EMERGENCY ALERTS

# ALARMS SEND MIXED SIGNALS

## Recent innovations in emergency alerting technology add safety but also confuse phone users

**ELLIOTT YAU**
*Staff Writer*

Phones around the Bay Area received wireless emergency alerts warning residents to shelter in place on Oct. 18. The earthquake originated in the Sacramento County area, over 60 miles away from Branham.

However, no Branham staff and students felt shaking after the alert, leading to a moment of confusion. Minutes after the initial alert, a PA announcement instructed students and staff to duck, cover and hold, further confusing staff like English teacher **Kerry Murphy**.

"That we were asked to duck and cover minutes after the earthquake was a bit odd," Murphy said. "We already had the earthquake. Why are we ducking and covering now?"

The earthquake was initially estimated to be a 5.7-magnitude earthquake, above the 5.0-magnitude threshold for sending out wireless emergency alerts, then later downgraded to a 4.2-magnitude earthquake by the United States Geological Survey (USGS).

The ShakeAlert® Earthquake Early Warning System aims to give affected populations a few seconds to take cover. Seismic sensors in the ground immediately detect earthquakes and send data to processing centers, where the magnitude and location is determined. A ShakeAlert® message is immediately sent to the Federal Emergency Management's (FEMA) Integrated Public Alert & Warning System (IPAWS), which authenticates the alert and disseminates it simultaneously to the public via radio, TV and cell phones.

Principal **Lindsay Schubert**, who received the same alert and is responsible for handling emergencies, first checked in with other administrative team members to confirm the alarm was not a test.

The earthquake safety plan calls for students to duck, cover and hold until given the all-clear. The school is currently retraining staff on how to use InformaCast, which can send text, audio and visual alerts to classroom clocks and staff phones in case of an emergency. As a last resort, the school would be evacuated to a safe spot on campus or to Branham Park.

"[In] emergencies, anything can happen," Schubert said. "You have to adapt, but we do have a plan. We have anything for any kind of major disaster in place. That's why those drills are important to practice, so that we're ready for if something [happens]."

Computer science teacher **Steven Turner** has experienced evacuating his home due to a wildfire in 2020, which prepared him for in-school emergencies. He received an alert telling him to evacuate but already knew about the fire from X, previously called Twitter. Turner also uses Google Alerts to keep tabs on Branham and potential fires, which monitors the Internet for keywords.

"I think [Google Alerts is] probably more helpful [than emergency alerts]," Turner said. "But that's relying on one thing, and if there's an emergency, I'd rather have that plus the emergency system."

Alert systems can be incorrectly used at times, such as when a false incoming ballistic missile alert was issued to Hawaiians in 2018, briefly causing panic across the islands. An investigation later determined that poor communication and human error were at fault. Technology itself is rapidly improving in predicting extreme weather and sending alerts out accurately.

Geotargeting, when users receive alerts based on their location, is one example. In 2012, wireless emergency alerts were sent to entire counties. As of 2019, wireless providers are required to send alerts to a specific area with less than 528 feet or 161 meters of offshoot. Currently, an estimated 83% of US consumers' smartphones support enhanced geotargeting.

This improving technology is supposed to reduce the number of alerts sent out to unaffected areas, like Branham on Oct. 18.

For Turner, these alerts are more important due to the threat from global climate change and weren't very disruptive for his class.

"We need to have the systems in place because institutional knowledge and even your human knowledge are going to apply less and less often as our world continues to change," he said.


Elliott Yau/Bear Witness

ENGINEERING

# PLTW making more out of less

## From crowdfunding and grants to rationing supplies, engineering classes innovate amid budgetary difficulties

**YUJIN CHO**
*Staff Writer*

3D printers, screwdrivers, screws, laser cutters—these resources are readily available for students in the engineering classes.

Although initial materials were provided by the school, most of the resources are bought through grants submitted by teachers. These resources are used by engineering students or by the 3D Printing Club for projects.

Senior **Luigi Renovato** has been in the engineering program for the past two years, with his spark for inventions beginning during quarantine. He wasn't aware of the resources that the engineering department offered and utilizes his own resources. For example, he uses his own 3D printer for his smaller projects such as creating keychains to support clubs and programs that he is a part of.

"I feel like [my creativity] is something I have always had. I've never been satisfied with how things are," Renovato said.

Renovato recently took on a project given by digital electronics and engineering design and development teacher **Barbara Schremp**. The project included 3D printing various components and assembling the motors and fans, and Schremp ordered the parts for a machine that converts recycled plastic bottles into filament, which is the material that the printers use to form their prints.

"[Mrs. Schremp] asked me to build it because I'm really knowledgeable in [the engineering] field," said Renovato. "She gave me all the parts and I'm almost done with it too."

In junior **Zoya Brahimzadeh's** Digital Electronics class, students conduct experiments and collect data and model circuits in order to learn the basics of electrical engineering. Digital tools are also used for ease of access along with their lower costs.

"We haven't experienced any instances where we're completely out of [a certain] part," Brahimzadeh said. "We treat our materials really well, and sometimes I'm surprised by how much stuff we have that I thought we wouldn't be able to have access to."

Teachers have submitted grants to different companies for items such as 3D printers, computer science supplies, and other basic supplies. According to Schremp, the process of writing and applying for the grants takes a minimum of three to five hours. Yet, other resources that are necessary to the curriculum are not always covered by the grant money, and Schremp has proposed different ideas to get around these issues.

For example, this year, she recycled old teacher computers to accommodate the shortage of laptops required for the digital electronics class. On the other hand, other in-class projects require more specialized equipment that Branham doesn't have access to.

"[A group] needed [equipment] that Branham doesn't have, so we worked out a deal where they went over to Westmont because Westmont had the equipment," Schremp said.

The department is still looking to expand the resources available to the students.

"If we start thinking longer term about what types of materials are ongoing, and then put them into the budget, then all of the classes that we offer will not be limited by not having the right resources," she said.

### Engineering process steps

1. Research: Identify and validate the problem. Then conduct research based on expert sources.
2. Design: Develop solutions considering the time, resources, skills and knowledge needed.
3. Prototype and test: Utilize design requirements to create a testable prototype.
4. Evaluate: Look at feedback and protoype performance data to go over the design and revise.


Yujin Cho/Bear Witness

**Senior Luigi Renovato works on a new 3D printer for his Project Lead the Way class.**