

Case Study

How a childcare center in California uses the AirGradient DIY Sensor Kit in all classrooms to better protect their children from wildfire air hazards and COVID-19 transmission risks (and saved thousands of USD).

Background

The [Children's Pre-School Center](#) (CPSC) in Palo Alto, California is a childcare center caring for over 100 children.

The school, together with the Board, became increasingly concerned about the growth in number and size of the California wildfires causing heavy smoke to become trapped in the Bay Area for days and weeks.

The school has air purifiers in its classrooms but wanted to assess the efficacy of the HEPA filters and make data-driven decisions to protect the children and staff.

Additionally, the center wanted to gain a better understanding of the CO2 buildup in the classrooms to determine whether the air ventilation was sufficient to meet CDC recommendations to reduce COVID-19 transmission risk.

In order to get a solid and comprehensive data baseline, monitoring all classrooms was required. The closest off-the-shelf air quality monitor solutions would have cost over USD 3000, and did not easily provide the data platform ease of use needed by CPSC.

Why the AirGradient DIY Kit

Parents at CPSC became aware of the [AirGradient DIY sensor kit](#) and monitoring platform and decided to test the AirGradient solution to the following reasons:

- Low entry costs to cover all classrooms (substantial cost savings compared with PurpleAir, AirVisual or LaserEgg)
- Dashboard and data platform developed specifically for schools
- The kit uses the same high quality PM2.5 sensor as Purple Air
- The extensibility of the platform, e.g. the ability to monitor the kitchen refrigerator temperature and the ability to add a small display per device
- Option to switch between DIY and AG-built sensors
- Ease of build steps and "shopping list"
- Integration with Purple Air for outdoor sensors
- Great support from AirGradient



The Sensor Build Process

Building the sensors was a three step process.

- 1) **Ordering of Parts:** AirGradient sponsored the PCBs. The electronic parts were ordered from AliExpress. The 3D enclosure print was ordered from Craftcloud.
- 2) **Assembly:** The assembly of the components consist of some basic soldering and flashing the software through the Arduino IDE.



- 3) **Custom Add-Ons:** The AirGradient DIY Kit being open source allowed the school to add some customized addition, e.g. the milk refrigerator temperature probe and custom displays on the sensors. These additions would not have been possible with standard off-the-shelf air quality monitors.

It's a DIY Sensor, keep that in mind.

Although the build process is very well documented and the assembled sensors out-perform equipment costing hundreds of dollars more, there are a few things to keep in mind:

- It may occasionally take a very long for the parts from China to arrive
- Due to the location of the temperature sensor on the DIY board, the temperature reading may be elevated. This can be fixed by putting the temperature sensor outside the enclosure
- The sensor does not come with over-the-air updates but this can be added manually
- There is no TVOC sensor directly foreseen on the board but can be added as the software is open-source

Conclusion

The Children's Pre-School Center was able to set up a comprehensive air quality monitoring system covering all its 12 classrooms for less than USD 1000.

In addition, it uses the same powerful air quality dashboard that comes with the professional AirGradient sensors.

This allows CPSC to gain valuable insights about the exposure of the children to harmful air and provides the foundation for implementing corrective actions to produce the safest and healthiest possible environment for learning and growing .



"We are extremely pleased to be able to maintain the air quality of our classrooms within the strict WHO recommendations -even on highly polluted days. AirGradient has helped us to gain valuable insights into the air quality in each of our classrooms. AirGradient's dedication to this mission has made it possible for any school or center to monitor their air quality in a cost effective way."

Kay Erikson, Director

Further Information

Contact us for a meeting to discuss how we can help your school.

<https://www.airgradient.com/schools/support@airgradient.com>