

## Science Unit of Work

<b>Unit Title</b> Earth Shattering Science	<b>Stage</b> Three
<b>Term</b> Three	<b>Strand</b> Earth and Space
<b>Duration</b> Ten Lessons (one per week)	<b>Sub-strand</b> ST3-9ES: Explains rapid change at the Earth's surface cause by natural events, using evidence provided by advances in technology and scientific understanding

### **Rationale**

This unit 'Earth Shattering Science' will support students as they discover and build on the concept that 'sudden geological changes or extreme weather conditions can affect Earth's surface' in accordance with the NSW syllabus for the Australian Curriculum for Science K-10 (2014). This unit adopts a constructivist teaching and learning approach, which places the students at the center of 'hands-on', 'minds-on' inquiry based and interactive activities. Students will learn in a supportive and social environment whereby they are connecting new learning to existing understanding and experiences in order to construct their own knowledge and understanding of Earthquakes (K-10 Science Syllabus, 2014). The science classroom will be set up in a manner that effectively supports whole class, group, pair and individual work. Studies by Vygotsky (1978) demonstrated that 'every function in the child's cultural development appears twice; first on the social level and later, on the individual level.' (p.57 as cited in Venville, 2004)

Students will have ample exposure and opportunities to interact with several modes of technology such as computers, iPads, the Internet and the interactive whiteboard (IWB). The use of information communication technology (ICT), if used effectively, can enhance science learning. This unit has also been developed with the 5E instructional model in mind, making sure that each lesson is designed to incorporate essential aspects of the engagement, exploration, explanation, elaboration or evaluation phases. Research has proven that the 5E model increases student levels of scientific reasoning along with their interest and attitudes towards science learning (Bybee, 2006).

<p><b>Science Links</b></p> <p><b>Working Technologically</b>        ST3-5WT: Plans and implements design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints.</p> <p><b>Built Environments</b>        ST3-14BE: Describes systems in built environments and how social and environmental factors influence their design.</p> <p><b>Earth and its surroundings</b>        ST3-9ES: Explains rapid change t the Earth’s surface caused by natural events, using evidence provided by advances in technology and scientific understanding.</p> <p><b>Working Scientifically</b>        ST3-4WS: Investigates by posing questions including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations.</p>	<p><b>Mathematics</b></p> <p><b>Measurement and Geometry</b>        MA3-13MG: Uses 24-hpur time and am and pm notation in real-life situations, and constructs timelines.        MA3-9MG: Selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters and converts between units of length.</p> <p><b>Working mathematically</b>        MA3-3WM: Gives a valid reason for supporting one possible solution over another.        MA3-2WM: Selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations.</p> <p><b>Statistics and Probability</b>        MA3-18SP: Uses appropriate methods to collect data and constructs, interprets and evaluates data displays, including dot plots, line graphs and two-way tables.</p>
<p><b>English</b></p> <p><b>Speaking and Listening</b>        EN3-1A: communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features.</p> <p><b>Writing and representing</b></p>	<p><b>History</b></p> <p>HT3-5: Applies a variety of skills of historical inquiry and information.</p>

EN3-2A: composes, edits and presents well-structured and coherent texts

***Reading and viewing***

EN3-3A: uses an integrated range of skills, strategies and knowledge to read, view and comprehend a wide range of texts in different media and technologies

***Spelling***

EN3-4A: draws on appropriate strategies to accurately spell familiar and unfamiliar words when composing texts

**Assessment – Formative (during learning engagements)**

Formative assessment will be constantly carried out through the unit. This will be done mostly through observation and anecdotal notes , conversations with students, discussions, probing and questioning, asking students to explain or elaborate on their reasoning, asking students to support their claims using the appropriate meta language surrounding the topic of earthquakes.

Lesson 1: A TWLH chart is used and is will be visually displayed in the classroom as a constant reminder to the children and to assist them with self assessment.

Lesson 2: Through observation and probing students about their presentation the teacher can gain insight into students’ knowledge and understanding of earthquakes around the world.

Lesson 3: Through observation of students and discussion about the manipulation of tectonic plates (play dough) and also through writing anecdotal notes in their science journals.

Lesson 4: Through the diagram of the earth’s core and observing conversations in response to the stimulus (model of the earth) the egg.

