

## Cambridge Middle School – NZ, Case Study

The escalating trend of young people turning to vaping has ignited growing alarm among parents who are witnessing the debilitating effects of addiction in their children. While vaping is harmful to everyone, it's [particularly harmful to young people](#) as they are more likely to smoke cigarettes in the future. Making matters worse, just as second-hand smoking has been proven to cause harmful health effects, on-going research indicates that [second-hand vaping](#) carries serious risks as well.

To combat this issue, a Facebook group named Vape-Free Kids NZ was established and quickly garnered over 1,000 members in just a month. Numerous parents have shared their harrowing experiences, recounting how their 16-year-old children rapidly fell into the throes of vaping addiction, often initiated at the tender age of 14 by peers at school. Compounding the issue, parents often remain oblivious to their children's vaping habits due to the ease with which such behaviour can be concealed. Marnie Wilton, the group's spokesperson, underscored the gravity of the problem, noting that some children, as young as those in primary school, grapple with quitting vaping.

These concerns are further exacerbated by disconcerting statistics from ASH New Zealand and the Ministry of Health, which reveal a dramatic surge in daily vaping among 13- to 14-year-olds and a quadrupling of daily vapers aged 15 to 17 within a mere three years. In response, the government has introduced measures to combat youth vaping, encompassing restrictions on disposable vapes and the proximity of vape shops to schools. However, members of Vape-Free Kids NZ perceive these actions as inadequate. Moreover, the repercussions of students' vaping habits extend beyond the vapers themselves, affecting non-vaping students as well. As reported by RNZ on July 25, 2023, students are now rushing home from school to access bathroom facilities during breaks and between classes, as vaping students often monopolize these spaces. This issue is compounded by the fact that non-vapers are inadvertently exposed to harmful aerosols, effectively becoming second-hand vapers.

While various solutions, such as using cameras or audio sensors, have been proposed by different companies and schools to address these concerns, they invariably raise significant privacy issues, particularly in sensitive areas like bathrooms. The pressing need to tackle these increasing concerns and the lack of technological measures that strike a balance between privacy and security were pivotal in motivating the development of vape and smoke detector sensors by Piera Systems.

### **Solution, Piera sensors and MACSO AI**

Cambridge Middle School made the strategic choice to employ Piera's Canāree Vape/Smoke Detectors as a robust solution to address their pressing concerns regarding youth vaping and smoking within their educational facilities.

These detectors stand out due to their advanced MACSO AI technology, meticulously designed not only to identify conventional smoke but also the distinct particulates produced by vaping, ensuring a comprehensive approach to air quality monitoring. The selection of this solution was driven by several key factors:

- **Dual-Detection Capability:** Piera's detectors exhibit the remarkable ability to discern between smoke, vape, and common airborne particles such as deodorants. This dual-detection capacity ensures a thorough and accurate monitoring process.
- **Rapid Alert System:** When an incident is detected, the system immediately triggers customized notifications, providing school staff with real-time alerts. This feature enables swift responses to potentially harmful situations, enhancing the safety of students and staff.

- **Data Logging and Student Privacy:** The Piera detectors excel in maintaining a comprehensive record of each incident, allowing for the generation of detailed reports that are instrumental for trend analysis and policy assessment. These innovative sensors prioritize student privacy by exclusively considering the aerosol data produced by vape and cigarette smoke substances, avoiding any audio or video recording of students. Additionally, these devices analyse data on device, ensuring that all data processing remains entirely private and securely contained locally.

### Implementation and pilot:

The implementation process of the Piera Vape/Smoke Detectors within the school building involved a series of strategic steps:

- **Installation:** Canāree vape/smoke detectors are easy to install so this process was completed soon after the right restrooms were strategically identified, ensuring their effectiveness in addressing the vaping and smoking concerns.
- **Integration:** The Piera detectors seamlessly integrated with a customized notification system, enhancing the visibility of alerts for school staff and facilitating their swift response to incidents.
- **Staff Training:** Building staff quickly learned how to respond effectively to alerts generated by the detectors and how to utilize the data logging and reporting system to its full potential with its intuitive and easy-to-use interface.

### The results:

#### **“Pilot bathroom became vape-free within the first two weeks of the device installation”**

The implementation of the Piera Vape/Smoke Detectors has yielded a range of significant outcomes and benefits for Cambridge Middle School:

- **Enhanced Student Experience:** within the first two weeks, two vaping instances were identified which meant the students realised they could no longer use the pilot bathroom as a place for vaping. This notably improved the safety and restroom accessibility of the sensor location.
- **Effective Deterrence:** The presence of Piera detectors serves as a powerful deterrent, leading to a marked reduction in vape and smoke incidents within the school restrooms.
- **Timely Responses:** The system's instant alert feature empowers school staff to respond swiftly to incidents, minimizing their potential impact on students and the learning environment.
- **Policy Refinement:** The data generated by the detectors has proven invaluable in helping the district refine its anti-vaping and anti-smoking policies, tailoring them to address specific concerns more effectively and ultimately contributing to a safer educational environment.

“Vaping is emerging as the top health threat for students, particularly in schools, including for students who don’t vape at all,” said Vin Ratford , CEO at Piera Systems. “Our highly accurate Canāree Air Quality Monitors act as a powerful deterrent and provide real-time vaping alerts which eliminates vaping activity within schools and provides a safe and healthy environment for all students.”

“Cambridge Middle School was delighted that the vaping activity ceased. Student Voice confirmed that students felt safer using the bathrooms,” Assistant Principal Natalie Marsh says.



“As a purpose-driven AI company, dedicated to bringing the positive impact of artificial intelligence to the world, we are proud to be working with Piera on the mission to make schools vape and smoke-free to enable the next generation to study in a safe and healthy environment” stated Saba Samiei, Founder and CEO of MACSO Technologies