

An earthquake in your classroom

A classroom earthquake intensity scale

Ask one of your pupils to sit at your desk or table in front of the class, to help you to act out the effects of an earthquake as you describe what happens at each level of the intensity scale. Begin with intensity I – then build up to intensity XII.



A school damaged by an earthquake.

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Earthquake intensity	Description	What you would feel and see, what to do
I	Not felt	Nothing
II	Scarcely felt	If you are on an upper floor, vibrate the table slightly to make pens or pencils move
III	Weak	Move the table a little more, so that things on the desk clearly vibrate
IV	Largely observed	Move the table more, note the rattling noises. Lots of other things in the classroom are rattling too; hanging objects are swinging backwards and forwards
V	Strong	Shake the table even more, the pupil should get under the table to feel safer; top-heavy objects on the desk topple over; hanging objects are swinging even more, while doors and windows swing open and shut
VI	Slightly damaging	Rock the table – your pupil should certainly be under the table by now, and holding onto the legs so that, if the table vibrates across the room, they can follow; objects fall off walls, cupboards shake, wall plaster cracks, flakes fall from the ceiling
VII	Damaging	Greater movement of the table, your pupil should hang on tight; things fall off shelves, walls crack, bigger flakes from the ceiling, lots of dust
VIII	Heavily damaging	Great table movement, desks and chairs overturn; large cracks in walls and big chunks fall off the ceiling onto the desk and other furniture; even more noise and dust
IX	Destructive	The ceiling collapses onto the desk, but your pupil is safe beneath; much vibration, crashing noises and dust
X	Very destructive	The classroom walls begin to collapse outward or inward, but it is still safe under your sturdy table; it is dark, very dusty and noisy
XI	Devastating	The rest of the building collapses, but people protected by strong furniture and in protected corners of buildings survive
XII	Completely devastating	All buildings in the area collapse, but alarms have gone out far and wide; the rescue services are coming, but this will take time as all the roads have been destroyed; stay under the table and be patient – help is on its way

Developed from: the Wikipedia article on the European Macroseismic Scale at: https://en.wikipedia.org/wiki/European_macroseismic_scale and the British Geological Survey synopsis at: http://earthquakes.bgs.ac.uk/education/education/ems_synopsis.htm

An alternative teaching strategy is for the pupils to make models of buildings, and use them to show what happens at increasing earthquake intensities.

This scale is based on the widely-used European Macroseismic Scale (similar to the Modified

Mercalli intensity scale). Both intensity scales are based on the impact of an earthquake at different places. They are completely different from earthquake magnitude scales (like the Richter Scale) which are based on seismograph records measuring the power of an earthquake at the epicentre.

The back up

Title: An earthquake in your classroom

Subtitle: A classroom earthquake intensity scale

Topic: A strategy to help pupils to visualise what experiencing an earthquake of different intensities might be like.

Age range of pupils: 10 years upwards

Time needed to complete activity: 15 minutes

Pupil learning outcomes: Pupils can:

- describe what it might be like to experience an earthquake of varying intensities;
- explain the best ways to survive such an earthquake.

Context:

Dramatic re-enactment of this classroom earthquake intensity scale can make fine school drama performances or add to school open days.

It is worth repeating the old dictum, “Earthquakes don’t kill people; buildings do.”

Following up the activity:

Ask your pupils to download the ‘Lastquake’ smartphone app at: <http://www.emsc-csem.org/service/application/>. This free-of-charge app includes a cartoon intensity scale and encourages users to report the effects they feel during an earthquake, to add to the intensity database recorded at the time.

Ask your pupils to search the internet for photographs of earthquake damage, to compile their own photographic version of an intensity scale.

Underlying principles:

- One of the ways of assessing the effects of an earthquake is to evaluate its impact using an earthquake intensity scale, like the European Macroseismic Scale or the Modified Mercalli intensity scale.
- Intensity scales measure earthquakes using completely different principles from earthquake magnitude scales, such as the Richter Scale.

Thinking skill development:

Visualising the various earthquake intensities requires creative and imaginative skills, as well as bridging from a ‘safe’ classroom environment to a potentially terrifying earthquake scenario.

Resource list:

- a sturdy desk in the classroom or laboratory

Useful links:

The app above at: <http://www.emsc-csem.org/service/application/>

Source: Devised by Chris King of the Earthlearningidea Team, with important contributions by British Geological Survey staff, Paul Denton and John Stevenson.

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