Lesson 5: Assessing the presentation skills of students and probing their understanding as well as adding information into the glossary which is written in their science journals.

Lesson 6: Through the interaction and conversation around the web quest on the 2004 Boxing Day Tsunami. The teacher will constantly be accessing the working website to gain insight into students understanding of the 2004 Tsunami and its impact.

**Assessment – Summative (at the end)**

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Lesson 6: The Web quest is an ongoing working document but will be assessed a few days prior to the lesson to allow the teacher insight into students understanding of Tsunami’s and the affect of the Boxing Day Tsunami’s around the world. Children will be given their results and will be encouraged to go back and improve their web quest to ensure that students continue to develop their understanding and interact with each other in a professional manner.

Lesson 10: The major summative assessment task will be conducted in week 10 where students are asked to consolidate all their knowledge and apply it to create a newspaper article or transcript asking students to provide information about what an earthquake is, Richter scale readings, what effects it will have on the environment and what cautions people should take.

As well as this the teacher will also collect the science journal which has been used throughout the unit to inform them of the students understanding of Earthquakes.

Lesson 7: Through anecdotal notes and the conversation surrounding the visit by the AEW and observing the children work in groups as they research the 1988 Earthquake in Newcastle and it's relationship to the aboriginal dreamtime 'The Kangaroo That Lives Inside Nobbys'.

Lesson 8: Through observation and conversation, to assist the teacher and allow them concrete evidence they may like to use a voice recorder to allow them to refer back to it in future lessons.

Lesson 9: A video and photos will be taken of students problem solving and working out how to construct their seismometer.

<b>Students</b>	
- There are 24 students in this year six class	
<b>Differentiation needs</b>	<b>Skills, Interests and Prior Knowledge</b>
<p>Experiences need to cater for student's prior knowledge of science. Understanding that some students may have a passion for science and therefore will have a much broader understanding than others.</p> <p>Students will be grouped:</p> <ul style="list-style-type: none"> <li>• Friendship partners</li> <li>• Mixed ability partners</li> <li>• Prediscussed groupings (groups of three)</li> </ul> <p>Billy is a student who has been diagnosed with mild dyslexia and therefore finds it difficult to read and write. The unit incorporates a lot of discussion and group work to cater for him. He will also be given the opportunity to read and write on blue sheets of paper which is known to be beneficial for students with dyslexia. As well as this Billy will also have access to a voice recorder which he can use instead of writing. This will allow him to extend his understanding beyond what he can show through writing.</p>	<p><b>ST3-9ES</b></p> <p>Explains rapid change at the Earth's surface caused by natural events, using evidence provided by advances in technology and scientific understanding</p> <p>Content: Sudden geological changes or extreme weather conditions can affect Earth's surface.</p> <p>Students:</p> <p>Describe using examples how natural geological events cause rapid changes to the Earth's surface, eg earthquakes, volcanic eruptions or tsunamis in the Asian region or throughout the world.</p> <p>Research how some discoveries or inventions have increased scientific knowledge and provided evidence about natural events that cause rapid changes at the Earth's surface</p> <p>Investigate a recent Australian example of the effect on the Earth's surface of extreme weather conditions, eg cyclones, droughts or floods.</p> <p>Identify ways that advances in science and technology have assisted people to plan for and manage natural disasters to minimise their effects, eg detection systems for tsunamis, floods and bush fires.</p>

**Risk Assessment**

Risk	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9
Allergies to eggs									
Cutting themselves with a knife and scissors									
Egg shell pieces in student's eyes									
Electric shock: iPads, computers and IWB									
Rocks causing injury									
Cutting circulation off with string									

