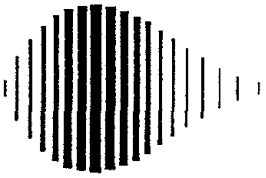

NCEER BIBLIOGRAPHY OF EARTHQUAKE EDUCATION MATERIALS

by

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Revised June 1, 1989

Technical Report NCEER-89-R010

NSF Master Contract Number ECE 86-07591

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50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. NCEER 89-R010	2.	3. Recipient's Accession No. PB90 109901/AS

4. Title and Subtitle

NCEER Bibliography of Earthquake Education Materials

5. Report Date

June 1, 1989

6.

7. Author(s)

Katharyn E. K. Ross

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

National Center for Earthquake Engineering Research
State University of New York at Buffalo
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Buffalo, New York 14261

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.

(C) ECE 86-07591

(G)

12. Sponsoring Organization Name and Address

13. Type of Report & Period Covered

Technical Report

14.

15. Supplementary Notes

This research was conducted at the National Center for Earthquake Engineering Research and was partially supported by the National Science Foundation under Grant No. ECE 86-07591.

16. Abstract (Limit: 200 words)

Resources for teachers and administrators desiring to start an earthquake education program or teach a more detailed lesson on earthquakes, volcanoes, tsunamis, and plate tectonics are presented in this text. Curricula, software, and supplemental informational material lists are provided with bibliographies of related books and articles for grades K-9 and parents and teachers. Bibliographic citations include reading levels and length of books whenever possible.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms

EARTHQUAKE ENGINEERING
EARTHQUAKE AWARENESS
BIBLIOGRAPHIES
CURRICULA
SOFTWARE
EARTHQUAKES
VOLCANOES
TSUNAMIS
PLATE TECTONICS
PRIMARY SCHOOLS
SECONDARY SCHOOLS
MIDDLE SCHOOLS
KINDERGARTEN

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Release Unlimited	Unclassified	78
	20. Security Class (This Page) Unclassified	22. Price

ABSTRACT

Resources for teachers and administrators desiring to start an earthquake education program or teach a more detailed lesson on earthquakes, volcanoes, tsunamis, and plate tectonics are presented in this text. Curricula, software, and supplemental informational material lists are provided with bibliographies of related books and articles for grades K-9 and parents and teachers. Bibliographic citations include reading levels and length of books whenever possible.

ACKNOWLEDGEMENT

I wish to thank Pat Kraemer and Roseanne Wawrzyniak for all their assistance in the preparation of this publication.

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Section 1
Introduction

On May 26, 1988, the National Center for Earthquake Engineering Research initiated an earthquake education project whose focus was on earthquake awareness and safety education in school programs for grades K-12. Initial goals of this program were to determine what has been done elsewhere in the field, develop a package of materials with an appropriate amount of detail for students at varying intellectual and interest levels, and test those materials in an elementary level program.

For the first six months of this program, the primary emphasis was to survey state education departments, individual school districts, and schools in the United States and the Territories to see who was offering earthquake education. Information about earthquake education programs was collected from other sources as well: Federal Emergency Management Agency; other preparedness organizations; Earthquake Information Centers; college and university faculty that have written articles about earth science and/or earthquake education programs or that have advised other programs; U.S. Geological Survey; Red Cross; and the Krause Guide.

In addition to discerning whether a state or particular school was offering earthquake education, surveyed programs were also asked the following: whether FEMA's Guidebook for Developing a School Earthquake Safety Program (December, 1985) was being used, what natural hazards curricula was being implemented, and if there was a school or classroom with a model natural hazards program. In the absence of a natural hazards curriculum, educational programs were queried about their disaster plans to see if earthquakes were included.

A secondary focus of the survey was to contact countries outside of the United States to learn about earthquake education programs in their school systems.

Throughout the time of the survey, copies of and information about earthquake education curricula, related software, and supplemental informational materials and books were collected and compiled.

As work progressed, it became clear that there was great interest in this work. Some individuals started sending examples of what they were doing. Others asked for assistance in starting an earthquake education program or if they could work with the National Center for Earthquake Engineering Research. Still others asked to be kept informed as to what responses were received from the survey and what curricular materials were available.

The response to our introductory bibliography (Technical Report NCEER-89-0010) was great. This current version is updated with additions we received after the first bibliography was printed. It is arranged to provide teachers and administrators with materials and background information in order to teach lessons about earthquakes, volcanoes, tsunamis, or plate tectonics, and to provide help for establishing an earthquake awareness and safety education program in the schools. It is not meant to be an all inclusive listing, nor is inclusion in this document meant as

an endorsement of the materials.

In order to meet the needs of our children in this important area, it is imperative that those who are interested be provided with information about background support materials and curricula so that valuable time and resources are not spent redesigning what is already available. Time can then be devoted to regionalizing existing materials, deciding what concepts are most crucial to teach at each age, and designing materials for those groups of students that are currently not being reached. It is hoped that this document fulfills this purpose.

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2.3 Selected Articles for Grades K-3

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Blohm, C. E. (1986, April). Nature's violent side. Cobblestone, pp. 6-10. For ages 8-14.

Brown, D. P. (1986, April). Elsewhere (ancient disasters). Cobblestone, pp. 30-31. For ages 8-14.

Cooper, M. (1986, January). The island that blew up. Faces, pp. 23-26. For ages 8-14.

Curtis, S. (1987, June). Volcanoes of science and legend (Hawaii). Boys' Life, pp. 38-41. For ages 8-18.

Digging deeper. (1986, April). Cobblestone, pp. 44-46. For ages 8-14.

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Svarney, B. P. (1986, April). Tsunamis: When the ocean roars. Cobblestone, pp. 37-38. For ages 8-14.

Try this experiment with Dr. Zed: Make a volcano erupt! (1988, May). Chickadee, pp. 22-23. For ages 4-8.

Volcano watch. (1986, May). World, pp. 18-23. For ages 8-13.

2.4 Selected Books for Grades K-3

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Arvetis, C. (1984). What is a volcano? Skokie, IL: Rand McNally. Reading level: 3.2, interest level: grades K-3. (fiction)

Berger, M. (1977). Jigsaw continents. New York: Coward, McCann, & Geoghegan. For grades 1-4. (47pp.)

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Cazeau, C. J. (1974). Earthquakes. Chicago, IL: Follette. Reading level: 4.6, interest level: grades K-3. (32pp.)

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Marcus, E. (1984). All about mountains and volcanoes. Mahwah, NJ: Troll Associates. Reading level: 3.0, interest level: grades 3-6. (86pp.) *

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*Book available at NCEER.

2.5 Selected Articles for Grades 4-6

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Blohm, C. E. (1986, April). Nature's violent side. Cobblestone, pp. 6-10. For ages 8-14.

Boraiko, A. A. (1986). Earthquake in Mexico. National Geographic, 169, 655-675. For grades 5-Adult.

Brown, D. P. (1986, April). Elsewhere (ancient disasters). Cobblestone, pp. 30-31. For ages 8-14.

Cooper, M. (1986, January). The island that blew up. Faces, pp. 23-26. For ages 8-14.

Curtis, S. (1987, June). Volcanoes of science and legend (Hawaii). Boys' Life, pp. 38-41. For ages 8-18.

Deepest hole being drilled for science. (1987, May 1). Current Science, p. 13. For grades 6-10.

Digging deeper. (1986, April). Cobblestone, pp. 44-46. For ages 8-14.

Earthquake kills about a thousand people. (1987, January 2). Current Science, p. 14. For grades 6-10.

Earthquake shakes up southern California. (1987, October 23). Current Events, pp. 1-2. For grades 6-10.

Earthquake! when will the big one hit? (1987, November 20). Junior Scholastic, pp. 12-13. For grades 6-8.

Evans, C. W. (1988, June). Volcano! Ranger Rick, pp. 24-31. For grades 5-12.

Garrett, W. E. (1986). When the earth moves. National Geographic, 169, 638-639. For grades 5-Adult.

Harrigan, J. (1981, May). Through a volcano with Jules Verne. Cobblestone, pp. 30-33. For ages 8-14.

The huge wave that wasn't. (1986, September 19). Current Science, p. 10. For grades 6-10.

Kabourek, J. (1989, May). Surtsey is born. Highlights, pp. 12-13. For ages 2-12.

Killer earthquake hits Mexico. (1985, October 18). Junior Scholastic, p. 13. For grades 6-8.

McDowell, B. (1986). Eruption in Columbia. National Geographic, 169, 640-653. For grades 5-Adult.

Macy, S. (1981, May). Aftershock: Rescue and rebuilding. Cobblestone, pp. 12-15. For ages 8-14.

May 18th, 1980: Eyewitness accounts by Cobblestone readers. (May, 1981). Cobblestone, pp. 20-23. For ages 8-14.

Mednick, E. R. Earthquake! scientists look beneath the surface. (1987, March). 3-2-1 Contact, pp. 24-27. For ages 8-14.

Mercer, C. (1986, October). Earthquake! Boys' Life, pp. 28-31+. For ages 8-18.

Mexico City rebuilds after killer quake. (1985, October 11). Current Events, pp. 1-2. For grades 6-10.

More explosions rock "Lake of Death." (1987, March 27). Current Science, p. 12. For grades 6-10.

Most powerful quakes in U.S. (1988, February 5). Current Science, p. 14. For grades 6-10.

