Your Question:

You asked for research discussing the effects of school facilities – specifically, construction and renovation – on student learning.

Our Response:

Research on school facilities generally seeks to establish whether school building quality is correlated to student achievement, and how facilities investments impact student outcomes. This overview will highlight several more recent studies on the relationship between student outcomes and school building quality as well as research examining the current state of school facilities investments.

**School Facility Quality and Student Achievement:**

Research in this area attempts to understand the role that quality v. poor quality buildings have on student achievement or other key functions. Analysis in this area generally studies student outcomes and teacher retention:

- **The walls speak: The interplay of quality facilities, school climate, and student achievement** (2008): This analysis examines the relationship between school facility quality and student achievement. Using a combination of teacher surveys and student achievement data, the authors incorporate multiple variables beyond facility quality variables to understand the role school facilities have on student outcomes and school climate. The study finds a correlation between student achievement in English and mathematics and the quality of school facilities. Further, the research finds a positive relationship between the quality of school facilities and perceptions of school climate. Additionally, the study found that perceptions of cleanliness and organization were not linked to perceptions of building quality, and that the quality of school building was not linked to socioeconomic status.

- **The Effect of School Construction on Test Scores, School Enrollment, and Home Prices** (2011): This study examined the impact of school facilities investment on test scores, enrollment, and home prices. The authors used academic and residential home sale data from a low-income urban school district (New Haven, Connecticut) over six years to understand the effects of school construction on elementary and middle school children. The study finds a positive correlation in student reading scores per $10,000 in facilities investment. Additionally, school construction was shown to improve home values in the surrounding area and improve district enrollment.

- **Does High School Facility Quality Affect Student Achievement? A 2-Level Hierarchical Linear Model** (2011): Research here counters findings showing a relationship between building quality and student achievement. This study examines data from 520 public schools on 8110 students in their final two years of high school. The authors find no statistically significant relationship between facility quality and achievement in
mathematics. Some mitigating conditions to this study included a narrow definition of school (high school) and facility condition (disrepair rather than overall quality). The authors suggest that facility maintenance and disrepair may operate through a mediated lens, meaning teacher and administrator perception of facility quality has a role on the student impact.

- **Investing in Schools: Capital Spending, Facility Conditions, and Student Achievement** (2016): This paper analyzes the impact of school facilities improvements from locally initiated and financed school districts. Specifically, this paper considers the role of local facilities improvement campaigns in Texas over a 14-year period to better understand what, if any, effects local bond measure campaigns may have on student outcomes. While the authors find local bond efforts lead to large increases in facilities funding in local school districts, these investments had no statistical impact on operating spending, average class size, teacher retention, or student recruitment at the individual school level. More importantly, the research finds that large local investments in capital projects had no impact on student achievement.

*Additional Research Summaries:*

Several other sources may be useful for understanding the relationship between physical school environments and student outcomes and behavior. These resources do not focus on one specific approach, but rather provide an overview of research in this area:

- **School Climate Research Summary** (2012): Research for the National School Climate Center includes a section on the role of physical environment in student learning (p. 9-10), but discusses the role in the broader context of an analysis of school climate literature. Nonetheless, the literature presented in this summary demonstrates that – in addition to student and faculty perception and quality factors – the physical size of a school has implications for the type of learning community the building creates and has an impact on student perceptions of safety in that environment.

- **State of Our Schools: America’s K-12 Facilities** (2016): This report adopts a holistic approach to understanding the role of educational facilities have on student behavior and performance. The research highlights student health and performance, the environment, and equity questions as they relate to school facilities. Additionally, the report provides a national overview of state investments in public school facilities. The report concludes by asking readers to understand their community’s public-school facility needs, engage with their community in education facilities planning, support new public funding, and leverage public and private resources.