<b>Essential Understandings</b>	<b>Essential Skills</b>
<p>Students will learn <i>about</i>:</p> <ul style="list-style-type: none"> <li>• Earthquakes and types of earthquakes: convergent boundary, divergent boundary, transform fault.</li> <li>• Primary and Secondary Waves</li> <li>• Interplate and Intraplate earthquakes</li> <li>• Tsunamis and their presence and impact on the environment</li> <li>• The difference between earthquake magnitude and intensity</li> <li>• Tectonic plate movement</li> <li>• The layers and structure of the earth</li> <li>• The causes and effects of earthquakes</li> <li>• The reasons why Australia has minimal earthquakes compared to other countries around the world</li> <li>• The indigenous understanding of earthquakes in reference to the dreamtime story</li> <li>• The scales used to measure earthquakes and why that is important in understanding the intensity and magnitude</li> <li>• Seismographs and their purpose in the understanding of earthquakes and their impact</li> <li>• The impact of the 2004 Boxing Day Tsunami</li> </ul>	<p>Students will learn <i>to</i>:</p> <ul style="list-style-type: none"> <li>• Investigate, predict, observe, classify, explore, discover, experiment, document, plan, design and make and record findings in relation to Earthquakes</li> <li>• Work collaboratively together and assess themselves and their own understanding.</li> <li>• Broaden their understanding of Earthquakes</li> <li>• Classify types of earthquakes</li> <li>• Read and understand information</li> <li>• Converse using appropriate scientific meta-language</li> <li>• Use a variety of different resources to research and inquire, present information, and create a seismometer</li> <li>• Reflect on their work and collaboratively assess how successful their project, inquiry, and learning has been.</li> </ul>



Learning Engagements	Resources & Preparation	Outcome	Sign off
<p><b>Lesson 1</b>  <b>Engage</b></p> <ul style="list-style-type: none"> <li>• The focus of this lesson will be to spark student’s interest, stimulate their curiosity, raise questions for inquiry and elicit their existing beliefs about the topic.</li> <li>• The aim of the lesson will be to find out what students know about how sudden geological changes or extreme weather conditions can affect the Earth’s surface, this will be done through a class discussion creating a mind map, students will then be questioned about the cause and effects of earthquakes.</li> <li>• Students will then watch two short videos from the National Geographic demonstrating the destruction of earthquakes.</li> <li>• After this there will be time to discuss ideas and questions for a TWLH chart. As a lesson closure students will start a glossary in their science journals, this will be modeled by the teacher on how to develop a glossary using the word ‘earthquake’. After this a word wall will be started.</li> <li>• NB. TWLH chart will be written on light blue/green cardboard to cater for Billy’s dyslexia. Having a pale colour is easier to read than white cardboard.</li> </ul>	<ul style="list-style-type: none"> <li>• TWHL chart: cardboard, pens, sticky notes.</li> <li>• Glossary</li> <li>• Science Journals</li> <li>• Videos:  <a href="http://video.nationalgeographic.com/video/earthquake-montage">http://video.nationalgeographic.com/video/earthquake-montage</a>  <a href="http://video.nationalgeographic.com/video/101-videos/earthquake-101">http://video.nationalgeographic.com/video/101-videos/earthquake-101</a></li> </ul>	<p>ST3-9ES            EN3-1A            EN3-2A</p>	