Mount St. Helens: An American volcano. (1981, May). Cobblestone, pp. 4-7. For ages 8-14.

Natural disasters. (1986, April). Cobblestone, pp. 4-5. For ages 8-14.

O'Connor, J. (1985, November 29). Mexico after the earthquake. Junior Scholastic, pp. 2-4. For grades 6-8.

Pele's puffs. (1981, May). Cobblestone, p. 40. For ages 8-14.

Peters, L. (1986, May). The changing look of Mount St. Helens. Highlights, pp. 12-13. For ages 2-12.

Plude, C. (1986, April). Charles Richter: "Earthquake man." Cobblestone, pp. 20-22. For ages 8-14.

Plude, C. (1986, April). The Richter scale. Cobblestone, p. 22. For ages 8-14.

Rasmussen, J. (1981, May). Mt. St. Helens: A geologists point of view. Cobblestone, pp. 8-11. For ages 8-14.

Reichlin, L. (1986, January 3). Can earthquakes be predicted? Current Science, pp. 4-5. For grades 6-10.

Reichlin, L. (1986, February 14). Volcano disaster: When will the next one strike? Current Science, pp. 6-7. For grades 6-10.

Reichlin, L. (1986, October 31). Superquake: When will it strike? Current Science, pp. 4-5. For grades 6-10.

Reichlin, L. (1987, February 27). Erupting volcanoes threaten villages. Current Science, pp. 4-5. For grades 6-10.

Reichlin, L. (1988, January 8). Damaging quake: A warning of the big one? Current Science, pp. 6-7. For grades 6-10.

Ring around the volcano. (1986, May). 3-2-1 Contact, pp. 2-3. For ages 8-14.

Rocks light up during earthquakes. (1987, May 15). Current Science, p. 8. For grades 6-10.

Roop, P., & Roop, C. (1986, April). The New Madrid earthquake of 1811. Cobblestone, pp. 15-17. For ages 8-14.

Roop, P., & Roop, C. (1986, April). The San Francisco earthquake and fire. Cobblestone, pp. 18-19. For ages 8-14.

Rosenstock, L. (1988, May 13). Can animals predict earthquakes? Current Science, pp. 4-5. For grades 6-10.

Sextro, D. (1981, May). Mount St. Helens' Harry Truman. Cobblestone, pp. 26-29. For ages 8-14.

Shake, rattle and roll. (1985, November). 3-2-1 Contact, p. 2. For ages 8-14.

Soren, D. (1988). The day the world ended at Kourion: Reconstructing an ancient earthquake. National Geographic, 174, 30-53. For grades 5-Adult.

Souza, D. M. (1988, July). Big waves in the harbors. Boys' Life, p. 9. For ages 8-18.

Stuckey, S. (1988, June). Climbing the killer volcano. Boys' Life, pp. 28-31. For ages 8-18.

Svarney, B. P. (1986, April). Tsunamis: When the ocean roars. Cobblestone, pp. 37-38. For ages 8-14.

Tenney, E. (1981, May). The legend of Loo-Wit. Cobblestone, pp. 34-37. For ages 8-14.

Thousands buried alive. (1985, December 6). Current Events, pp.1-2. For grades 6-10.

Try this experiment with Dr. Zed: Make a volcano erupt! Chickadee, pp. 22-23. For ages 4-8.

U.S. volcano may be active for decades. (1987, April 17). Current Science, p. 12. For grades 6-10.

Volcanic eruption triggered famine many years ago. (1988, April 1). Current Science, p. 14. For grades 6-10.

A volcanic glossary. (1981, May). Cobblestone, p. 41. For ages 8-14.

Volcano erupts under sea. (1988, January 22). Current Science, p. 8. For grades 6-10.

Volcano watch. (1986, May). World, pp. 18-23. For ages 8-13.

What triggers volcanic eruptions? (1988, April 29). Current Science, p. 8. For grades 6-10.

Wong, L. (1981, May). Monitoring a mountain. Cobblestone, pp. 16-19. For ages 8-14.

2.6 Selected Books for Grades 4-6

The following references were used to obtain reading and interest levels in this bibliography: Baker and Taylor, School Selection Guide - 1988; Book Review Digest, 1954-1989; Brodart In-Stock Books, K-8, 1986; El-Hi Series Textbooks in Print, 1977-1988; Follett Library Book Company - Elementary 1987/88 catalog; Follett Library Book Company - K-12, 1987/88 hardbound, paperback catalog; and Project Quake, "Resources - Books."

Asimov, I. (1978). How did we find out about earthquakes? New York: Walker. For ages 10-19; reading level: 5.4. (58pp.)

Asimov, I. (1981). How did we find out about volcanoes? New York: Walker. Reading level: 6.4. (64pp.)

Aylesworth, T. (1979). Geologic disasters: Earthquakes and volcanoes (Impact Book). New York: Franklin Watts. For grades 4 and up. (88pp.)

Aylesworth, T. G., & Aylesworth, V. L. (1983). The Mount St. Helens disaster. New York: Franklin Watts. For grades 5-7. (86pp.)

Bain, I. (1984). Mountains and earth movements. New York: Franklin Watts. Reading level: 5.0, interest level: grades 5-8. (48pp.)

Berger, M. (1977). Jigsaw continents. New York: Coward, McCann, & Geoghegan. For grades 1-4. (47pp.)

Bramwell, M. (1986). Volcanoes and earthquakes. New York: Franklin Watts. Reading level: 6.7, interest level: grades 5-8.

Brandreth, G. (1981). Amazing facts about our earth. New York: Doubleday. For ages 10-14.

Brandt, K. (1985). Earth. Mahwah, NJ: Troll Associates. (30pp.) *

Branley, F. M. (1974). Shakes, quakes, and shifts (earth tectonics). New York: Thomas Y. Crowell. For grades 4-8. (33pp.)

Branley, F. M. (1985). Volcanoes. New York: Thomas Y. Crowell. Reading level: 2.0, interest level: grades K-4. (32pp.)

Brown, B., & Brown, W. (1974). Historical catastrophies: Earthquakes. Reading, MA: Addison-Wesley. For grades 5-7. (191pp.)

Cazeau, C. J. (1974). Earthquakes. Chicago, IL: Follett. Reading level: 4.6, interest level: grades K-3. (32pp.)

Challand, H. (1982). Activities in the earth sciences. Chicago, IL: Children's. For grades 5 and up. (93pp.)

Challand, H. (1982). Earthquakes. Chicago, IL: Children's. For ages 5-9. (45pp.) *

Christopher, M. F. (1975). Earthquake. Boston, MA: Little, Brown. For ages 9-11. (111pp.)

Cole, J. (1987). The magic school bus inside the earth. New York: Scholastic. (40 pp.)

Creative (Eds.). (1971). Forces of nature. Mankato, MN: Creative Education Society. For grades 1-6. (37pp.)

Dudman, J. (1988). The San Francisco earthquake. Denver, CO: Wayland. For grades 1-6. (32pp.)

Fodor, R. V. (1977). What does a geologist do? New York: Dodd, Mead. For grades 5-12. (62pp.)

Fradin, D. B. (1982). Disaster! earthquakes. Chicago, IL: Children's. For ages 8-19. (63pp.)

Fradin, D. B. (1982). Disaster! volcanoes. Chicago, IL: Children's. For ages 8-19. (62pp.)

Gilbreath, A. (1986). Ring of fire and the Hawaiian islands and Iceland. Minneapolis, MN: Dillon. Reading level: 6.0, interest level: grades 5-8. (95pp.)

Gilfond, H. (1981). Disastrous earthquakes. New York: Franklin Watts. For ages 10-19. (66pp.)

Goldner, K. A., & Vogel, C. G. (1981). Why Mount St. Helens blew Its top. Minneapolis, MN: Dillon. Reading level: 6.3, interest level: grades 5-8. (88pp.)

Gormley, B. (1987). Paul's volcano. Boston, MA: Houghton Mifflin. Interest level: grades 3-6. (143pp., fiction)

Gray, G. (1977). Alaskan woman. St. Paul: EMC. For grades 4-9. (40pp.)

Harris, S. (1979). Volcanoes. New York: Franklin Watts. (48pp.)

Heintze, C. (1968). The circle of fire; the great chain of volcanoes and earth faults. New York: Meredith. For grades 6 and up. (161pp.)

Iacopi, R. (1971). Earthquake country (3rd ed.). Menlo Park, CA: Lane. For ages 7-21. (160pp.)

Irving, R. (1962). Volcanoes and earthquakes. New York: Alfred Knopt. For grades 4-7. (123pp.)

Kiefer, I. (1978). Global jigsaw puzzle, story of continental drift. New York: Atheneum. For ages 10-14. (79pp.)

Lambert, D. (1982). The active earth. New York: Lothrop, Lee, & Shepard. For grades 4-7. (41pp.)

Lambert, D. (1982). Earthquakes. New York: Franklin Watts. For ages 7-9. (32pp.)

Lambert, D. (1985). Volcanoes. New York: Franklin Watts. Interest level: grades 3-4. (32pp.)

Larson, N. (1982). Why do we have earthquakes? Mankato, MN: Creative Education. Reading level: 4.1, interest level: grades 3-6.

Lauber, P. (1972). Earthquakes: New scientific ideas about how and why the earth shakes. New York: Random House. Reading level: 3, for grades 2-6. (81pp.)

