buildings are usually vacated under tornado-like weather, further increasing anxiety and disrupting learning time as teachers rush students to gyms and cafeterias.

The American Society of Civil Engineers' 2017 Infrastructure Report Card for K-12 schools issued a grade of D+ because it found that approximately 53 percent of schools need improvements to reach even "good" condition. Many school districts had not adopted regular, comprehensive major maintenance, renewal, and construction programs nor preventive maintenance programs due to lack of adequate funding.

ASCE also recognized that "school buildings also serve communities as emergency shelters during man-made and natural disasters. This secondary function has a significant role in public health, safety, and welfare and requires facilities that are maintained to function in emergencies and resilient to quickly recover. Unfortunately, many older school buildings do not have windows that can withstand high winds, structures designed to survive earthquakes, and rooms specifically designed as shelters from tornados."

Excerpt from the 2017 ASCE National Infrastructure Report Card for Schools – D+

- Our nation’s public schools received a grade of a D+, up from a D in 2013.
- Public schools serve as critical learning environments for the next generation. Recent studies indicate that public schools’ conditions may affect student performance, with quality facilities helping to improve student achievement, reduce truancy, and raise staff morale and retention.
- More than half (53%) of public schools need to make investments for repairs, renovations, and modernizations to be considered in “good” condition.
- While school districts invested as much as \$99 billion per year in school facilities from 2011-2013, it is estimated that the nation should be spending \$145 billion per year to maintain, operate, and renew facilities so they provide healthy, safe, and modern learning environments leaving an estimated \$46 billion annual gap.
- School districts spent \$14 billion on construction projects in 2014. A little more than half of that amount (\$7.8 billion) was spent on new schools, while the rest was split between additions to existing buildings (\$3.2 billion) and modernizing existing structures (\$3.14 billion). There’s been essentially no new investment nationally.
- School funding varies widely by state. Five states pay for nearly all of their districts capital costs, 12 states provide no direct support for districts for capital construction responsibilities, and in the remaining 33 states, the levels of support vary greatly. The federal government contributes little to nothing to help alleviate disparities.

The 2017 Louisiana Report Card did not evaluate schools, but we know that like most public infrastructure there is never enough funding in the local school districts and many schools were not designed to meet tomorrow’s demands. Consequently, aging infrastructure is a disadvantage and our children and teachers are at a disadvantage. School closures are an example of the inconveniences that happen because our infrastructure is not meeting our needs. When a school has to close:

- Students’ learning is disrupted for that day and teachers must adjust plans
- Parents need to find alternate childcare—possibly not going to work, and therefore losing wages themselves
- Hourly school employees lose wages
- Repairs may cause more than one lost school day

If you have an interest in serving on the next Louisiana Infrastructure Report Card’s committee for evaluating Louisiana’s public schools, please consider volunteering to serve on a new committee, if we have enough volunteers. It will be a state-wide effort made easiest if we have ASCE members evaluating as many public school districts as possible. We owe it to our children and our teachers.