<p><b>Lesson 2</b>  <b>Explore – Overview of Earthquakes</b></p> <ul style="list-style-type: none"> <li>The focus of this lesson will be on how the effects, magnitude and intensity of earthquakes are measured. The students will be broken up into eight groups. Each group will have a Director, Manager and a Speaker. Students will complete their work in their own science journals; each group will be given a news report either on China, Haiti, New Zealand and Australia, a Richter scale resource sheet and a Modified Mercalli scale resource sheet. Each group will use information from the news reports to present to the class. Presentations are to include information such as:       <ul style="list-style-type: none"> <li>When and where did the earthquake happen?</li> <li>What kind of damage was described and who did it affect?</li> <li>Are there indications or measurements of how strong the earthquake was?</li> </ul> </li> <li>For the presentations, groups may wish to source images from the Internet to visually support the information that they will share with the class.</li> <li>After the presentations each group will be asked questions by their fellow peers e.g. Do you think the earthquake was strong? How would people know the earthquake was strong? What could they use to measure the strength of the earthquake?</li> <li>To conclude, the class will consider the magnitude of each earthquake in relation to the other. The class will make a line graph to indicate the biggest and smallest of the earthquakes researched. This will not be recorded in their books but a photograph will taken to stick into their books.</li> <li>NB: Groups will be organized prior to the activity and will consider students learning needs to ensure they are catered for throughout the lesson.</li> </ul>	<ul style="list-style-type: none"> <li>Newspaper articles</li> <li>iPads</li> <li>Science Journals</li> <li>Richter scale resource sheet</li> <li>Modified Mercalli scale resource sheet</li> </ul>	<p>ST3-9ES          ST3-4WS          EN3-1A          EN3-2A          EN3-3A          EN3-4A          MA3-18SP          HT3-5</p>	
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<p><b>Lesson 3</b>  <b>Explore - The Earths Surface and Tectonic Plates</b></p> <ul style="list-style-type: none"> <li>• Review the TWLH chart from the previous lessons.</li> <li>• Students will be working in collaborative teams of 4.</li> <li>• They will be using play-dough and hard-boiled eggs to simulate tectonic plate movement and also using the hard-boiled eggs to model and discuss the plates of the Earth.</li> <li>• Firstly, in their groups, students are given the play dough and asked to make two flat ‘plates’ (approx. 20cm by 10cm, and 1.5cm thick).</li> <li>• Students then experiment by pushing the plates together, pulling them apart, and sliding them against each other. They observe the changes to the plates and discuss their findings.</li> <li>• Then students are given small blocks to represent buildings. They predict what will happen. Placing these on the plates they then simulate earthquakes using the three different types of plate movements. They observe the effects the movements have on the ‘buildings’. Then, discuss findings again, and now record in their science journals.</li> <li>• Following this, students will observe how a cracked shell is similar to the plates of the earth.</li> <li>• Each group gets one egg. Students use a spoon (or other similar device) to lightly tap the egg and create cracks (aiming to form cracks, rather than shattering the egg shell) then discuss how this is similar to the Earth’s plates.       <ul style="list-style-type: none"> <li>- Children explore by observing the effects of: pushing two parts of the cracked shell together, spreading two parts apart, and sliding two parts together.</li> <li>- They discuss findings, how it relates to the Earth’s plates, then draw and record their findings in their science journals.</li> </ul> </li> <li>• Brief class discussion, students add information to the class TWLH chart.</li> </ul>	<ul style="list-style-type: none"> <li>• TWLH Chart</li> <li>• Play dough</li> <li>• Blocks to simulate buildings</li> <li>• Hard-boiled eggs prepared earlier – enough for one in each groups plus spares.</li> <li>• Spoons (or other hard, blunt device suitable for cracking eggs).</li> </ul>	<p>ST3-9ES          ST3-4WS          ST-3-5WT          ST3-14BE          EN3-1A          MA3-2WM          MA3-9MG</p>	
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<p><b>Lesson 4</b>  <b>Explore and Explain - Tectonic Plates and the Earth's Core</b></p> <ul style="list-style-type: none"> <li>• Investigate the Earth's structure.</li> <li>• Class discussion about the previous lessons:       <ul style="list-style-type: none"> <li>- What are tectonic plates?</li> <li>- How do tectonic plates contribute to earthquakes?</li> </ul> </li> <li>• The class will then work through the first section of <i>Tectonics Investigator: Earth's structure</i> on the IWB.       <ul style="list-style-type: none"> <li>- Working through all sections up to and including the interactive diagram of the Earth's structure</li> <li>- NB. Small role play around P-waves and S-waves on relevant slide.</li> </ul> </li> <li>• Then students are in working groups.</li> <li>• Each group receives an egg, a knife, and a large sheet of paper.</li> <li>• They are to cut their egg in half and observe the different features. They then discuss:       <ul style="list-style-type: none"> <li>- How the egg's structure is similar/dissimilar to the Earth's.</li> <li>- How each feature of the egg feels (e.g. shell = hard, whites = flexible etc.)</li> <li>- How the egg could represent the different aspects of the Earth's structure.</li> </ul> </li> <li>• Students draw a diagrammatical cross section of the Earth and label it accordingly.</li> <li>• Class discussion on findings, and additions made to the TWLH chart as necessary.</li> <li>• Then as a class again, complete the rest of the "Earth's Structure" section of <i>Tectonics Investigator: Earth's structure</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• TWHL Chart</li> <li>• IWB</li> <li>• <i>Tectonics Investigator: Earth's Structure</i> Interactive Activity</li> <li>• Hard boiled eggs</li> <li>• Knives</li> <li>• Butcher's paper</li> </ul>	<p>ST3-9ES          ST3-4WS          ST3-5WT          EN3-1A          EN3-2A          EN3-4A          MA3-2WM</p>	
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<p><b>Lesson 5</b>  <b>Explain – Different Types and Causes of Earthquakes</b></p> <ul style="list-style-type: none"> <li>• Research and teach a particular earthquake concept to the class.</li> <li>• Working collaboratively in groups, students will conduct an investigation into the types and causes of earthquakes. Much of the information they will already know and have recorded in their journals.</li> <li>• Through inquiry, using iPads and Computers, children will work in small groups to understand one of the following concepts:       <ul style="list-style-type: none"> <li>- Convergent boundary            - Interplate earthquakes</li> <li>- Divergent boundary            - Intraplate earthquakes</li> <li>- Transform fault</li> <li>- P-waves (Primary)</li> <li>- S-waves (Secondary)</li> </ul> </li> <li>• They will become an ‘expert’ in their concept. Writing up a thorough explanation: what it is, its causes, and effects. They will draw a diagram that demonstrates their concept.</li> <li>• Students must then briefly present their concept to the class using materials available: play dough, strings, cardboard. Taking no more than 2-3min.</li> <li>• As each group presents students will take notes and add the concepts to their glossaries.</li> <li>• Each group will also respond to questions from the class.</li> </ul>	<ul style="list-style-type: none"> <li>• L5 iPads and computers</li> <li>• Science journals</li> <li>• Play dough</li> <li>• String</li> <li>• Cardboard</li> <li>• Scissors</li> </ul>	<p>ST3-9ES          ST3-4WS          ST3-5WT          EN3-1A          EN3-2A          EN3-4A          MA3-2WM</p>	
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## Lesson 6

