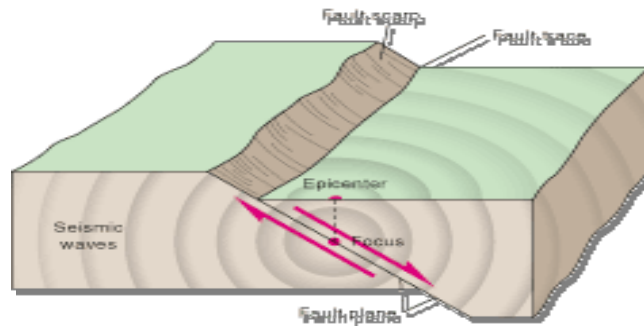
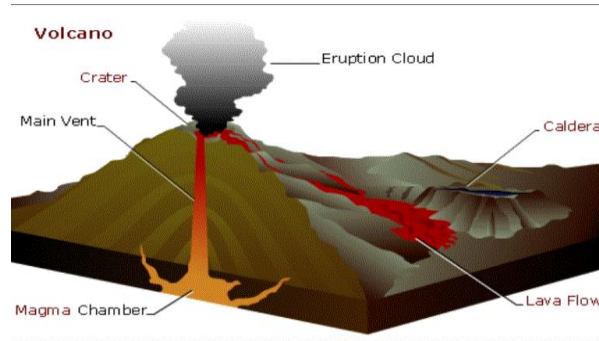


Earth Science Unit

Instructional Unit Resource Guide

Based on Principles of Universal Design and Differentiated Instruction



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Authors' Note

This unit is designed for 7th and 8th grade Science classes. It will be taught during the 3rd 6 weeks grading period. This unit will last for 6 weeks.

This unit is being designed due to 7th and 8th grade curriculum requiring all students to participate in a study of the earth science. We have discovered through our co-taught classes that our students with special needs tend to struggle with the reading and comprehension aspect of this requirement. We hope that this unit will allow ALL students to find successes. We hope that they will gain an understanding of what causes volcanoes and earthquakes, effects on the atmosphere, examples of earth changes, types of volcanoes, types of faults, layers of the earth, and understanding making web searches.

Universal design has opened our eyes to all the resources available to allow ALL students access to the literature and information needed.

Special technology requirements are:

- ❖ *LCD projector*
- ❖ *Computer lab or access to groups of computers*
- ❖ *IPOD Nanos, scanners (book will be scanned then made into a text to speech version and downloaded onto MP3)*
- ❖ *Smart boards*
- ❖ *Elmos*
- ❖ *Neo Laptops*
- ❖ *Flip Videos*

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Standards

Students will meet the following standards in this unit:

Standards covered in Earthquake and Volcano unit (7th and 8th grades)

- 7.3.4 Explain how heat flow and movement of material within the Earth causes earthquakes and volcanic eruptions and creates mountains and ocean basins
- 7.3.6 Describe how gas and dust from large volcanoes can change the atmosphere
- 7.3.7 Give examples of some changes in the Earth's surface that are abrupt, such as earthquakes and volcanic eruptions, and some changes that happen very slowly, such as uplift and wearing down of mountains, and the action of glaciers.
- 7.7.2 Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.
- 8.2.7 Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions. (Core Standard)
- 8.3.2 Explain that the slow movement of material within the Earth results from heat flowing out of the deep interior and the action of gravitational forces on regions of different density. (Core Standard)
- 8.3.3 Explain that the solid crust of Earth, including both the continents and the ocean basins, consists of separate plates that ride on a denser, hot, gradually deformable layer of earth. Understand that the crust sections move very slowly, pressing against one another in some places, pulling apart in other places. Further understand that ocean-floor plates may slide under continental plates, sinking deep into Earth, and that the surface layers of these plates may fold, forming mountain ranges. (Core Standard)
- 8.3.4 Explain that earthquakes often occur along the boundaries between colliding plates, and molten rock from below creates pressure that is released by volcanic eruptions, helping to build up mountains. Understand that under the ocean basins, molten rock may well up between separating plates to create new ocean floor. Further understand that volcanic activity along the ocean floor may form undersea mountains, which can thrust above the ocean's surface to become islands. (Core Standard)

