

ShakeAlert® Classroom Model

Advance Preparation & Printing Guide · Grades 6–8

Where and When to Use This Model

This lesson can be used in any academic class or advisory period to review your school's ShakeAlert-powered Earthquake Early Warning System. Students will model how ShakeAlert works and will practice how to stay safe if they feel shaking or get an alert.

This lesson can also be a relevant and empowering addition to any science curriculum, as it pertains to plate tectonics (earth science), the behavior of seismic waves (physical science), an engineered system (engineering), and impacts on people (Earth & human activity). It's also a vital public safety tool, since anyone can ensure their cell phones are alert-enabled or download a ShakeAlert-powered earthquake early warning app for free. (Note: There is no app called ShakeAlert to download; they will come automatically to your phone as long as alerts are enabled.)

Ways to Connect to Your Science Curriculum

- **Plate tectonics unit** — plate boundaries and earthquakes
(NGSS MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.)
- **Natural hazards lesson** — how we know earthquakes will happen near us and what we can do to mitigate their effects
(NGSS MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.)
- **Waves unit** — types of waves and measuring their energy
(NGSS MS-PS4-1: Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.)
- **After modeling seismic waves** with a metal spring ([Seismic Slinky from EarthScope](#))
- **Engineering design unit**
(NGSS MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.)
- After teaching the 6th–8th grade ShakeAlert® Earthquake Early Warning Earthquake **Drill Lesson** on [ShakeAlert.org](#)

Materials Needed

Required

- ☐ Printed role cards, picture cards, and student sheets for the model participants
- ☐ Painters tape or masking tape
- ☐ A device to project the [video](#) and slides

Optional — Introductory Simulation

- ☐ Pool noodles or balled-up paper to throw during the introductory earthquake simulation and model objects that could fall on you during an earthquake

Optional — Automated Actions Extension

- ☐ Enough blocks or building bricks to construct a T-shape
- ☐ 2 small balls (tennis, ping pong)
- ☐ 2 cups and water
- ☐ 1 balloon
- ☐ 1 flashlight and enough batteries to power it
- ☐ 1 toy car

Optional — Seismic Wave Modeling

- ☐ Long metal spring to model seismic waves (see [Seismic Slinkies](#))

Advance Preparation Checklist

- ☐ Review how the ShakeAlert Earthquake Early Warning System works (see Program Overview Video, below).
- ☐ Preview the slides and the student sheet answer key.
- ☐ Print the materials you'll need for this lesson (see What to Print, below).
- ☐ Decide whether you'd like to start the lesson by conducting a mock earthquake or by having students record what they already know about earthquakes.
- ☐ Plan where to conduct the model. We recommend an area that is at least 24 feet long.
- ☐ Place painters or masking tape on the floor to mark where the earthquake starts, and in a straight line at every yard along the distance the P-Wave will travel.
- ☐ Give the S-Wave targets a path to walk. Place tape marks on the floor 3 feet from the P-Wave path, on alternating sides, about every 3 feet.
- ☐ Place a tape mark about 5 feet from where the earthquake starts, next to the P-Wave line, to show where the Seismic Station will stand.
- ☐ Decide where model students will sit. We recommend one small group at a table about 6 feet from where the model starts, and one small group at a table near the end of where the P-Wave will travel. Consider placing the tables in advance.

Program Overview Video

ShakeAlert Earthquake Early Warning System Overview (2:18)

— also available on ShakeAlert.org in the Messaging Toolkit.

[Watch the video](#)

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Printable Materials

How to print: 11" × 8.5" page. Use cardstock and cut along the dashed lines.

Required — Core Model Role Cards A–E

- ☐ **Role Cards A–D** — One copy each on cardstock. Cut in half.
- ☐ **Student Role Cards E** — Enough copies for your model. Cut in half.

Optional — Student Sheet

- ☐ **Student Sheet** — Diagram-labeling worksheet. One copy per student.
- ☐ **Reflection** — Reflection questions. One copy per student. Can be printed double-sided with a Student Sheet.
- ☐ **Answer Key** — Sample responses for teacher's reference.

Optional — Automated Actions Extension

- ☐ **Automated Actions Role Cards A–C** — On cardstock. Cut in half.

Optional — Protective Actions Extension

- ☐ **Modified Protective Actions Role Cards A–C** — On cardstock. Cut in half.

Optional — Picture Card Brainstorm

- ☐ **Automated Actions Picture Cards 1–3** — Cut apart into individual picture cards.