### Elaborate – Earthquakes and Tsunamis

- The purpose of this lesson is for students to investigate earthquakes in an underwater context. Students will work through a webquest focusing on the 2004 tsunami.
- There will be 8 groups of 3, and students will be given a country that was affected by the tsunami and asked to research that country.

The screenshot shows a webquest interface for 'Year 6'. At the top, there is a navigation bar with links: HOME, YOUR JOB, INDIA, INDONESIA, MALAYSIA, MYANAMAR, SOMALIA, SRI LANKA, and MORE... Below the navigation bar is a large image of a tsunami wave. Underneath the image is the title 'Tsunami 101'. Below the title is a video player showing a scene from the 2004 Boxing Day Tsunami. To the right of the video player is a text box that reads: 'The strongest earthquake to hit our planet in the last 40 years caused a series of tsunamis that ravaged the coasts of India, Thailand and many Indonesian islands. The destruction and loss of life was so catastrophic that the whole world stood in shock at the sheer power of nature. Many are worried that this could happen again, somewhere else.' Below the text box is a task instruction: 'Your job is to report on what happened as a result of this particular tsunami. The question that you need to answer as a journalist is this, how can an earthquake cause a tsunami? Present your findings in any form.'

NB: Groups will be organized prior to the activity and will consider students learning needs to ensure they are catered for throughout the lesson.