For additional resources on the Indiana State Standards go to www.doe.state.in.us/

For additional resources on the National Standards go to <http://www.ncte.org/about/over/standards/110846.htm>

Planning for Academic Diversity

Before you begin planning your unit, consider the following types of scaffolds that should be built into your unit to support diverse learners:

For **students that cannot read at grade level...**

- Try text to speech <http://www.readplease.com/>
- Don Johnston's Read out Loud
- Try <http://www.wikipedia.com>
- Try <http://voicethread.com>

If a student has **difficulty comprehending the material...**

- Try study aids
- Try <http://www.flash-card.org/>
- Try <http://www.studystack.com>

If students have **difficulty mastering the vocabulary** of the unit...

- Try a visual thesaurus <http://www.visuwords.com>
- Try <http://dictionary.com>
- Try <http://www.flash-card.org/>
- Try <http://www.studystack.com>

If you have students who have **difficulty with handwriting**, (either speed or accuracy), then...

- Consider dictation <http://www.idictate.com>
- Consider allowing students to type or word process using Neo Laptops.
- Consider allowing students to record oral response as mp3.
- Consider the use of the Smart Pen.

If you have **students who need additional challenge**, then...

- Search Google or TrackStar for enrichment activities
- Try http://www.windoes.ucar.edu/tour/link=/earth/geology/quake_1.html&edu=elem
- Try <http://inspiration.com>
- Try <http://kurzweil3000.com> (use for scanning documents)
- Try providing internet access

If your unit **requires students to conduct research**, you might want to use...

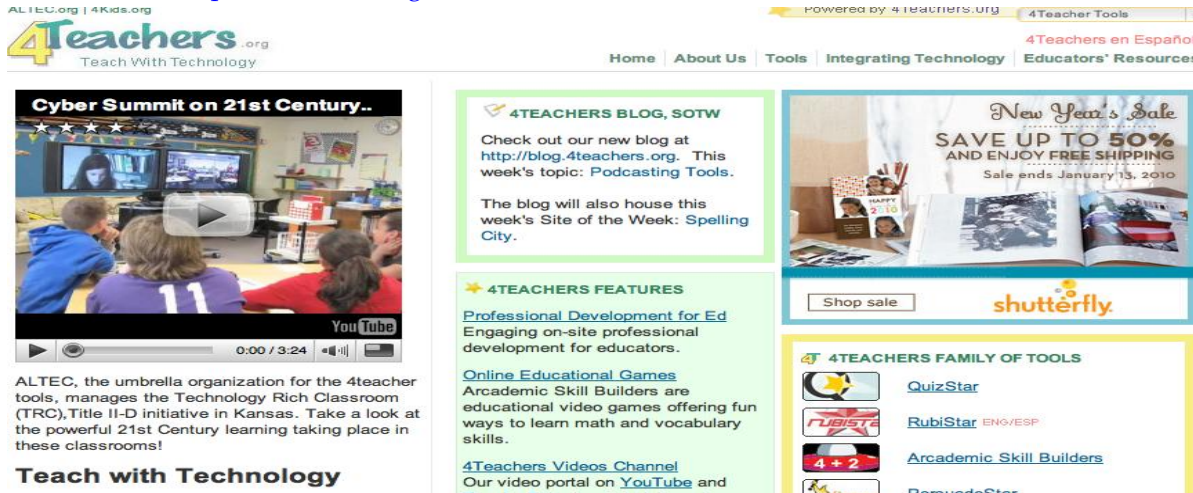
- Google Toolbar <http://toolbar.google.com/>
- Try <http://livescribe.com> – to allow for oral notetaking

Teacher Library

Briefly describe instructional resources that will be useful to teachers when preparing this unit for diverse learners.

4 Teachers

<http://4teachers.org/>



ALTEC.org | 4Kids.org

4Teachers.org
Teach With Technology

Powered by 4TEACHERS.ORG | 4Teacher Tools

4Teachers en Español
Educators' Resources

Home | About Us | Tools | Integrating Technology | Educators' Resources

Cyber Summit on 21st Century..

