

CASE STUDY



Project | Panther Valley Elementary School
Location | Nesquehoning, PA
Product | Ultima® Ceilings, StrataClean IQ™ Air Filtration System and VidaShield UV24™ Air Purification System



1 877 276-7876
armstrongceilings.com/healthyschools

the challenge:

Indoor Air Quality (IAQ), acoustics, and lighting in school buildings affect students' ability to learn and the overall health of all building occupants. In addition, poor IAQ leads to higher absenteeism, and poor acoustics are linked to lower test scores.

To determine the condition of its Indoor Environmental Quality (IEQ), the Panther Valley Elementary School in Nesquehoning, PA recently placed AWAIR indoor environmental sensors throughout the school. The sensors measure seven key IEQ factors: temperature, humidity, CO₂, volatile organic compounds (VOCs), particulate matter (PM_{2.5}), noise, and light.

During initial monitoring, the overall AWAIR scores moved between fair and good, averaging in the low 80s. Primary areas of concern identified were air quality (ventilation rates and CO₂ thresholds), noise, and light levels.

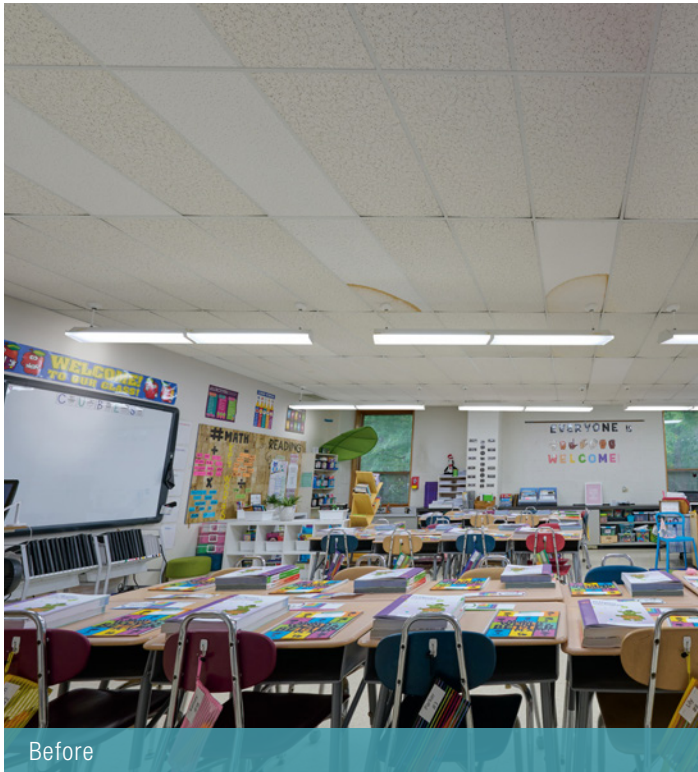
the solution:

To help address these concerns, the school replaced the ceilings in a 780-square-foot third-grade classroom and a 450-square-foot nurse's office and added in-ceiling air-cleaning solutions.

Air Filtration in the Classroom

Built in the 1980s, the classroom houses 27-32 students and is in use nearly eight hours a day. An in-ceiling Armstrong StrataClean IQ™ Air Filtration System was installed in the classroom to improve indoor air quality. The system captures and removes 90% of airborne contaminants, allergens, and other particulates using proven MERV 13 filtration.

Like many schools in the northern part of the country, Panther Valley Elementary has a limited HVAC system. As a result, air changes per hour (ACH) in the classroom were only .5 ACH. Following installation of the StrataClean IQ unit, ACH increased to 1.5 ACH. Increasing ACH helped reduce exposure to airborne contaminants. In addition, particulate matter and CO₂ levels decreased.



Before



After

Third grade teacher, Tori Koebler, noticed the improvement. As she says, “I know how important indoor air quality is for both myself and my students. I’m a severe asthmatic and I haven’t had any episodes since the start of school and the room renovation.”

Director of Buildings and Grounds Scott Fisher concurs: “Improved indoor air quality is especially important since we have no full-blown HVAC system in the building. The cleaner, brighter environment definitely has an effect on how kids learn.”

Air Purification in the Nurse’s Office:

In addition, a VidaShield UV24™ air purification system was installed in the nurse’s office. This unit operates by continuously drawing air into a self-contained chamber in the ceiling plenum where the air is treated safely with ultraviolet light air-cleaning technology.

Third-party testing shows this system neutralizes 97 percent of bacteria, viruses and allergens on the first pass of air through the system. This contributes to healthier spaces by minimizing allergy and asthma triggers.

Improved Lighting and Acoustics

Ultima® high light-reflective ceiling panels from Armstrong Ceiling & Wall Solutions were installed in both spaces. The smooth-textured panels with a non-directional visual are both washable and impact-and scratch-resistant. The new ceiling panels provided improved lighting as well. Estimated light reflectance value of the existing ceiling was in the 40 – 60 range, while the Ultima ceiling panels have a light reflectance of 88.

By upgrading to Ultima ceiling tile and new LED light fixtures, light levels in the spaces more than doubled from 116 to 253 lux. Improved light reflectance brightens spaces, maximizes light, and enhances visual comfort by reducing eye strain and glare.

The acoustic environment also improved. The Noise Reduction Coefficient (NRC) of the ceiling increased from .55 to .75, meaning the new panels absorb 75% of the sound that strikes them. The new ceiling panels also provide Armstrong Total Acoustics® performance, meaning they not only absorb sound but also block it from entering adjacent spaces.

Following completion of the improvements, AWAIR scores were in the mid 80s to low 90s with an average near 88.