

ShakeAlert® Ready Schools

Integrating Earthquake Early Warning into School Communities



ShakeAlert earthquake early warning (EEW) is being implemented in schools in Washington, Oregon, and California. ShakeAlert Ready Schools education and training resources help the school community use ShakeAlert as a public safety tool.

- Age-appropriate lessons teach earthquake science for K-12 students that help integrate EEW, protective action, and preparedness information
- Professional development materials ensure teachers and other school personnel are ready to respond to ShakeAlert-powered alerts and support students
- A parent/guardian presentation and family engagement letter ensure parents and guardians are aware of ShakeAlert EEW
- An administrator planning guide and webinars help school administrators implement ShakeAlert educational materials in their school or district
- Resources were developed with feedback from school professionals and USGS-licensed alert delivery partners that provide schools with ShakeAlert-powered products and services
- New resources are continually developed to educate K-12 school communities to help them stay safer during earthquakes


Suite of Resources

Age-Appropriate and Standards-Aligned Classroom Lessons

Have you experienced an earthquake? What about your family members?

What do you or family members:

- SEE? 👁️
- HEAR? 👂
- FEEL? 🧑




The K-1 Grade lesson engages young audiences with basic concepts that pieces of the Earth move and how to react safely when that happens. A student worksheet is included.

We Need Water - Why?

Examine the cup of water. Estimate:

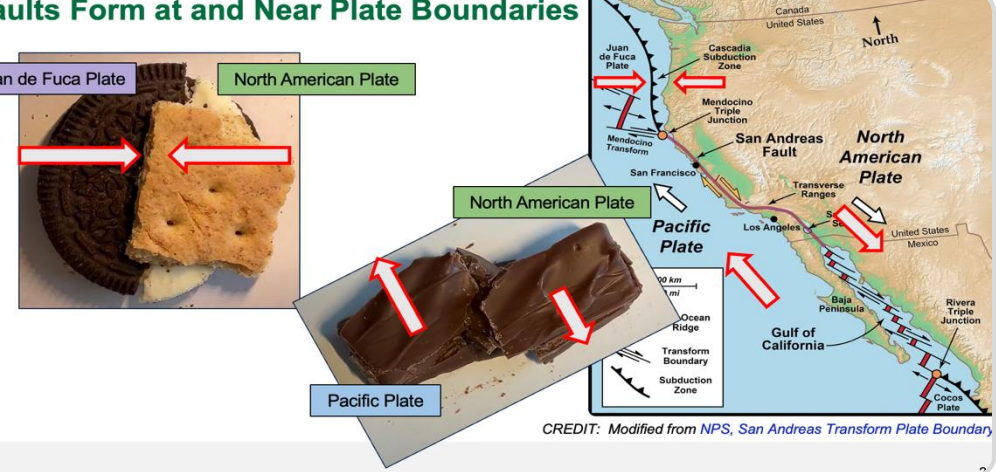
- How many cups do you need to drink per day?
- How many cups do you need to wash?
- How many cups do you need to flush the toilet?
- How many cups do you need for other uses?
- How many total cups do you estimate you need per day?



The 2-3 Grade lesson asks students to calculate the amount of water their family would need after an earthquake and includes a student sheet to guide their thinking.

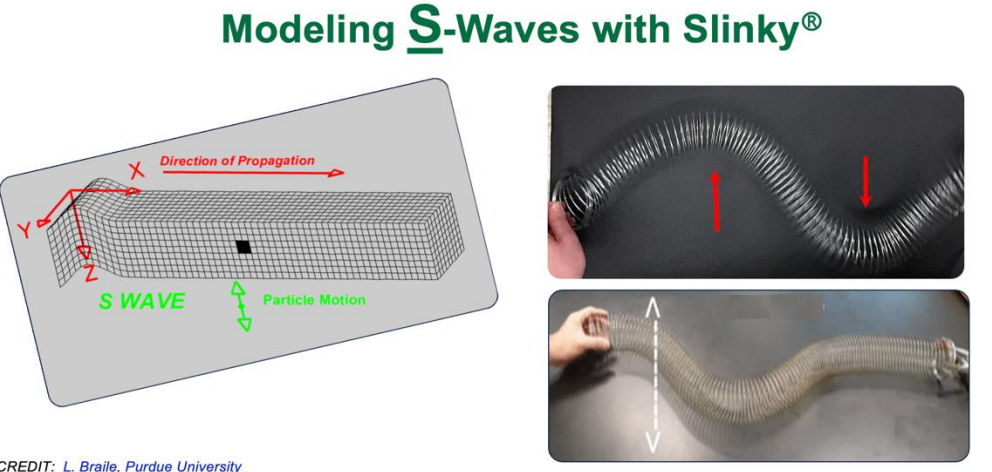
The 4-5 Grade lesson focuses on the basics of waves and teaches about seismic waves and earthquake risk. Misconceptions are used as the hook. Student worksheets are included.