Lauber, P. (1986). Volcano: The eruption and healing of Mount St. Helens. Scarsdale, NY: Bradbury Press. Reading level: 6.5, interest level: grades 5-8. Newberry Honor Book 1987. (60 pp.) NCEER readability analysis shows reading level of 7.9.

Lye, K. (1983). The earth. Morristown, NJ: Silver Burdette.

Marcus, E. (1984). All about mountains and volcanoes. Mahwah, NJ: Troll Associates. Reading level: 3.0, interest level: grades 3-6. (30pp.) *

Marcus, R. B. (1972). The first book of volcanoes and earthquakes. New York: Franklin Watts. For grades 5-7. (86pp.)

Matthews, A. (1986). Earthquake (a "Transformer book"). New York: Ballantine. Reading level: 3.0, interest level: grades 3-6; designed for reluctant readers. (fiction)

Matthews, W. (1969). Story of volcanoes and earthquakes. Harvey House. For grades 4-6. (126pp.)

May, J. (1969). Why the earth quakes. New York: Holiday. For grades 2-4. (37pp.)

Merrians, D. (1975). I can read about earthquakes and volcanoes. Mahwah, NJ: Troll Associates. For grades 2-4.

Miklowitz, G. D. (1977). Earthquake! New York: Julian Messner. For grades 4-7. (96pp.)

Navarra, J. G. (1980). Earthquake! New York: Doubleday. For grades 5-7. (95pp.)

Nixon, H., & Nixon, J. L. (1981). Earthquakes: Nature in motion. New York: Dodd, Mead. For grades 2-5. (63pp.)

Paananen, E. (1982). Tremor earthquake technology in the space age. New York: Julian Messner. For ages 10-19. (126pp.)

Pough, F. H. (1953). All about volcanoes and earthquakes. New York: Random House. (150pp.)

Poynter, M. (1980). Volcanoes, the fiery mountains. New York: Julian Messner. (128pp.)

Radlauer, R. S. (1981). Volcanoes. Chicago, IL: Children's. Reading level: 4.4. (48pp.)

Radlauer, R. S., & Radlauer, E. (1987). Earthquakes. Chicago, IL: Children's. Interest level: grades 3-6. (48pp.)

Rutland, J. (1987). Violent earth. New York: Random House. Reading level: 3.0, interest level: grades 3-6. (24pp.)

Santrey, L. (1985). Earthquakes and volcanoes. Mahwah, NJ: Troll Associates. Reading level: 4.0, interest level: grades 3-6. (30pp.) *

Simon, S. (1979). Danger from below: Earthquakes past, present, and future. New York: Four Winds. Reading level: 6.4, interest level: grades 5-8. (86pp.)

Stein, R. C. (1983). The story of the San Francisco earthquake. Chicago, IL: Children's. For grades 3-6. (31pp.)

Sullivan. (1982). Earthquake 2099. New York: Dutton. Reading level: 5.8. (119 pp., fiction)

Updegraff, I., & Updegraff, R. (1981). Earthquakes and volcanoes. Chicago, IL: Children's. Reading level: 5, for grades 4-7. (25pp.)

Walker, B., & the editors of Time-Life Books. (1982). Earthquake (Planet Earth Series). Alexandria, VA: Time-Life. For ages 11-19. (176pp.)

Watson, N., et al. (1982). Our violent earth. Washington, DC: National Geographic Society. (103pp.)

Watts, L., & Tyler, J. (1978). The children's book of the earth. St. Paul, MN: EMC. (32pp.)

Williamson, T. (1984). Understanding the earth. Morristown, NJ: Silver Burdett.

Winner, P. (1986). Earthquakes. Lexington, MA: Silver. For grades 3-7.

* Book available at NCEER.

2.7 Selected Articles for Grades 7-9

The Children's Magazine Guide was used as a reference for age levels in the following bibliography.

Abrams, I. S. (1986, April). Prepare for disaster. Cobblestone, pp. 11-14. For ages 8-14.

Blohm, C. E. (1986, April). Nature's violent side. Cobblestone, pp. 6-10. For ages 8-14.

Boraiko, A. A. (1986). Earthquake in Mexico. National Geographic, 169, 655-675. For grades 5-Adult.

Brown, D. P. (1986, April). Elsewhere (ancient disasters). Cobblestone, pp. 30-31. For ages 8-14.

Cooper, M. (1986, January). The island that blew up. Faces, pp. 23-26. For ages 8-14.

Curtis, S. (1987, June). Volcanoes of science and legend (Hawaii). Boys' Life, pp. 38-41. For ages 8-18.

Deepest hole being drilled for science. (1987, May 1). Current Science, p. 13. For grades 6-10.

Digging deeper. (1986, April). Cobblestone, pp. 44-46. For ages 8-14.

Earthquake damage in the U.S. (1988, April 22). Science World, p. 5. For grades 7-10.

Earthquake kills about a thousand people. (1987, January 2). Current Science, p. 14. For grades 6-10.

Earthquake shakes up southern California. (1987, October 23). Current Events, pp. 1-2. For grades 6-10.

Earthquake! when will the big one hit? (1987, November 20). Junior Scholastic, pp. 12-13. For grades 6-8.

Evans, C. W. (1988, June). Volcano. Ranger Rick, pp. 24-31. For grades 5-12.

Fritz, S. (1985, November 29). Major earthquake hits Mexico City. Science World, pp. 4-7. For grades 7-10.

Garrett, W. E. (1986). When the earth moves. National Geographic, 169, 638-639. For grades 5-Adult.

Gerdes, V. L. (1987, March 23). The caldron called Kilauea. Science World, pp. 4-5. For grades 7-10.

Goodman, B. (1988, April 8). Waiting for the big one--in eastern North America. Science World, p. 6. For grades 7-10.

Harrigan, J. (1981, May). Through a volcano with Jules Verne. Cobblestone, pp. 30-33. For ages 8-14.

The huge wave that wasn't. (1986, September 19). Current Science, p. 10. For grades 6-10.

Killgore, J. (1987, April 6). Earthquake: A.D. 365. Science World, pp. 16-19. For grades 7-10.

Killer earthquake hits Mexico. (1985, October 18). Junior Scholastic, p. 13. For grades 6-8.

McDowell, B. (1986). Eruption in Columbia. National Geographic, 169, 640-653. For grades 5-Adult.

Macy, S. (1981, May). Aftershock: Rescue and rebuilding. Cobblestone, pp. 12-15. For ages 8-14.

May 18th, 1980: Eyewitness accounts by Cobblestone readers. (1981, May). Cobblestone, pp. 20-23. For ages 8-14.

Mednick, E. R. (1987, March). Earthquake! scientists look beneath the surface. 3-2-1 Contact, pp. 24-27. For ages 8-14.

Mercer, C. (1986, October). Earthquake! Boys' Life, pp. 28-31+. For ages 8-18.

Mexico City rebuilds after killer quake. (1985, October 11). Current Events, pp. 1-2. For grades 6-10.

More explosions rock "Lake of Death." (1987, March 27). Current Science, p. 12. For grades 6-10.

Most powerful quakes in U.S. (1988, February 5). Current Science, p. 14. For grades 6-10.

Mount St. Helens: An American volcano. (1981, May). Cobblestone, pp. 4-7. For ages 8-14.

Natural disasters. (1986, April). Cobblestone, pp. 4-5. For ages 8-14.

O'Connor, J. (1985, November 29). Mexico after the earthquake. Junior Scholastic, pp. 2-4. For grades 6-8.

Pele's puffs. (1981, May). Cobblestone, p. 40. For ages 8-14.

Plude, C. (1986, April). Charles Richter: "Earthquake man." Cobblestone, pp. 20-22. For ages 8-14.

Plude, C. (1986, April). The Richter scale. Cobblestone, p. 22. For ages 8-14.

Proujan, C. (1985, November 29). Build a model tiltmeter--an earthquake warning system. Science World, p. 9. For grades 7-10.

Proujan, C. (1985, November 29). Tiltmeters--when tilt means danger! Science World, p. 8. For grades 7-10.

Rasmussen, J. (1981, May). Mt. St. Helens: A geologists point of view. Cobblestone, pp. 4-7. For ages 8-14.

Reichlin, L. (1986, January 3). Can earthquakes be predicted? Current Science, pp. 4-5. For grades 6-10.

Reichlin, L. (1986, February 14). Volcano disaster: When will the next one strike? Current Science, pp. 6-7. For grades 6-10.

Reichlin, L. (1986, October 31). Superquake: When will it strike? Current Science, pp. 4-5. For grades 6-10.

Reichlin, L. (1987, February 27). Erupting volcanoes threaten villages. Current Science, pp. 4-5. For grades 6-10.

Reichlin, L. (1988, January 8). Damaging quake: A warning of the big one? Current Science, pp. 6-7. For grades 6-10.

Ring around the volcano. (1986, May). 3-2-1 Contact, pp. 2-3. For ages 8-14.

Rocks light up during earthquakes. (1987, May 15). Current Science, p. 8. For grades 6-10.

Roop, P., & Roop, C. (1986, April). The New Madrid earthquake of 1811. Cobblestone, pp. 15-17. For ages 8-14.

Roop, P., & Roop, C. (1986, April). The San Francisco earthquake and fire. Cobblestone, pp. 18-19. For ages 8-14.

