

Effects of School Facilities' Mechanical and Plumbing Characteristics and Conditions on Student Attendance, Academic Performance and Health

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Abstract : School districts throughout the United States are constantly seeking measures to improve test scores, reduce school absenteeism and improve indoor environmental quality. It is imperative to identify key building investments which will provide the largest benefits to schools in terms of improving the aforementioned factors. This study uses Analysis of Variance (ANOVA) tests to statistically evaluate the impact of a school building's mechanical and plumbing characteristics on a child's educational performance. The educational performance is measured via three indicators, i.e. test scores, suspensions, and absenteeism. The study investigated 125 New York City school facilities to determine the potential correlations between 50 mechanical and plumbing variables and the performance indicators. Key findings from the tests revealed that elementary schools with pneumatic systems in "good" condition have 48.8% lower percentages of students scoring at the minimum English Language Arts (ELA) competency level compared with those with no pneumatic system. Additionally, elementary schools with "unit heaters/cabinet heaters" in "good to fair" conditions have 1.1% higher attendance rates compared to schools with no "unit heaters/cabinet heaters" or those in inferior condition. Furthermore, elementary schools with air conditioning have 0.6% higher attendance rates compared to schools with no air conditioning, and those with interior floor drains in "good" condition have 1.8% higher attendance rates compared to schools with interior drains in inferior condition.

Keywords : academic attendance and performance, mechanical and plumbing systems, schools, student health

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