Faults Form at and Near Plate Boundaries



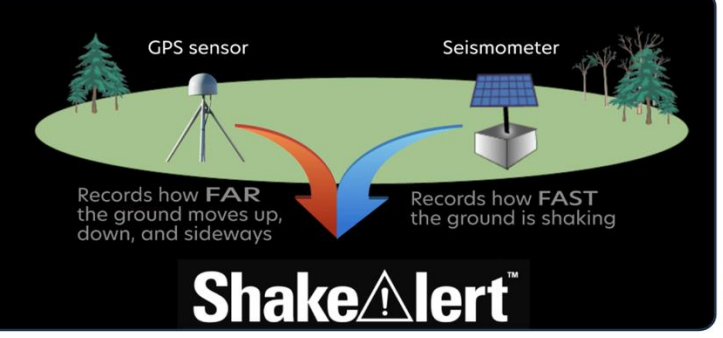
The 6-8 Grade lesson focuses on plate boundaries and faults using interactive demos and optional food items to highlight movement and includes an explanation of how the ShakeAlert system works.

Modeling S-Waves with Slinky®



The 9-12 Grade lesson goes is a deeper analysis of waves and energy that connects to how the ShakeAlert system operates by using seismic waves and radio waves from GPS.


ShakeAlert Earthquake Early Warning Uses Earthquake Information from Seismometers & GPS



All Lessons Include

How ShakeAlert Works
to deepen presenter knowledge

Background - How ShakeAlert® Earthquake Early Warning System Works



West Coast Hazard Info
to provide basic Earth science background for presenters

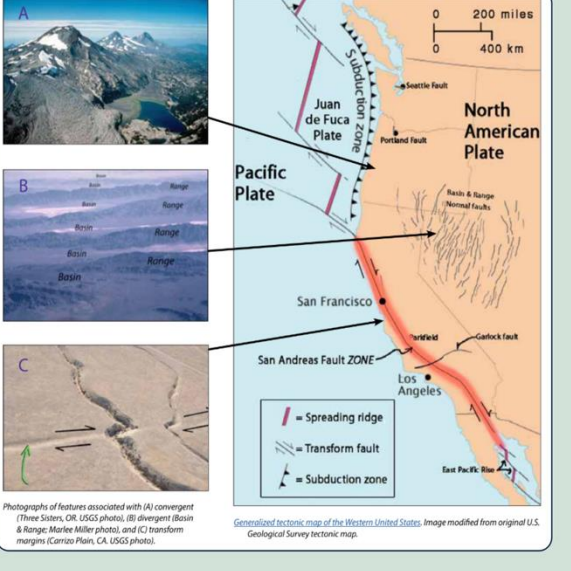
Background - Earthquake Hazard

California, Oregon, and Washington all face hazards from earthquakes because of the underlying tectonic plates, which constantly grind against each other. This friction creates "faults," lines of weakness in the Earth's tectonic plates (fractures) where earthquakes are most likely to occur.

California's San Andreas Fault is one example. Another example is the Cascadia Subduction Zone, which threatens all three states and British Columbia, Canada. This giant fault lies offshore, where the Juan de Fuca Plate dives beneath the North American Plate. This type of motion on other subduction zones can cause massive earthquakes, like the one that struck Japan in 2011.

While smaller earthquakes happen often, scientists think a major earthquake could happen any time, so it's important to be prepared.

For more information: [Faults](#), [Plate Tectonics](#) & [Earthquake Hazards](#)
[Animations](#) / [Videos](#)



Teaching Steps

Each lesson slide deck contains detailed **instructions for teachers**, as well as hands-on experiences teachers can choose to incorporate.

Content Standards


Each lesson is cross-referenced to national science, health, language arts (**Common Core**) **standards**, in addition to relevant **state-specific standards** at each grade level.

Rationale for Conducting Drills

To emphasize the need to rehearse so actions are second nature and to help families prepare, each lesson explains the **rationale for doing preparedness drills**.

Resources in Development

Project with The Hero In You Foundation to incorporate ShakeAlert Ready Schools into Rocket Rules resources.



How do you feel?

Turn and talk to a partner!

😊 Happy
🙂 Confident
😌 Calm, Content
🤔 Thoughtful
😞 Sad, Negative
😰 Anxious, Worried

Lessons specific to individual grade levels to best target emotional response and grade-level standards.

- Activity designed to physically model how the ShakeAlert System works once sensors are triggered, showing that earthquake data is processed so alerts can be delivered to people and automated systems before the arrival of strong shaking
- STEAM night materials for community engagement
- Seventh Grade assessment and ShakeAlert lesson bundle tied to Next Generation Science Standards on preparedness
- Fourth Grade integrated unit for geology incorporating the ShakeAlert system

Administrator Webinar and School Plan and Teacher Professional Development

ShakeAlert® Because seconds matter.