Rosenstock, L. (1988, May 13). Can animals predict earthquakes? Current Science, pp. 4-5. For grades 6-10.

Samz, J. (1987, November 6). Volcanoes on other worlds. Science World, pp. 16-18. For grades 7-10.

Samz, J. (1988, February 12). The strange case of the missing polar earthquakes. Science World, p. 6. For grades 7-10.

Sextro, D. (1981, May). Mount St. Helens' Harry Truman. Cobblestone, pp. 26-29. For ages 8-14.

Shake, rattle and roll. (1985, November). 3-2-1 Contact, p. 2. For ages 8-14.

Soren, D. (1988). The day the world ended at Kourion: Reconstructing an ancient earthquake. National Geographic, 174, 30-53. For grades 5-Adult.

Souza, D. M. (1988, July). Big waves in the harbors. Boys' Life, p. 9. For ages 8-18.

Stuckey, S. (1988, June). Climbing the killer volcano. Boys' Life, pp. 28-31. For ages 8-18.

Svarney, B. P. (1986, April). Tsunamis: When the ocean roars. Cobblestone, pp. 37-38. For ages 8-14.

Tenney, E. (1981, May). The legend of Loo-Wit. Cobblestone, pp. 34-37. For ages 8-14.

Thousands buried alive. (1985, December 6). Current Events, pp. 1-2. For grades 6-10.

U.S. volcano may be active for decades. (1987, April 17). Current Science, p. 12. For grades 6-10.

Volcanic eruption triggered famine many years ago. (1988, April 1). Current Science, p. 14. For grades 6-10.

A volcanic glossary. (1981, May). Cobblestone, p. 41. For ages 8-14.

Volcano erupts under the sea. (1988, January 22). Current Science, p. 8. For grades 6-10.

Volcano watch. (1986, May). World, pp. 18-23. For ages 8-13.

What triggers volcanic eruptions? (1988, April 29). Current Science, p. 8. For grades 6-10.

Wong, L. (1981, May). Monitoring a mountain. Cobblestone, pp. 16-19. For ages 8-14.

2.8 Selected Books for Grades 7-9

The following references were used to obtain reading and interest levels in this bibliography: Baker and Taylor, School Selection Guide - 1988; Book Review Digest, 1954-1989; Brodart In-Stock Books, K-8, 1986; El-Hi Series Textbooks in Print, 1974-1988; Follett Library Book Company - Elementary 1987/88 catalog; and Follett Library Book Company - K-12, 1987/88 hardbound, paperback catalog; and Project Quake, "Resources - Books."

Asimov, I. (1978). How did we find out about earthquakes? New York: Walker. For ages 10-19, reading level: 5.4. (58pp.)

Aylesworth, T. G., & Aylesworth, V. L. (1983). The Mount St. Helens disaster. New York: Franklin Watts. For grades 5-7. (86pp.)

Bain, I. (1984). Mountains and earth movements. New York: Franklin Watts. (48pp.)

Berger, M. (1981). Disastrous volcanoes. New York: Franklin Watts. For ages 8-12. (47pp.)

Bramwell, M. (1986). Volcanoes and earthquakes. New York: Franklin Watts.

Brandreth, G. (1981). Amazing facts about our earth. New York: Doubleday. For ages 10-14.

Brown, B., & Brown, W. (1974). Historical catastrophies: Earthquakes. Reading, MA: Addison-Wesley. For grades 5-7. (191pp.)

Carson, J. (1984). Volcanoes. New York: Franklin Watts. (48pp.)

Challand, H. J. (1982). Activities in the earth sciences. Chicago, IL: Children's. For ages 10-19. (93pp.)

Eicher, D. L. (1976). Geologic time. Englewood Cliffs, NJ: Prentice-Hall. (150pp.)

Fearon. Quake 8.1. Palo Alto, CA: Fearon. (Part of Flashback Disaster Series, high interest/easy reading - fiction.) Reading level: 4.0, interest level: grades 7-10.

Fodor, R. V. (1978). Earth in motion: The concept of plate tectonics. New York: William Morrow. (95pp.) For grades 5-12.

Fradin, D. B. (1982). Disaster! earthquakes. Chicago, IL: Children's. For ages 8-19. (63pp.)

Fradin, D. B. (1982). Disaster! volcanoes. Chicago, IL: Children's. For ages 8-19. (62pp.)

Gallant, R. A. (1986). Our restless earth. New York: Franklin Watts. For grades 5-9. (96pp.)

Gere, J. M., & Shah, H. C. (1984). Terra non firma - understanding and preparing for earthquakes. New York: W. H. Freeman. For grades 7-Adult. (203pp.)

Gilbreath, A. (1986). Ring of fire and the Hawaiian islands and Iceland. Minneapolis, MN: Dillon. Reading level: 6.0, interest level: grades 5-8. (95pp.)

Gilfond, H. (1981). Disastrous earthquakes. New York: Franklin Watts. For ages 10-19. (66pp.)

Golden, F. (1983). The trembling earth: Probing and predicting quakes. New York: Scribner. For grades 7-Adult. (175pp.)

Goldner, K. A., & Vogel, C. G. (1981). Why Mount St. Helens blew its top. Minneapolis, MN: Dillon. Reading level: 6.3, interest level: 5.8. (88pp.)

Gray, G. (1977). Alaskan woman. St. Paul, MN: EMC. For grades 4-9. (40pp.)

Heintze, C. (1968). The circle of fire; the great chain of volcanoes and earth faults. New York: Meredith. For grades 6 and up. (161pp.)

Iacopi, R. (1971). Earthquake country (3rd ed.). Menlo Park, CA: Lane. For ages 7-21. (160pp.)

Irving, R. (1962). Volcanoes and earthquakes. New York: Alfred Knopt. For grades 4-7. (123pp.)

Jennings, T. (1980). Volcanoes and earthquakes. Freeport, NY: M. Cavendish. For ages 12 and up. (132pp.)

Jones, P. (1981). The forces of nature. Chicago: Children's. For grades 7-8. (64pp.)

Kiefer, I. (1978). Global jigsaw puzzle: The story of continental drift. New York: Atheneum. For ages 10-14. (79pp.)

Lambert, D. (1982). The active earth. New York: Lothrop, Lee, & Shepard. For grades 4-7. (41pp.)

Lauber, P. (1972). Earthquakes: New scientific ideas about how and why the earth shakes. New York: Random House. For grades 2-6, reading level: 3. (81pp.)

Lauber, P. (1986). Volcano: The eruption and healing of Mount St. Helens. Scarsdale, NY: Bradbury. Reading level: 6.5, interest level: grades 5-8. Newberry Honor Book 1987. (60pp.) NCEER reading ability analysis shows reading level of 7.9.

Miklowitz, G. D. (1977). Earthquake! New York: Julian Messner. For grades 4-7. (96pp.)

Navarra, J. G. (1980). Earthquake! New York: Doubleday. For grades 5-7. (95pp.)

Nixon, H., & Nixon, J. L. (1978). Volcanoes: Nature's fireworks. New York: Dodd & Mead. Reading level: 7.4. (63pp.)

Paananen, E. (1982). Tremor earthquake technology in the space age. New York: Julian Messner. For ages 10-19. (126pp.)

Raymo, C. (1983). The crust of our earth. Englewood Cliffs, NJ: Prentice Hall. For grades 6-12. (135pp.)

Rossbacher, L. A. (1986). Recent revolutions in geology. New York: Franklin Watts. For grades 7-12. (125pp.)

Scariano. Earthquake! (Part of High Adventure series; high interest/easy reading - fiction.) Reading level: 3.0, interest level: grades 7-10.

Simon, S. (1979). Danger from below: Earthquakes past, present, and future. New York: Four Winds. Reading level: 6.4, interest level: grades 5-8. (86pp.)

Taylor, G. J. (1983). Volcanoes in our solar system. New York: Dodd & Mead. For grades 4 and up. (95pp.)

Tributsch, H. (1982). When the snakes awake: Animals and earthquake prediction. Cambridge, MA: MIT. (248pp.)

Tufty, B. (1969). 1001 questions answered about earthquakes, avalanches, floods and other natural disasters. New York: Dover. For grades 10-Adult. (350pp.)

Updegraff, I., & Updegraff, R. (1981). Earthquakes and volcanoes. Chicago, IL: Children's. For grades 4-7, reading level: 5. (25pp.)

Walker, B., & the editors of Time-Life Books. (1982). Earthquake (Planet Earth series). Alexandria, VA: Time-Life. (176pp.)

Walker, B., & the editors of Time-Life Books. (1982). Volcano (Planet Earth series). Alexandria, VA: Time-Life. (176pp.)

Yanev, P. (1974). Peace of mind in earthquake country - how to save your home and your life. San Francisco, CA: Chronicle. (304pp.)

* Book available at NCEER.