- iPads/computers
- Pre-prepared webquest:  
<http://yr6tsunami.weebly.com/>

ST3-9ES  
ST3-4WS  
ST3-5WT  
ST3-14BE  
EN3-1A  
EN3-2A  
EN3-3A  
EN3-4A  
HT3-5

<p><b>Lesson 7</b>  <b>Elaborate – Aboriginal Earthquake Perspective and historical investigation</b></p> <ul style="list-style-type: none"> <li>• The teacher will invite an Aboriginal Education Worker to visit the school and talk to the students about Aboriginal beliefs behind earthquakes.</li> <li>• This will begin by retelling ‘The Story of the Kangaroo and the Nobby’s’. Students will be asked what the Dreamtime story is referring to; what natural disaster is written about in this piece?</li> <li>• The students will then be invited to research the 1989 Newcastle Earthquake through various sources such as iPads, computers the classrooms IWB this information will be written into their science journals.</li> <li>• Students will discuss their findings and along with the Aboriginal Education Worker they will compare the Dreamtime story to the 1989 Earthquake.</li> <li>• Discuss what the Aboriginal people may have observed and their interpretation of the event. Consider the time difference to when the 1989 Earthquake happened and the Dreamtime Story was written. Were the Aboriginals referring to the 1989 Earthquake in their writing? Using the AEW for insight children will be encouraged to ask the AEW questions relating to both earthquakes and this particular dreamtime story.</li> <li>• The AEW will engage the students who are still developing their research and writing skills as they will be encouraged to listen and discuss what they have learnt and the AEW, with the teacher, will be there to engage in conversations about both Earthquakes and the indigenous perspective of earthquakes.</li> <li>• Information is written into science journals, and referred to in future lessons.</li> <li>• NB: This incorporates the story sharing component of the 8 Aboriginal ways of learning enabling the children to really engage with AEW through the sharing of the dream time story.</li> </ul>	<ul style="list-style-type: none"> <li>• iPads and computers</li> <li>• IWB</li> <li>• Science Journals</li> </ul>	<p>ST3-9ES          ST3-4WS          EN3-1A          EN3-2A          EN3-3A          EN3-4A          MA3-2WM          MA3-13M          HT3-5</p>	
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<p><b>Lesson 8 – Earthquakes around the World</b></p> <ul style="list-style-type: none"> <li>• Children will discuss with a partner what they already know about earthquakes. Children may refer to the TWLH chart to assist them in talking about what they already know. Talking with a partner allows children to actively engage with the content and have meaningful discussions – then they may use science journals.</li> <li>• Teacher facilitates discussion about the presence of earthquakes in our world, referring back to the last lesson; class researched the Newcastle earthquakes.</li> <li>• The class will be presented with a Map of the world and using IWB markers they will indicate where they believe Earthquakes are likely to occur. Each student will need to justify the reasoning behind each suggestion.</li> <li>• Using the ‘Live Earthquake Map’. Children will consider “Is that the same or different to what I believed?”</li> <li>• Using the IWB the teacher will show the ‘Live Earthquake Map’. Allowing children some think-time students will consider the patterns of earthquakes as shown through this website.</li> <li>• Students will partner off and discuss two questions:       <ul style="list-style-type: none"> <li>- Why is there little/ no earthquake activity in Australia, since 1988?</li> <li>- Why is there a higher rate of occurrence of earthquake activity in some of the neighbouring countries?</li> </ul> </li> <li>• In pairs students will discuss and write a response to both questions individually. Then the class will come together and sit in a circle to discuss their opinions and consider students thoughts.</li> <li>• NB: Partners will be organised prior to the activity and will consider students learning needs. Students who struggle with writing will be encouraged to record their conversation using a voice recorder to ensure that students participate in quality conversations. Billy will be partnered with Jasmine who will assist him with the recording device and allow him to extend his thinking and conversational skills.</li> </ul>	<ul style="list-style-type: none"> <li>• Science Journals</li> <li>• TWHL chart.</li> <li>• IWB</li> <li>• Map of the world</li> <li>• Interactive map: “Live Earthquake Map”.</li> </ul>	<p>ST3-9ES          ST3-4WS          EN3-1A          EN3-3A          HT3-5</p>	
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<p><b>Lesson 9</b>  <b>Elaborate – Creating Seismographs</b></p> <ul style="list-style-type: none"> <li>• The class will discuss the numbers corresponding to each earthquake. What do the numbers mean? How do they measure the earthquake? (This relates to the number within the Mathematics syllabus)</li> <li>• Show the video ‘How a Seismograph works.’</li> <li>• Invite the children to simulate a seismograph using students’ desks, paper, pens and etc. Picture will be displayed to involve them.</li> <li>• Students are then given the opportunity to explore the seismograph for themselves. Using the app or creating one using the materials provided.</li> <li>• Present the materials to the students and a completed seismograph to the class.</li> <li>• Working collaboratively the children will be asked to create their own individual seismograph which will then be tested to see if it functions properly. This activity encourages children to problem solve and to work together. Students will be encouraged to use mathematical skills and strategies to ensure they create a functioning seismograph.</li> <li>• Students will be invited to swap with a partner to test their partner’s seismograph using disturbances within the classroom. ie. Shake the desk.</li> <li>• Use the Seismograph app whilst shaking the desk to help cement the children’s understanding.</li> </ul>	<ul style="list-style-type: none"> <li>• IWB and ‘Live Earthquake Maps’</li> <li>• iPads</li> <li>• Video: <i>How a seismograph works</i></li> <li>• Cardboard boxes</li> <li>• Cups</li> <li>• Scissors</li> <li>• Rocks (or other weighted device)</li> <li>• Blotak</li> <li>• Paper</li> <li>• Pens</li> <li>• String</li> <li>• Desks</li> </ul>	<p>ST3-9ES          ST3-4WS          ST3-5WT          EN3-1A          MA3-2WM          MA3-3WM</p>	
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<p><b>Lesson 10</b>  <b>Evaluate – Assessment to display knowledge</b></p> <ul style="list-style-type: none"> <li>• This is the final task that summarises the topics.</li> <li>• Students will be presented with the topic and will be working individually on this task. Students will be writing (newspaper article) or reporting (script) on a serious earthquake which has hit the Australian shores.</li> <li>• Children need to provide the viewers/readers with information about an earthquake: what an earthquake is, the Richter scale reading, what people can expect to happen, and what cautions people should take. Children will be encouraged to create a draft copy and a final copy and should present it as if they were providing the general population with this information.</li> <li>• The task will be written up on the IWB or whiteboard for children to refer to throughout the lesson and the teacher will be there to answer questions and to clarify details.</li> <li>• This is a summative assessment and will be used to ascertain how children have gone throughout the unit. The task encourages children to prove how much they know about the concept and children are reminded to be as creative as they like.</li> <li>• NB. Billy, who has trouble with writing as he has mild dyslexia will be provided with blue paper to write on as well as a voice recording device. He will be given the option to decide between writing or recording his response. He may also like to dramatise his voice to sound like a news reporter.</li> </ul>	<ul style="list-style-type: none"> <li>• IWB</li> <li>• Science Journal</li> </ul>	<p>ST3-9ES          EN3-1A          EN3-2A          EN3-4A          MA3-3WM</p>	
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## Resource List