ALTEC, the umbrella organization for the 4teacher tools, manages the Technology Rich Classroom (TRC), Title II-D initiative in Kansas. Take a look at the powerful 21st Century learning taking place in these classrooms!

Teach with Technology

4TEACHERS BLOG, SOTW
Check out our new blog at <http://blog.4teachers.org>. This week's topic: Podcasting Tools.
The blog will also house this week's Site of the Week: Spelling City.

4TEACHERS FEATURES
Professional Development for Ed
Engaging on-site professional development for educators.
Online Educational Games
Arcademic Skill Builders are educational video games offering fun ways to learn math and vocabulary skills.
4Teachers Videos Channel
Our video portal on YouTube and

New Year's Sale
SAVE UP TO 50%
AND ENJOY FREE SHIPPING
Sale ends January 13, 2010

Shop sale shutterfly

4TEACHERS FAMILY OF TOOLS
QuizStar
RubiStar ENG/ESP
Academic Skill Builders
PerseusStar

42Explore: Thematic Pathfinders

<http://42explore.com/>



Science topics include earth science, life science, physical science, and air/space science.

- acid rain (see 'water')
- Agent Orange (see 'disaster, catastrophe, & calamity')
- airplanes (see 'flight')
- animals (see 'creatures of the night', 'prairies', 'trees and forests', and 'wolves')
- [animal homes](#)
- [animal tracks](#)
- [ants](#)
- armadillo (see 'creatures of the night')
- [astronomy](#)
- [balloons](#) (see also 'bubbles')
- [bats](#) (see also 'caves' & 'creatures of the night')
- [bears](#)
- beaver (see 'creatures of the night')
- [bees](#) (see also 'insects')
- [birds](#) (see also 'creatures of the night')
- [brain](#) (see also 'respiratory system' and 'skeletal system')
- [bridge building](#)
- [bubbles](#)
- [butterflies](#) (see also 'insects')
- [caves](#)
- Challenger disaster (see 'disaster, catastrophe, & calamity')
- Chernobyl nuclear disaster (see 'disaster, catastrophe, & calamity')
- climate change (see 'global warming')

Google

<http://www.google.com>

Kathy Schrock's Guide for Educators

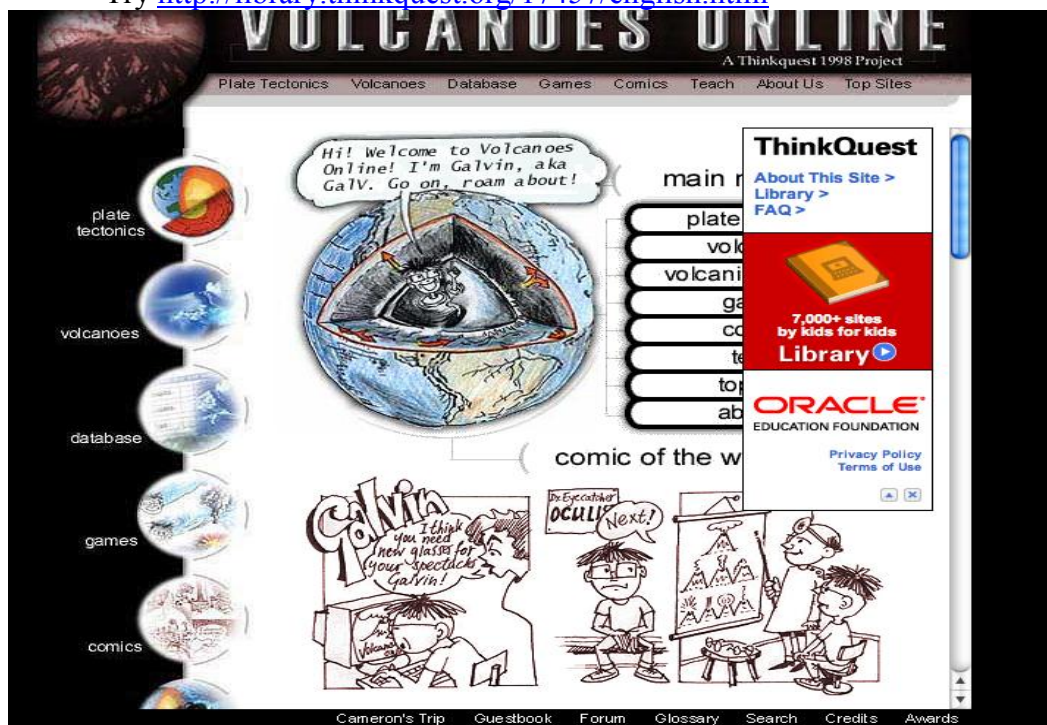
<http://school.discovery.com/schrockguide/>