Section 3
Educational Resources

3.1 Elementary Science Curricula

Science Series	Authors	Copy-Right	Grade Level	Unit or Chapter	Contents
Accent on Science Charles E. Merrill Publishing Co. A Bell and Howell Company Columbus, Ohio	Dr. Robert B. Sund Dr. Donald K. Adams Dr. Jay K. Hackett Dr. Richard H. Moyer	1985, 1983, 1980	6	Unit 3 Earth Models, Chapter 2, "The Earth's Changing Crust"	Chapter 2 includes: continental drift, sea floor spreading, earthquakes, and plate tectonics.
			5	Unit 8 Exploring Earth Patterns Chapter 1, "The Earth's Layers"	Chapter 1 includes: "Studying the Earth," "Crust," "Mantle and Core," "Clues from Volcanoes," "Clues from Earthquakes," "Earthquake Effects," and information about Mt. St. Helens. Includes a list of books for students, rated according to difficulty; vocabulary; list of related films, filmstrips and software; ideas for teaching exceptional students; projects to make i.e. mid-ocean ridges. Includes pupil editions, teacher's editions, teacher resource books (reproducible masters), activity books, poster packets, super scientist critter stickers, science kits.
HBJ Science Harcourt Brace Jovanovich, Publishers Orlando, Florida	Elizabeth K. Cooper Paul E. Blackwood John A. Boeschen Morsley E. Giddings Arthur A. Carin	1985	5	Unit 6 - The Earth's Rocks	Unit 6 includes: "Rocks that Form in Fire" (volcanoes, Mt. St. Helens eruption) and "How Mountains Form" (folds, faults and mountains making islands).
				Unit 7 - The Earth's Oceans	Unit 7 includes: Lesson 5 - "The Changing Ocean Floor" (plates, earthquakes, movement of continents, seismographs). Has bulletin board suggestions, list of resources, vocabulary activities, workbook activities, copying master worksheets.
Heath Science D.C. Heath and Company Lexington, MA	James P. Barufaldi George T. Ladd Alice Johnson Moses	1985, 1984, 1981	5	Unit III - Exploring the Earth, Chapter 5, "The Changing Earth"	Includes: "Inside the Earth," "Earthquakes," "Volcanoes," "The Drifting Continents," "The Ocean Floor Splits Apart," "A New Theory" (plate tectonics), and a brief biography of Charles Richter. Also has activities to do to demonstrate different aspects of the material, i.e. a way to show how magma can flow under the earth's crust, a make-your-own seismograph, etc.
			6		Has reference to energy from volcanoes (p.206).

Science Series	Authors	Copy-Right	Grade Level	Unit or Chapter	Contents
Holt Science Holt, Rinehart, and Winston, Publishers New York	Joseph Abruscato Joan Wade Fossaceca Jack Hassard Donald Peck	1986, 1984	6	Unit 2: The Changing Earth	Chapter 4 - "How Rocks Are Formed" (earthquake waves, volcanoes, the rock cycle) Chapter 5 - "Studying the Earth's Crust" (earthquakes, faults, folds) Chapter 6 - "Earth History" (continental drift) Includes: student texts, teacher editions, worksheet masters, enrichment suggestions, exceptional student IEP chapter goals, and lists of related books, films/videos, filmstrips/sound cassettes, and computer software.
Journeys in Science Laidlaw Educational Publishers River Forest, Illinois	James Shymansky Nancy Romance Larry Yore	1988	6	Unit 3 - The Earth's Crust	Includes: Chapter 6 - "Building Blocks of the Earth," Chapter 7 - "Formation of Rocks," and Chapter 8 - "Movement of the Earth's Crust." Chapter 8 includes earthquakes and volcanoes. Grade 6 includes pupil text, teacher edition, workbook, spirit-duplicating masters, posters, overhead transparencies, computer coursework, and science kit. In Chapter 8, Health and Safety worksheet #21 - "What To Do During an Earthquake" has as an objective: "Apply science to daily life by recognizing the health and safety issues related to earthquakes."
			5		Has section on "Earth's Crust Under the Ocean;" no mention of earthquakes.
Science and Technology On Planet Earth Coronado Publishers, Inc. San Diego, CA	Textbook: Paul F. Brandwein Burnett Cross Sylvia S. Neivert Teacher's Edition: Sigmund Abeles Robert M. Jones Donna M. Kopenski Donald P. LaSalle John A. Pellino Steven A. Weinberg	1985	4	Unit I - The Changing Earth Chapter 1, "Below the Earth's Surface"	Chapter 1 includes information about the inside of the earth, waves in the earth, heat in the earth.
				Chapter 3, "Breaking Down the Land"	Chapter 3 makes a brief reference to earthquakes and volcanoes.
				Chapter 4, "Building Up the Land"	Chapter 4 includes how volcanoes are born, faults, folds, plate tectonics, and earthquakes. Unit highlights related careers and includes library research topics, a student bibliography and experiments, i.e. "An Investigation into Moving Tectonic Plates" using a softball and play-doh.

Science Series	Authors	Copy-Right	Grade Level	Unit or Chapter	Contents
Scott, Foresman Science Scott, Foresman and Company Glenview, Illinois	Michael R. Cohen Bette J. Del Giorno Jean Durgin Harlan Alan J. McCormack John R. Staver	1986	4	Unit 3: Forces Within The Earth Chapter 5: "Inside the Earth" Chapter 6: "Building and Shaking the Earth"	Chapter 5 includes: "What is inside the earth?" (core, mantle, crust); "Are the continents moving?" (plates, mid-ocean ridge). Chapter 6 includes: "Modeling Earth's Forces" (using clay), "What Are Faults?", "What Causes Earthquakes?" (damage scale of earthquakes, earthquake prediction), "How do Volcanoes Form?" (Mt. St. Helens), and "How do MountainsBuildUp?" Has laboratory activities and notes related careers. Series includes student texts, teacher guides, Teacher's Resource Book, posters, and Science Square-Off, computer coursework for grades 4-6.
			3	Unit 4: The Earth Has a Crust	Main Ideas include: minerals people use every day come from different rocks and soil is important to us and gradually forms from rock, organisms, air, and water.
Silver Burdett Science Silver Burdett Morristown, NJ	George G. Mallinson Jacqueline B. Mallinson William Smallwood Catherine Valentino	1987	6	Chapter 11 "Changes in the Earth's Crust"	Includes: "The Floating Crust," "Earthquakes," "Volcanoes," and "Mountain Building." Gives bibliography bulletin board ideas, ditto masters and includes related vocabulary, pupil text, teacher edition and teacher resource package. Includes ideas for the exceptional student.

3.2 Earthquake Education - Curricula Summary

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
CALEEP Curricula Lawrence Hall of Science Univ. of California at Berkeley Berkeley, CA 94720	4-8	1987, Funded by Legislative Act of the State of Calif.; CALEEP is a cooperative effort between Lawrence Hall of Science and the Calif. State Seismic Safety Commission. Available in Science/Engineering Library.	"Mini-Kit" consists of 14 Hands-On earthquake education activities: a. Teacher's Guide - including blackline masters b. Computer Disk - (Apple II+ and/or IIe with disk drive) Quake: A Computer Simulation and Survival: A computer Simulation Game c. Filmstrip d. Audio Cassette Tape - disc jockey, Mr. Pate, experiencing 1964 Alaska Earthquake e. AAA map California Can purchase Quake BINGO, Await the Quake game and Simulator Kit separately. The Complete CALEEP Kit contains 22 activities.	Have been field-tested throughout California in grades 4-8. More information can be found: 1. Dr. Wm. Ritz Science & Math. Institute CSU Long Beach, CA 90840 2. Dr. Bonnie Brunckhorst Assoc. Prof. of Science Ed. CSU San Bernardino, CA 92407	"Mini-Kit" $30, plus $5 shipping and handling; Complete Kit $75.00.
I Can Make A The Difference Chair Emergency Preparedness Committee Utah State PTA 1037 E. South Temple Salt Lake City, Utah 84102 *Mrs. Patty Sandstrom	Primary Grades, written at 4th grade reading level	1978 - Index for Teachers 1983 - Elementary Curriculum	This contains a series of units on a number of areas involving emergency preparedness: fire, earthquake, flood, nuclear war, and weather problems. Each unit is set up in the same format and includes: a picture of a house in the student's community which becomes a home when each child imagines he lives there; an introductory poem; "What Would I Do" exercises; "Things I Should Know;" and games and puzzles. The earthquake section includes a map showing Utah earthquakes, an earthquake word hunt, and safety rules crossword puzzle.	Text was piloted in 8 classrooms in 4 different schools.	$2.50/copy plus postage.