<b>Text</b>	<b>Online/IWB/Audio/Visual</b>
<p><i>Shaky Ground – Earthquakes</i> by Mary Colson</p> <p><i>I didn't know that quakes split the ground open</i> by Clare Oliver</p> <p><i>Shattering Earthquakes</i> by Louise and Richard Spilsbury</p> <p><i>Earthquake (The Violent Earth Series)</i> by John Dudman</p> <p><i>Earth Science Pentland</i> by Peter and Pennie Stoyles</p> <p><i>Earthquakes</i> by Ellen J Prager</p> <p><i>Earthquake</i> by Ian Rohr</p> <p><i>Earth's changing crust: Plate tectonics and extreme events</i> by Rebecca Harman</p>	<p>Websites:</p> <p><a href="http://abed.boardofstudies.nsw.edu.au/index.cfm">http://abed.boardofstudies.nsw.edu.au/index.cfm</a></p> <p><a href="http://edst512earthquakes.wordpress.com/twlh-chart/">http://edst512earthquakes.wordpress.com/twlh-chart/</a></p> <p><a href="http://video.nationalgeographic.com/video/earthquake-montage">http://video.nationalgeographic.com/video/earthquake-montage</a></p> <p><a href="http://video.nationalgeographic.com/video/101-videos/earthquake-101">http://video.nationalgeographic.com/video/101-videos/earthquake-101</a></p> <p><a href="http://yr6tsunami.weebly.com/">http://yr6tsunami.weebly.com/</a> <a href="http://edst512earthquakes.wordpress.com/measuring-earthquakes/scootle.edu.au/ec/viewing/L5826/index.html">http://edst512earthquakes.wordpress.com/measuring-earthquakes/scootle.edu.au/ec/viewing/L5826/index.html</a></p> <p><a href="http://www.weatherzone.com.au/">http://www.weatherzone.com.au/</a></p> <p><a href="http://www.bbc.co.uk/schools/gcsebitesize/science/21c/earth_universe/seismic_wavesrev1.shtml">http://www.bbc.co.uk/schools/gcsebitesize/science/21c/earth_universe/seismic_wavesrev1.shtml</a></p> <p><a href="http://www.sciencekids.co.nz/videos/earth/whatisanearthquake.html">http://www.sciencekids.co.nz/videos/earth/whatisanearthquake.html</a></p> <p><a href="http://earthquake.usgs.gov/monitoring/helicorders/nca/">http://earthquake.usgs.gov/monitoring/helicorders/nca/</a></p> <p><a href="http://quakes.globalincidentmap.com/">http://quakes.globalincidentmap.com/</a></p> <p><a href="http://primaryconnections.com.au/">http://primaryconnections.com.au/</a></p> <p><a href="http://www.scootle.edu.au/ec/viewing/L5826/index.html">http://www.scootle.edu.au/ec/viewing/L5826/index.html</a></p>
<p><b>Place</b></p> <p>An outdoor area A Classroom</p>	<p><b>Human</b></p> <p>Aboriginal Education Worker Parent helpers Students</p>