Administrator Planning Guide

ShakeAlert Ready Schools resources are designed to prepare the entire school community to respond to ground shaking and ShakeAlert-Powered Earthquake Early Warning (EEW) alerts. This checklist will help you prepare to implement the provided educational resources. You will find the curriculum, presentation slides, and other resources referenced below on the [ShakeAlert Ready Schools](#) section of the [ShakeAlert.org](#) website.

Summer

- ☐ Add the three-minute **Staff Back-to-School Presentation** to your pre-service agenda.
- ☐ Schedule a ShakeAlert-powered school-wide earthquake drill.
 - October is a great time to schedule this lesson because it coordinates with the international Great ShakeOut earthquake drill (on the third Thursday of each October).
- ☐ Add the grade-appropriate 30- to 60-minute **ShakeAlert Ready Lessons** to teacher calendars to precede the date of school-wide earthquake drill.
- ☐ Schedule the 30-minute **Staff Professional Development Presentation** one to three weeks before ShakeAlert-powered Earthquake Drill lessons will be taught.

→ **Make a Plan:** It's important to ensure that **all staff members** are trained, including office and cafeteria staff, new hires, visitors, and substitute teachers. Also think about other organizations that use your building!

Administrators get a detailed planning guide outlining how to integrate resources into their school calendars, what to do at each step, and when best to do it.


District and school administrators can access a webinar that introduces the resources and helps them to facilitate staff professional development.

Teachers receive professional development to learn about ShakeAlert EEW in their school and the lessons they can present in their classrooms.


ShakeAlert Drill Essentials Lessons

Short basic lessons for elementary and secondary classes on how the ShakeAlert EEW operates, what an EEW alert sounds like in their school, and how to take protective action during earthquakes.

What if you're outside when you get an alert or feel shaking?



What to Expect from an Alert



Parent/Guardian Information

Letters in English or Spanish can be sent home to inform parents and guardians about the ShakeAlert System.

Presentations for Parent Teacher Association meetings or Back-to-School Nights are also available. These resources help keep parents informed and connect them with preparedness information.

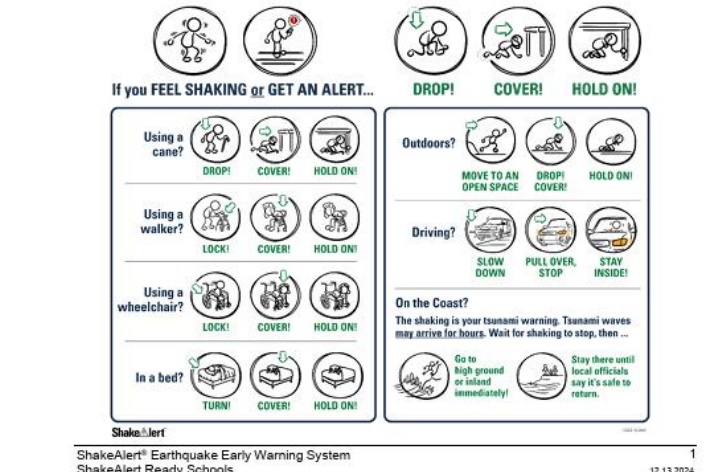
ShakeAlert® Because seconds matter.

An Open Letter About Earthquake Safety

Schools are increasingly installing ShakeAlert® Earthquake Early Warning technology to strengthen their resilience to earthquakes. Your school is among them. This technology can give all students and staff members critical seconds, minutes, and even hours of advance warning from an earthquake.

Earthquake Early Warning (EEW) relies on earthquake observations from the U.S. Geological Survey, a partnership with your state, to manage the nation's only public EEW system. The ShakeAlert system uses a network of sensors in California, Oregon, and Washington, which automatically broadcast alerts through the school's public address system. The goal is to provide students time to take protective action during shaking periods. Schools may also use the technology to conduct earthquake drills. Students will be notified to shake and show how they take a protective action, and how.

Remember, critical seconds and minutes matter. When you get an alert, you are expected to be prepared and respond appropriately and quickly. You can sign up at [usgs.gov/shake](#) to receive alerts on your cell phone. These alerts can be received on mobile devices by providing you information of your location and also connecting you to preparedness resources. To take a presentation action, such as Drop, Cover, and Hold On if you hear shaking or get an alert.



Opportunities and Next Steps to Improve Implementation

- Partnering with district curriculum managers to strategize how to best implement ShakeAlert Ready Schools resources
- Providing resources tailored to specific technical partners so that school community members know exactly what sounds and actions to expect
- Raising awareness about the ShakeAlert Ready Schools resources available to school districts after implementing ShakeAlert EEW
- Getting actionable feedback through surveys for future lesson ideas, lesson refinement, and more methods to connect with school communities