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Crustal Evolution Education Project available from: Ward's Natural Science Establishment, Inc. 5100 W. Henrietta Rd. P.O. Box 92912 Rochester, NY 14692-9012 (p.110-116) 1-800-962-2660	Designed Primarily for grades 7-12	Developed by the National Association of Geology Teachers with support from the National Science Foundation 1979	Consists of 33 individual activity modules designed to provide students with an understanding "of the concepts behind plate tectonics and the physical Earth." Each module is individual, self-contained and designed for the Earth Science classroom. Modules include: "Locating Active Plate Boundaries by Earthquake Data," "Earthquakes and Plate Boundaries," "Plate Boundaries and Earthquake Prediction," "Hot Spots in the Earth's Crust," "Volcanoes: Where and Why?" and "Quake Estate," a board game to be played by two to four students at a time and whose goal is, "to achieve success in net income based on accuracy of assessing earthquake risks" (copyright, 1979). The CEEP is not intended to be a complete curriculum but designed to adapt to any teacher's curriculum.	Testing conducted in 3 stages. Third stage evaluation involved being tested nationwide in 15 test centers with students in grades 7-12: Calif., Colo., Fla., Georgia, Indiana, Iowa, Maryland, Mass., Minnesota, NY, Penna., Texas, Virginia, Washington, and Wisconsin.	Class Pack which contains 1 Teacher's Guide and 30 copies of Student Investigation Booklet - $21, except for "Quake Estate"-$28 and "The Eruption of Mount Saint Helen's"-$30.
Earthquake Awareness and Preparedness Curriculum Junior League of Oakland-East Bay 3730 Mt. Diablo Blvd. Suite 310 Lafayette, CA 94549 *Linda Grandt Patricia Monson	Pre-K-6; has been used with students up to 8th grade	1985; CALEEP and EV (1983) materials have individual copyrights	This is a 1 hour curriculum that anyone can pick up and do that is particularly aimed at elementary students. There is a curriculum guide that provides lessons for each grade level, an Instructor's Guide from Environmental Volunteers, Inc., and role playing situations from CALEEP. There are also supporting videotapes that show each level of the curriculum that were prepared by JLOEB, the Albany Unified School District, and the Audubon Nature Training Society: preschool level, middle school, highschool - adult (not included in the curriculum), and "School Facilitation." These can be borrowed from BAREPP.	The curriculum was developed in 1983, and in 1984 an 8-hour curriculum was tested in model schools. Results of questionnaires given to students aided in the revision of the curriculum to a 1-hour program.	$10.00
Earthquakes: A Teacher's Package for K-6 /FEMA 159 Federal Emergency Management Agency Earthquakes and Natural Hazards Programs Division 500 C Street, S.W. Washington, DC 20472	K-6	Developed for FEMA by the National Science Teachers Association	This 250 page curriculum includes background material; sets of lessons and classroom activities on earthquake science and safety topics for each of three grade levels (K-2, 3-4, 5-6); scope and sequence charts depicting multidisciplinary connections; masters for reproduction; references; and resources. This package is designed for teachers who have little or no science background.	Has been field tested in Alaska, Calif., Indiana, Maryland, Missouri, Montana, NY, So. Carolina, Tennessee, and Washington	Single copies are available at no cost.

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Earthquakes (module) "Minorities in Engineering" Project Currently used by MESA Univ. of Washington 353 Loew Hall, FH-18 Seattle, Wash. 98195 *Dr. Tom Liau SUNY at Stony Brook	8-10	1980, developed by National Coordinating Center for Curriculum Development, College of Engineering and Applied Sciences, State University of New York at Stony Brook.	This is a module designed to interest students in earthquakes through activities, modeling, engineering applications, and simulation strategies. Has 12 lessons: 1-5 introduce students to earthquakes; 6-9 talks about observed precursors of earthquakes and introduces seismograms; and 10-12 try to make earthquake investigation relevant to students. Includes directions for making related items and doing experiments, i.e. making your own tiltmeter, creepmeter, shoebox model of a fault simulator and trying liquefaction simulation, resonating building demonstration, and earthquake simulation. Includes reproducible charts and maps. Can be used in part or total in an earth science or general science course.	Test piloting of the entire project took place between 1976-1980, with 100,000 students; it has not been updated since this time.	Permission has been given to NCEER to copy the module on request.
Guidebook for Developing a School Earthquake Safety Program / FEMA 88 Federal Emergency Mgmt. Agency P.O. Box 70274 Washington, DC 20024 *Marilyn P. MacCabe	Designed to assist school community to develop and tailor an earthquake safety program for the school.	1985	A 60-page guide plus appendices that include reprints of FEMA 46, 48, and 113. The Guidebook includes: "The Planning Process" "Hazard Identification" "Earthquake Drills" "Immediate Response and Care Requirements" "Communication" "Post-Earthquake Shelter Planning" Appendices include: "Teacher's Package On Earthquake Drills," an example of an earthquake safety program plan; sections on "Children and Disasters" and "Non-Structural Earthquake Damage" This is designed mainly as a guidebook, not a curriculum. It allows the school to be its own planner.	Field tested in Arkansas, Calif., Ill., Maryland, NY, So.Carolina, Tenn., Virginia, Washington. Used with Earthquake Education Center projects in Seattle, Tenn., and So.Carolina, in conjunction with HELP.	Single copies free from FEMA; order by stating FEMA # and title; allow 4-6 weeks for delivery.

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Hands-On Earthquake Learning Package Environmental Volunteers 2448 Watson Court Palo Alto, CA 94303 (415) 424-8035	K-12	First earthquake teaching kit-developed 1981; copyright 1983	1. Instructor's Guide a. 17 illustrated, plastic-protected Activity Folders b. 16 information/activity inserts (including quake myths, games, puzzles, math activity, "tremor tales"). c. Illustrated text on basic earthquake geology: The Story of the Earth d. Red Cross' Safety and Survival in an Earthquake e. "Getting Ready for a Big Quake" - Sunset magazine f. Complete guide to school earthquake planning g. Neighborhood Preparedness Guide h. "Plans for the Teaching Materials" 2. Hands-On Teaching Materials a. Plate Tectonics Globe (removable plates) b. Earth Hemisphere Model c. Plate Puzzle map (ocean floor features) d. Wood Plate/Fault Blocks e. 9 ft. sq. plate tectonics rug (pattern also available) f. Sea Floor Basalt rock sample g. Sea Floor spreading box h. Time cards, markers and time-tape i. Continental Drift film (computer-generated) j. Fault Zone Model k. Magni-tube Model l. Motor driven shaking table and accessories	Used in FEMA earthquake education center in Seattle, Charleston, Memphis Charleston Palo Alto and Sunnyvale, CA, have adopted HELP for use in their schools. Currently involved in development of elementary curriculum with FEMA and National Science Teacher's Assoc.	$8,280 Total. Instructors' Guide $200. Shaking Table $1,900. Plate globe $450.
I - Science Mate Program (Integrating Math, Science and Technology) Math Science Nucleus 3710 Yale Way Fremont, CA 94538 *Dr. Joyce Blueford	K-6	1985 (Blueford, Montez, Tervalon, Chan) Developed jointly by scientists/ educators of Math Science Nucleus and the US Geological Survey. Publishing date: Sept. 20, 1988.	Plate Tectonic Cycle - The Earth on the Move (part of a master science curriculum consisting of six master themes and 24 subthemes). 1. Lab manuals for grades 2-6 2. Shaker tables (made of cardboard, marbles, wood, etc.) 3. Lessons/with experiments and worksheets for grades K-6. Plate Tectonics Cycle includes: Volcanoes, Earthquakes, Plate Tectonics, and Hazards. NCEER has copies of the lessons, experiments, and worksheets from K-6 and some books used in the lessons. 4. Also available from Math Science Nucleus: a. Historical Earthquake Slides b. Recent Earthquake Slides c. Inflatable globe d. Glue Balls - to illustrate faults have memory e. Physiographic Relief Globe	Formally test piloted program for 4 years; currently involved with three science centers located in Fremont, East Palo Alto, and Vallejo, CA	Plate Tectonic Cycle book - $14.95 plus $4 shipping and handling. Slides - $9/set. Inflatable globe - $3.25. Glue Balls - $3.95. Relief Globe - $34.50. Workshops on material offered (3-4 hours, $150 + $8 per teacher manual + travel exp. if over 80 miles from Fremont, CA area.)

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
K-12 Earthquake Science Curriculum Los Angeles Unified School District Office of Emergency Services Room G-314 450 N. Grand Avenue Los Angeles, CA 90012 *Jerry Kurilich	K-12		Teachers receive 8 hour inservice and then are given either an elementary (K-6) or secondary (7-12) guide; also have a resource kit. Currently waiting for Board approval and funding to complete and distribute curriculum.		Not currently available for use. Draft copies of K-6 section available on request. (213) 625-6495
Plan to Live Chair Emergency Preparedness Committee Utah State PTA 1037 E. South Temple Salt Lake City, Utah 84102 *Mrs. Joy Bossi	Secondary grades, written at 11th grade reading level		This includes a series of lessons on various natural and man-made hazards, including earthquakes. Earthquake related lessons include: "What to Do in Case of an Earthquake," "How to Prepare for an Earthquake," and "Information You Should Know About Earthquakes." Test questions are included at the end of each lesson.	This was piloted in 4 highschools (1 large urban, 1 small urban, 1 large suburban, and 1 small rural) with 1,000 students in eleventh grade social studies classes.	$2.50/copy plus postage.
Project Quake *Linda Noson	K-6	Initially undertaken by School Earthquake Safety and Education Project (SESEP).	It "is an interdisciplinary, supplementary, environmental and safety program emphasizing the impact of earthquakes on the human physical, social and emotional environment." Consists of 2 parts: Curriculum Package and Facilities Package. Curriculum Package has 4 goals: 1. Awareness, 2. Understanding, 3. Preparedness in the schools and 4. Preparedness in the community. Section #4 has not been developed. *Currently, the incomplete curriculum is at the Public Instruction Office in Olympia, Washington waiting for money and the legislative authority to complete it.	Two Teacher workshops held in July 1987 to evaluate activities developed; modifications made following the workshops.	Not currently available.