<b>Materials</b>	
Play dough Blocks (to represent buildings) Butchers Paper Cardboard String Rocks Cardboard boxes Paper cups Felt tip marker Stones Paper	Scissors String Blue-tak Students workbooks Ipads IWB Newspaper articles Richter scale resource Modified Mercalli scale resource sheet Blue Paper Voice recording device

**Rubrics**

**Tsunami Webquest Report**

Teacher Name: \_\_\_\_\_

Student Name: \_\_\_\_\_

CATEGORY	Working beyond	Achieving	Working towards
Delegation of Responsibility	Each student in the group can clearly explain what information is needed by the group, what information they were responsible for locating, and when the information is needed.	Each student in the group can clearly explain what information they were responsible for locating.	Each student in the group can, with minimal prompting from peers, clearly explain what information they were responsible for locating.
Plan for Organizing Information	Students have developed a clear plan for organizing the information as it is gathered and in the final research product. All students can independently explain the planned organization of the research findings.	Students have developed a clear plan for organizing the information in the final research product. All students can independently explain this plan.	Students have developed a clear plan for organizing the information as it is gathered. All students can independently explain most of this plan.
Spelling and Punctuation	There are no spelling or punctuation errors in the final draft. Place names that the author invented are spelled consistently throughout.	There is one spelling or punctuation error.	There are 2-3 spelling and punctuation errors.
Quality of Sources	Researchers independently locate at least 2 reliable, interesting information sources for EACH of their ideas or questions.	Researchers independently locate at least 2 reliable information sources for EACH of their ideas or questions.	Researchers, with some adult help, locate at least 2 reliable information sources for EACH of their ideas or questions.
Utilising the webquest	Researchers independently are able to complete all task required on the webquest.	Researchers are able to complete all task required on the webquest with minimal assistance.	Researcher are unable to complete all task required on the webquest.

**Earthquake News Report**

Teacher Name: \_\_\_\_\_

Student Name: \_\_\_\_\_

CATEGORY	Working beyond	Achieving	Working towards
Accuracy of Facts	All facts presented in the report are accurate.	Almost all facts presented in the report are accurate.	Most facts presented in the report are accurate (at least 70%).
Focus on Assigned Topic	The entire report is related to the assigned topic and allows the reader to understand much more about the topic.	Most of the report is related to the assigned topic. The story wanders off at one point, but the reader can still learn something about the topic.	Some of the report is related to the assigned topic, but a reader does not learn much about the topic.
Spelling and Punctuation	There are no spelling or punctuation errors in the final draft. Place names are spelled consistently throughout.	There is one spelling or punctuation error.	There are 2-3 spelling and punctuation errors.
Neatness	The report is readable, clean, neat and attractive. It is free of erasures and crossed-out words. It looks like the author took great pride in it.	The report is readable, neat and attractive. It may have one or two erasures, but they are not distracting. It looks like the author took some pride in it.	The report is readable and some of the pages are attractive. It looks like parts of it might have been done in a hurry.
Creativity	The report contains many creative details and/or descriptions that contribute to the reader's enjoyment. The author has really used their imagination.	The report contains a few creative details and/or descriptions that contribute to the reader's enjoyment. The author has used their imagination.	The report contains a few creative details and/or descriptions, but they distract from the story. The author has tried to use their imagination.
Introduction	First paragraph has a "grabber" or catchy beginning.	First paragraph has a weak "grabber".	A catchy beginning was attempted but was confusing rather than catchy.

## References

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