Thinkfinity

<http://www.thinkfinity.org>

Try <http://www.valdosta.edu/~junderwood/topic.html>

Try <http://library.thinkquest.org/17457/english.html>



Try <http://www.learner.org/interactive/volcanoes>

Try http://www.eduplace.com/science/hmsc/5/c/organizer/unit_5c.html

Try <http://www.iris.edu/gifs/animations/faults.htm>

Try <http://www.video.nationalgeographic.com/video/player/environment/>

The screenshot shows the National Geographic website's video player interface. At the top, there is a navigation bar with the National Geographic logo, a search bar, and links for Site Index, Subscriptions, Shop, Newsletters, and About. Below the navigation bar is a banner for "BEHIND THE LENS" featuring "THE FIFTH GENERATION 4RUNNER" and a "YOU IN?" promotion for National Geographic Magazine. The main content area is titled "Video" and features a large video player for "Rivers of Fire: Volcano Lava in Action". To the right of the video player is a "Videos by Category" list with buttons for Animals, Daily News, Environment, Kids, Music, Science & Space, Specials, and Travel & Cultures. Below the video player is a "SPECIAL VIDEO SERIES: World Oceans" section with three video thumbnails. On the left side, there is a vertical navigation menu with categories like HOME, ANIMALS, DAILY NEWS, ENVIRONMENT, GAMES, GREEN GUIDE, HISTORY, KIDS, MAPS, MUSIC, PHOTOGRAPHY, SCIENCE & SPACE, TRAVEL & CULTURES, and VIDEO. At the bottom right, there is an advertisement for "Rent Movies From Net".

Try <http://streaming.discoveryeducation.com>

The screenshot shows the Discovery Education website's search results page for "volcanoes". The page has a blue header with the Discovery Education logo and a search bar. Below the header, there are navigation links for "My DE" and "streaming Plus". The main content area is titled "Results for volcanoes" and shows a grid of video results. The first row of results includes: "Earth Science: Volcanoes" (20:00), "Standard Deviants School Geology: Volcanoes and Erosion" (24:59), "Eye Wonder: Billboards, Volcanoes, and Aquariums" (26:50), "I Want to Know: Volcanoes" (07:07), and "Earth Science for Students: Earthquakes and Volcanoes" (20:10). The second row of results includes: "Earth Science: Volcanoes" (15:03), "Earth Science: Volcanoes" (20:10), "Earth Science: Volcanoes" (10:14), "Earth Science: Volcanoes" (17:10), and "Earth Science: Volcanoes" (03:52). On the left side, there is a "NARROW MY RESULTS" section with "You have selected: Keyword: volcanoes" and a "Start Over" button. Below this, there are "CONTINUE NARROWING BY:" sections for "BY SUBJECT" and "BY GRADE".

Try <http://science.pppst.com/volcanoes.html>

Try <http://gk12.uark.edu/lessons/Volcanoes.ppt>

Try http://hs-staffserver_stjames.k12.mn.us/.../powerpoint.../volcanoes/Volcanoes.htm

Content Accessibility

The UDL principle of multiple means of representation is an important design principle for creating accessible and engaging instruction. The following resources will be provided to ensure that diverse students have access to the instructional content presented in this unit.

Text-based content:

Holt Science & Technology Text book

Web page content:

Use of Read-out- loud software to make websites more accessible.

Use of text-to-speech software to drag and drop web page text.