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Teaching Earthquake Safety in the Elementary Classroom Utah Museum of Natural History University of Utah Salt Lake City, Utah 84112 *Deedee O'Brien	K-3	In process	A 1/2 hour session gives children basic earthquake information utilizing simple activities, myths and factual information. Includes Kamchatka Myth poster (originally obtained from CALEEP), Wasatch Fault poster and five follow-up activities (adapted from CALEEP to reflect the Utah scene.) A Fault Blockset available from NASCO science is recommended. Curriculum easily adaptable for general use outside of Utah. Note: Utah Museum of Natural History currently only source for CALEEP's Kamchatka Myth Posters.	Has been tested with 25 classrooms, kindergarten through grade 3. Plan to use teacher workshops to disseminate this curriculum.	$7.50 + postage.
Utah Geologic Hazards Utah Museum of Natural History University of Utah Salt Lake City, Utah 84112 *Deedee O'Brien	Grades 4-Senior High School	1985	Includes a two-part slide presentation and a two foot square model of a section of the Wasatch Front. Part I - mountain leveling processes of rockfall, landslide, mudflow, flood, and lake level rises. Part II - mountain building process-earthquake. It gives a general explanation of earthquakes, reviews the situation in Utah and what could happen in a major earthquake. This is followed by an earthquake safety session. Follow-up activities on earthquake safety are left with the classroom teacher. These were adapted from CALEEP materials to reflect the Utah scene.	Tested during a 2 year period with 60 schools and 6,000 children in Grades 4-Senior High School.	$25 for 2-1 hr. presentations in 1 classroom. $5 for each additional classroom (up to three) same school, same day - Salt Lake City vicinity. Teachers in the Salt Lake area who have completed an inservice may check out the kit for a one-week period at a cost of $5. 150 slides/ text/ follow-up activities, $95 + shipping. Model is not available.

* Indicates principal authors

3.3 Supplemental Informational Material

Name/Address	Grade Level	Contents	Cost
"Be Brave! Earthquake!" KYOU-TV Santa Ana Community Television 2900 W. Edinger E-103 Santa Ana, CA 92704 (714) 667-3266	Ages 3-10	This is a 6 and one-half minute video designed for young children to help prepare them for a natural disaster. Includes a lesson plan by Mary Picard.	$20.00
"Big Bird Get Ready for Earthquakes" FEMA P.O. Box 70274 Washington, D.C. 20024 or Children's Television Workshop Dept. CES/NH One Lincoln Plaza New York, N.Y. 10023	K - 6 for parents/ caregivers to use with children	1. This kit* features a booklet for parents and children that contains information on how to prepare for and recover from an earthquake; a board game, "Quake" for adults and children ages 8-12 that presents scientific facts and safety issues; and an audio cassette with the song "Beating the Quake" and stories about earthquakes told by Sesame Street characters, for pre-schoolers. 2. "Big Bird Get Ready! For Hurricanes" kit* includes a 16 page family booklet with essential information (also available in Spanish), "The Hurricane Force" board game, and a recording of the song, "Hurricane Blues." The emphasis is on helping parents and teachers talk to children about hurricanes in a way that is not frightening. 3. A videotape presenter's package is available which covers all three "Big Bird Get Ready" kits (hurricanes, earthquakes, floods) and provides information on the best way to work with children. 4. FEMA also has other related publications: FEMA 46, "Earthquake Safety Checklist;" FEMA 48, "Coping with Children's Reactions to Earthquakes and Other Disasters" (also available in Spanish); FEMA 113, "Family Earthquake Safety: Home Hazard Hunt and Drill;" FEMA 88, Guidebook for Developing a School Earthquake Safety Program (see Curricula Summary); FEMA Poster #6, "A Blueprint for Earthquake Survival;" FEMA 75, "Preparedness for People with Disabilities;" FEMA 76, "Preparedness in High-Rise Buildings;" and FEMA L-143, "Preparedness in Apartments and Mobile Homes."	Single copies of kits are available at no charge from FEMA. For more than one copy and bulk orders (cost per copy includes postage and handling) contact CTW. Videotape is available only from CTW for $19.95. To order other publications, state FEMA # and title. Single copies are free.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"A Catalog of Earthquake Related Sounds"* by Karl V. Steinbrugge Seismological Society of America 201 Plaza Professional Building El Cerrito, CA 94530		Contains 21 different entries, from 1954-1983. An accompanying catalog lists earthquake data, recording information, a commentary, and acknowledgements.	$10.00
Customized Disaster Survival Manuals Disaster Survival Planning (1) 4350 LaJolla Village Drive Suite 300 San Diego, CA 92122 (619) 546-4347 (2) 550 North Brand Blvd. Suite 700 Glendale, CA 92103 (818) 546-5042 (3) 44 Montgomery St. Suite 500 San Francisco, CA 94104 (415) 955-2778	Applicable to all organizations including schools, government agencies, and community organizations.	A four step process is used to design customized manuals for each organization: 1. Representative from the organization attends a one-day workshop and is trained on how to gather necessary information. A 15 step checklist is provided to schedule all of their activity over the next 30 days. 2. The instructor visits each representative for half a day to discuss their progress gathering information, remove any roadblocks, and to gather more detailed information which will be needed for the final product. 3. Thirty days after the initial workshop, representative returns for a 1/2 day workshop, bringing back the completed forms. Basic survival information training is given (i.e. how to deal with floods, bomb threats, civil disturbances, anxiety, stress, panic, etc.) 4. All the information from the representative and instructor is gathered and used to produce a customized disaster survival manual via a computer process. Manuals include location information, communication information, disaster survival information, and training/review information.	The cost of the manual/ workshops is $600 per representative. Workshops are conducted throughout California each month. Organizations with 10 or more representatives can arrange for On-Site Workshops anywhere in the world, at a discounted price of $550 per representative plus instructor expenses.
"Disaster, Helping Your Child Cope"* (1985) by Dr. Karen Doudt Disaster Child Care Response Program P.O. Box 188 New Windsor, MD 21776	For Parents and Teachers	This pamphlet explains how children need their parents after a disaster, lists some behaviors that can occur in children after a disaster, and notes what parents can do to help children cope with their feelings. Available in Spanish and English. They also provide a 2-1/2 day training program for persons interested in becoming disaster child care givers.	
The Drift Globe The Little Star Montessori School Supply Star Route 38 Winthrop, WA 98862	Primary Grades through College	This globe measures 12" in diameter and has velcro fasteners every 15 degrees of longitude so that the velcro backed continental fragments can be positioned anywhere on it. Various areas are marked as reference points on the globe, i.e. the Tethys Seaway, the drift paths of the major continents, etc. Continents each show present-day coastlines and continental shelves and have positioning holes with orientation marks. Fifteen page brochure included.	$149.50, postage paid. Write for further information.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"Earthquake Hazards Around the Home"* - A Coloring Book CALEEP Lawrence Hall of Science University of California Berkeley, CA 94720	Primary Grades	A coloring book that features the rooms in a house and identifies potential earthquake hazards in each.	Single copies Free
Earthquake I Am Prepared One & Only Publishing 5431 Avenida Encinas Ste. C Carlsbad, CA 92008 (619) 931-7777, outside California, call toll free (1-800-451-6659)	K-6 Coloring Workbook 7-9 Activity Workbook	1. A coloring workbook, designed for children in grades K-6, features Sid the Sealion, Shakey the Squirrel, Quakey the Quail. It includes what to do before, during, and after an earthquake as well as a page on "Plates" and a map of North and South America showing earthquake activity. 2. An earthquake preparedness workbook, developed for students in grades 7-9 includes what to do before, during, and after an earthquake, as well as a page on "Plates" and a map of North and South America showing earthquake activity. Both books are available in Spanish.	Sample books are available on request. Up to 1000 books, $.25 each; 1000-2000 books, $.22 each; 2001-3000 books, $.19 each (plus shipping). Orders under $40 must be prepaid, 2% less discount with prepaid orders.
"Earthquake Information" Geologic Inquiries Group U.S. Geological Survey 907 National Center Reston, VA 22092	Elementary, Middle and High school Classes	Selected References on Earthquakes (Bibliography). List includes material on specific earthquakes, general earthquakes, prediction and preparedness; lists catalogs and maps of earthquake occurrences.	Free
"Earthquake Planning and Preparedness Activities for Childcare Providers" Bay Area Regional Earthquake Preparedness Project Metro Center, #152 101 8th Street Oakland, CA 94607		This contains a set of activities that Day Care Staff can use to help them develop their earthquake plan. These activities are presented with an interactive, participatory approach.	Publication date, April, 1989. Call for information and price from April, 1989: (415) 540-2713

