There’s little evidence tech is much help stopping school shootings

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Schools are increasingly turning to technology like ShotSpotter to address the threat of mass shootings.

Jessica Rinaldi/The Boston Globe via Getty Images

A group of college students braved the frigid New England weather on Dec. 13, 2025, to attend a late afternoon review session at Brown University in Providence, Rhode Island. Eleven of those students were struck by gunfire when a shooter entered the lecture hall. Two didn’t survive.

Shortly after, a petition circulated calling for better security for Brown students, including ID-card entry to campus buildings and improved surveillance cameras. As often happens in the aftermath of tragedy, the conversation turned to lessons for the future, especially in terms of school security.

There has been rapid growth of the nation's now US$4 billion school security industry. Schools have many options, from traditional metal detectors and cameras to gunshot detection systems and weaponized drones. There are also purveyors of artificial-intelligence-assisted surveillance systems that promise prevention: The gun will be detected before any shots are fired, and the shooting will never happen.

They appeal to institutions struggling to protect their communities, and are marketed aggressively as the future of school shooting prevention.

I'm a criminologist who studies mass shootings and school violence. In my research, I've found that there's a lack of evidence to support the effectiveness of these technological interventions.

Grasping for a solution

Implementation has not lagged. A survey from Campus Safety Magazine found that about 24% of K-12 schools report video-assisted weapons detection systems, and 14% use gunshot detection systems, like ShotSpotter.

Gunshot detection uses acoustic sensors placed within an area to detect gunfire and alert police. Research has shown that gunshot detection may help police respond faster to gun crimes, but it has little to no role in preventing gun violence.

Still, schools may be warming to the idea of gunshot detection to address the threat of a campus shooter. In 2022, the school board in Manchester, New Hampshire, voted to implement ShotSpotter in the district's schools after a series of active-shooter threats.

Other companies claim their technologies provide real-time visual weapons detection. Evolv is an AI screening system for detecting concealed weapons, which has been implemented in more than 400 school buildings since 2021. ZeroEyes and Omnilert are AI-assisted security camera systems that detect firearms and promise to notify authorities within seconds or minutes of a gun being detected.

These systems analyze surveillance video with AI programs trained to recognize a range of visual cues, including different types of guns and behavioral indicators of aggression. Upon recognizing a threat, the system notifies a human verification team, which can then activate a prescribed response plan.

But even these highly sophisticated systems can fail to detect a real threat, leading to questions about the utility of security technology. Antioch High School in Nashville, Tennessee, was equipped with Omnilert's gun detection technology in January 2025 when a student walked inside the school building with a gun and shot several classmates, one fatally, before killing himself.

School security technology firm ZeroEyes uses this greenscreen lab to test and train artificial intelligence to spot visible guns.
AP Photo/Matt Slocum

Lack of evidence

This demonstrates an enduring problem with the school security technology industry: Most of these technologies are untested, and their effect on safety is unproven. Even gunshot detection systems have not been studied in the context of school and mass shootings outside of simulation studies. School shooting research has very little to offer in terms of assessing the value of these tools, because there are no studies out there.

This lack is partly due to the low incidence of mass and school shootings. Even with a broad definition of school shootings – any gunfire on school grounds resulting in injury – the annual rate across America is approximately 24 incidents per year. That's 24 more than anyone would want, but it's a small sample size for research. And there are few, if any, ethically and empirically sound ways to test whether a campus fortified with ShotSpotter or the newest AI surveillance cameras is less likely to experience an active shooter incident because the probability of that school being victimized is already so low.

Existing research provides a useful overview of the school safety technology landscape, but it offers little evidence of how well this technology actually prevents violence. The National Institute of Justice last published its Comprehensive Report on School Safety Technology in 2016, but its finding that the adoption of biometrics, “smart” cameras and weapons detection systems was outpacing research on the efficacy of the technology is still true today. The Rand Corporation and the University of Michigan Institute for Firearm Injury Prevention have produced similar findings that demonstrate limited or no evidence that these new technologies improve school safety and reduce risks.

While researchers can study some aspects of how the environment and security affect mass shooting outcomes, many of these technologies are too new to be included in studies, or too sparsely implemented to show any meaningful impact on outcomes.

My research on active and mass shootings has suggested that the security features with the most lifesaving potential are not part of highly technical systems: They are simple procedures like lockdowns during shootings.

The tech keeps coming

Nevertheless, technological innovations continue to drive the school safety industry. Campus Guardian Angel, launched out of Texas in 2023, promises a rapid drone response to an active school shooter. Founder Justin Marston compared the drone system to “having a SEAL team in the parking lot.” At $15,000 per box of six drones, and an additional monthly service charge per student, the drones are equipped with nonlethal weaponry, including flash-bangs and pepper spray guns.

In late 2025, three Florida school districts announced their participation in Campus Guardian Angel’s pilot programs.

There is no shortage of proposed technologies. A presentation from the 2023 International Conference on Computer and Applications described a cutting-edge architectural design system that integrates artificial intelligence and biometrics to bolster school security. And yet, the language used to describe the outcomes of this system leaned away from prevention, instead offering to “mitigate the potential” for a mass shooting to be carried out effectively.

While the difference is subtle, prevention and mitigation reflect two different things. Prevention is stopping something avoidable. Mitigation is consequence management: reducing the harm of an unavoidable hazard.

Response versus prevention

This is another of the enduring limitations of most emerging technologies being advertised as mass shooting prevention: They don’t prevent shootings. They may streamline a response to a crisis and speed up the resolution of the incident. With most active shooter incidents lasting fewer than 10 minutes, time saved could have critical lifesaving implications.

But by the time ShotSpotter has detected gunshots on a college campus, or Campus Guardian Angel has been activated in the hallways of a high school, the window for preventing the shooting has long since passed.

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