Audio supports for text:

Textbook on CD, Textbook on IPOD, teachers reading textbook to students, Text-to-speech, Online textbook Don Johnston's Read out loud

Audio content:

Closed-captioning for any DVDs used, Assistive Listening Devices, computerized speech recognition software

Video-based content:

Try <http://video.nationalgeographic.com/vidoe/player/environment>

Try <http://streaming.discoveryeducation.com/>

Simplified language:

<http://www.simplifiedenglish.net/>

Concept Map (Graphic Organizer):

Try http://interactives.mped.org/view_interactive.aspx?id=127&title=

Try <http://worksheets.teach-nology.com/science/volcano/>

Try http://www.eduplace.com/science/hmsc/5/c/organizer/unit_5c.html

Try <http://www.enchantedlearning.com/subjects/volcano/>

Vocabulary support:

Try a visual thesaurus <http://www.visuwords.com>

Try <http://dictionary.com>

Try <http://www.flash-card.org/>

Try <http://www.studystack.com>

Learner Activities

The UDL principle of multiple means of engagement is an important design principle for creating meaningful learning activities. The following materials will be used to engage diverse learners in the subject matter of this unit.

Try Cool Spots 4 Kids

<http://www.4kids.org/coolspots/>

Try Eduscapes

<http://eduscapes.com/>

Try Yahoooligans

<http://trackstar.hprtec.org/>

Try Thinkfinity

<http://www.thinkfinity.org/>

Try <http://www.quia.com/cb/207054.html>

Try <http://library.thinkquest.org/17457/english.html>

Try <http://www.learner.org/interactive/volcanoes>

Try <http://www.fema.gov/kids/volcano.htm>

Try <http://www.flash-card.org/>

Try <http://www.studystack.com>

Assessment

The UDL principle of multiple means of expression is an important design principle for assessment. The following materials and resources will be useful for assessing student knowledge, skills, and application of their learning.

Some possible organizers for this page:

Do they know it? (Declarative knowledge)

Small group activity (see attached)

Students will choose one of the following projects (interview a type of volcano or type of fault, build a volcano, build a model of a fault, build an earthquake resistant building, create a powerpoint presentation on a topic related to volcanoes or earthquakes, give an oral presentation or video taped presentation).

Can they do it? (skills)

Based on completion of note cards (word, book definition, definition in own words, picture) we will know if they comprehend vocabulary.

Based on performance in review activity (smartboard Jeopardy) we will know if they comprehend the topics. Can also try <http://www.alleghany.k12.va.us/> and go to ITRT instructional resources.

Application (near transfer/far transfer)

Students will be able to use the skills they gain in the small group activity for future work with groups.

Students will be able to use the skills they gain from working with powerpoint on future projects.

Students will be able to use the researching skills that they will gain through this unit on future projects.

Grading guidelines

Students will be grade with both formal and informal assessments. Rubrics will be used to grade the students' projects.

Rubric Tools

http://www.teach-nology.com/web_tools/rubrics/

<http://rubistar.4teachers.org>

Scoring Guide for Student Projects

<http://www.ncrtec.org/tl/sgsp/index.html>

Electronic Quiz Author Tools

Quia <http://www.quia.com>

Hot Potatoes <http://hotpot.uvic.ca/>

Moodle <http://moodle.org/>

Small Group Activity

Separate students into groups of 4. Assign each group one of the following topics: Stratovolcanoes, cinder cone volcanoes, shield volcanoes, plate boundaries and faults, seismic waves, earthquake measurement, physical structure of Earth, lava and magma.

Each group needs to complete the following for their topic:

1. Define and use vocab words
2. Provide notes
3. Design a demonstration (and be able to explain what you are showing)
4. Make a mini-poster (to help in presenting-can contain pictures, outline of presentation, vocab. Words, etc)

Work should be divided evenly among the students in the group (each student's name should go by the numbered items they are responsible for, so it is known who is doing what). Each group will present their information and do their demonstration for the class- either by having a round robin format (present several times to different groups of students) or to the entire class. Class members who view presentations are responsible for taking/filling in notes on each topic as presentations are given.

*can use document camera to project mini-poster up on screen for whole class presentation

*can record group presentations using document camera (?) or flip camera