

## Quake Shake (6-7)

Hello! This document includes a brief outline of our Quake Shake workshop, as well as relevant BC ADST curriculum connections. In this workshop, students will learn about earthquakes & different systems Civil Engineers utilize to protect buildings. Afterwards, students will build their own earthquake-proof buildings that will be tested & shaken!

If you'd like to register for our workshops, please fill out our registration survey linked [here](#).

<p><b>BC Curriculum Ties</b> (In addition to satisfying multiple core competencies)</p>	<p><u>BC Applied Design, Skills, and Technologies Curriculum Links 6-7:</u></p> <p>Complex tasks require the acquisition of additional skills &amp; complex tasks may require multiple tools and technologies.</p> <ul style="list-style-type: none"> <li>• <b>Applied Design:</b> <ul style="list-style-type: none"> <li>○ <i>Ideating – Generating potential ideas and add to others' ideas, Screen ideas against criteria and constraints, &amp; choosing an idea to pursue.</i></li> <li>○ <i>Making – Identify use of appropriate tools, technologies, and materials for production, &amp; making a plan for production and carrying it out, making changes as needed.</i></li> <li>○ <i>Sharing – Demonstrate their process, using appropriate terminology and providing reasons for methodology, Reflect on their design thinking and processes.</i></li> </ul> </li> <li>• <b>Applied Skills:</b> <ul style="list-style-type: none"> <li>○ <i>Identify and evaluate the skills and skill levels needed, individually or as a group, in relation to a specific task, and develop them as needed</i></li> </ul> </li> <li>• <b>Applied Technologies:</b> <ul style="list-style-type: none"> <li>○ <i>Select, and as needed learn about, appropriate tools and technologies to extend their capability to complete a task.</i></li> <li>○ <i>Identify the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use.</i></li> </ul> </li> </ul>
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<b>Grade Levels</b>	6-7
<b>Time</b>	1~1.5 Hours
<b>Goals of the Workshop</b>	<ol style="list-style-type: none"> <li>1. Understand how earthquakes occur and the different systems civil engineers utilize to protect civilians during earthquakes.</li> <li>2. Experience &amp; understand the engineering design process through their projects.</li> </ol>

## Activity Descriptions

### Earthquake Theory

Objective: To teach students how earthquakes occur, and the different systems civil engineers utilize to protect buildings and civilians against earthquakes.

Participants will:

- Learn about tectonic plates and why earthquake-proofing buildings are important.
- Learn about three specific systems that civil engineers use to protect buildings against earthquakes and why building damage is decreased as a result.
  - (*Base Isolation, Tuned Mass Dampers, & Shear Walls*)

### Earthquake Engineering Design Challenge

Objective: To have students implement the previously learned systems by designing their own earthquake-proof buildings!

Participants will:

- Design their own buildings from scratch, construct a prototype using household materials, & test its abilities to withstand an earthquake by placing their creations on a shake table!
- Learn the engineering design cycle & how to improve their building designs based on testing results.

**We can't wait to connect with your school & expose your students to the STEM field with our exciting, hands-on STEM activities!**