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Earthquake Preparedness Handbook Lafferty & Associates, Inc. P.O. Box 1026 La Canada, CA 91011 (818) 952-5483	Jr. High-College School Staff	A comprehensive step-by-step guide on how to prepare for earthquakes. Available in English and Spanish. Also available from Lafferty & Associates, Inc.: "Shake, Rattle & Roll"* videotape, or slide/cassette; "Be Ready"* videotape, or slide/cassette; "Earthquake Sounds Tape" a 45 second tape composed of real earthquake sounds in combination with clanking and breaking glass, sloshing water; "How to Survive A Major Earthquake" a 30 minute tape dialogue on what can be done to prepare; "Table-Talk Tent Cards" (32 expanatory, stand-up cards to be used with actual objects as preparedness is explained); and "Earthquake Fault Map" of northern and southern California. Lafferty & Associates, Inc. also has: Business and Industry Preparedness, Community-Based Earthquake Preparedness Training Programs, and Instructor Training.	$5.00/single copy. Quantity price list available. "Shake, Rattle & Roll" videotape $150.00. "Earthquake Sounds Tape" $10.00 "How To Survive A Major Earthquake" $4.95/cassette; $6.00 by mail. "Table-Talk Tent Cards" $30.00. "Earthquake Fault Map" $25.00 (rolled).
"Earthquake - Ready"* (Leaders Guide)(1983) CALEEP Lawrence Hall of Science University of California Berkeley, CA 94720	A book for use by leaders to help Girl Scouts to get an Earthquake-Ready patch (Juniors and Cadettes)	Seven activities must be completed to obtain the patch: 1. Act it Out 2. Improve Your EQ 3. Bedroom Hazard Hunt 4. Earthquake Drills a. Home b. Troop 5. First Aid 6. What Will Your Family Do After an Earthquake? 7. Reaching Out It also contains some informational appendices, i.e. "How to make a Search-And-Find Puzzle."	"Single copies available free. Girls Scout leaders have permission to reproduce all printed materials girls need to use the program.
"Earthquake Safety Guide for Children--What to do if You Are Alone" American Red Cross Contract Educational Services 2700 Wilshire Boulevard Los Angeles, CA 90057	5-6	This brochure gives a child clear instructions for what to do before, during, and after an earthquake. It includes a page of notes for a parent or other adult to fill out with the child.	$.10/copy Shipping charges: 1-25 copies-$.25 total. 25-250 copies-$1.00 total.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Earthquake Safety Teaching Modules Health Sciences Center for Educational Resources University of Washington SB-56 Seattle, Washington 98195	(1.) Pre-school - 3 (2.) 4 - 6	1. "When the Unusual Happens" consists of 3 lesson plans; 1 10-minute audiovisual presentation, "Habit Rabbit;" audiotape, "Earthquake Sounds;" masters of activity sheets; teacher's preparation materials on earthquake facts; vocabulary list of scientific terms related to earthquakes; common "What If" questions asked by young children and recommended responses; reference list of resource materials for students and teachers; and parent information letter. The intended audience for this module is Pre-school - 3rd Grade. 2. "Rumble Ready" consists of 3 lesson plans; 1 10-minute videotape, "Desk Nest;" masters of activity sheets; teacher's preparation materials on earthquake facts; vocabulary list of scientific terms related to earthquakes; reference list of resource materials for students and teachers; and a parent information letter. The intended audience for this module is 4th - 6th grades.	(1.) Videotape* (10 min.) or slides and learning module: 3/4" cassette: $120 ea. 1/2" Beta 1: $120 ea. 1/2" Beta 2: $120 ea. 1/2" VHS: $120 ea. (2.) Video* and learning module: $120 *Available in 1/2" VHS, 1/2" Beta 1 or 2, 3/4" videocassette
Earthquake Watch Kit Seismograph Model Mount St. Helens Ash Set Seismograms for the 1964 Alaskan Earthquake Science Kit and Boreal-Laboratories East Coast: 777 East Park Drive Tonawanda, NY 14150-6782 West Coast: P.O. Box 2726 Santa Fe Springs, CA 90670-4490 NOTE: Earthquake Watch Kit and Seismograph Model are also available from Fisher-Educational Materials Division (1-800-621-4769)	For use in Earth Science Classes	The Earthquake Watch Kit contains a Pacific-centered, Mercator projection map on which students can plot location, time of occurrence, magnitude and depth of earthquakes. The map is 125 x 95 cm. and is shaded to indicate bathymetric contours and land relief. The seismograph model includes a recording needle, a support with a suspended weight, and a recording tape. It demonstrates the principles of seismograph recording. Comes with a teacher's guide. The Mount St. Helens Ash Set includes a 50 ml. flask of ash from Mount St. Helens, hand lens, illustrated brochure, and student activity sheet. The brochure lists facts about the mountain before and after eruption, volume of material expelled, composition of the ash, and illustrations of the structure of the mountain. The Seismograms for the 1964 Alaskan Earthquake Kit includes 12 exact size copies of seismograms for a 48-hour period showing the 1964 earthquake and its aftershocks. Includes a 40 page teacher's guide with interpretations of the seismograms, suggested student activities, and black line masters of maps, charts, and tables.	$17.40 (1989-90 catalog) $19.50 (1989-90 catalog) $10.00 (1989-90 catalog) $21.00 (1989-90 catalog) Fisher-Educational Materials: Earthquake Watch Kit - $15.00 (88/89 catalog) Seismograph Model - $19.95 (88/89 catalog)

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"Earthquake" What to Do!!! When the Ground Shakes* City of El Segundo Police Department 348 Main Street El Segundo, CA 90245	K-3	Coloring book with easy to read tips about what to do during and after a quake. At the end there's a list of tips for parents, including basic home emergency supplies.	Single copies are free and can be copied.
Earthquakes and Volcanoes* (1985) by Ruth Deery, illustrated by Sue Ellen Miller-Ray Good Apple Inc. Box 299 Carthage, IL 62321-0299	4 - 8	Part of the Natural Disaster Series, this is a workbook format containing reproducible student activity pages for classroom use: covers plate tectonics, earthquakes, tsunami, seismographs, etc. It includes chapters such as: "Two Myths About Earthquakes," "Three Kinds of Volcanoes," "Predicting Eruptions," and "Pangaea: Super Continent." (Includes teacher's lesson notes to be used with the workbook.) Other books in this series are: Tornadoes and Hurricanes, Floods and Droughts, and Storms and Blizzards.	$5.95 for reproducible booklet, plus shipping and handling. Set of 4 titles: $23.80.
Earthquakes in Canada* Mrs. Lesley Lynn Director of Public Information Emergency Preparedness Canada Second Floor, Jackson Building 122 Bank Street Ottawa, Ontario, Canada K1A 0W6	?	This public information videotape provides an overview of earthquakes in Canada; what causes them, and what to do before, during and after them to mitigate damage to life and property. Available in English and French.	English version available on request to agencies that might find it useful. Available in 1/2" and 3/4" VHS.
"Emergency 'Q' Tips"* #1 and #2 Earthquake Education Center Baptist College at Charleston Charleston, SC 29411	Middle School, Junior, and Senior High School or at any Grade for distribution to parents	These 2 pamphlets give a condensed version of an emergency survival food list, first aid supplies, Quake Tips (Q-Tips) and emergency numbers. Also available from the Earthquake Education Center: "Home Hazard Hunt and Earthquake Drill," Word puzzles, "Earthquake History of South Carolina," an article on "Mini Car Survival Kit," "Earthquake Fact Sheet," Coping with Children's Reactions to Earthquakes and Other Disasters (FEMA 48/Sept. 1983), Home Hazard Hunt (FEMA 49/Sept. 1983), Family Earthquake Drill (FEMA 47/Sept. 1983) and Earthquake Safety Checklist (FEMA 46/Sept. 1983). The EEC at Baptist College at Charleston loans out films, slides, books, and three dimensional earth science models for demonstrations to schools in their area, and has a newsletter with activity suggestions.	Single copies free.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Guidelines for School Earthquake Safety Planning Southern California Earthquake Preparedness Project 600 South Commonwealth Suite 1100 Los Angeles, CA 90005	Guide to assist schools in planning for a damaging earthquake.	The document outlines policies which must be determined to initiate a safety program. It recommends a framework for planning, including suggested committees and information needed for planning. The areas covered include communications, hazard assessment, supplies, evacuation, and training. Also available: Earthquake Preparedness Checklist for Schools: highlights important questions and activities that should be addressed and undertaken as part of a school safety and preparedness program as referred to in the California Education Code, 35295, 35296, 35297. and Hands-On Earthquake Learning Package (HELP) (For grades K-12): designed to teach students about nature, causes and effects of earthquakes, and to provide information on how to prepare. The curriculum contains an instructor's guide and can be used in non-science classes. The guide is made up of information and instructional activities. It is illustrated throughout and has an earthquake vocabulary section and scripted slide presentation. There is also a "recipe book" for building hands-on teaching materials. The activities are not sequential, allowing the instructor to select the activity he or she desires.	$2.35 for Guidelines, $.40 for Preparedness Checklist, and $13.65 for HELP.
"An Instrument for the Study of Earthquakes" by Gerald J. Shea Center for Earthquake Research and Information Memphis State University Memphis, Tennessee 38152		This 11 page handout provides directions to construct a homemade seismograph. Also available, "The Amateur Scientist" by Jearl Walker which is a 6 page handout that describes how to build a simple seismograph to record earthquake waves at home. Some of the other handouts available from this Center are: "Earthquake Education Project Film Review," "Earthquake Education Project Book Review," "A Major Earthquake Zone on the Mississippi" by Arch C. Johnston which is a reprint of a Scientific American article on the New Madrid seismic zone, and "New Madrid Seismic Zone Epicentral Map 1974-1981."	Single copies are available without charge.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Living With Our Faults (Hundreds of Ways to Reduce Your Risks in the Next Earthquake)* Quake Safe 10573 W. Pico Blvd. Suite 174 Los Angeles, CA 90064	Junior High School - College or for younger children to share with parents.	Includes a home hazard hunt, supplies and utilities - do's and don'ts, lists of materials that should be in emergency kits in various locations, survival tips, shopping lists for emergency supplies, a calendar that can be copied and used for writing a list of preparedness tasks on, and cut-out emergency cards. Other services from Quake Safe: newsletter published 4 times in the school year; a center library with disaster planning guides, lesson plans developed for elementary and secondary school programs, maps, films, hands-on materials including a tectonic plate puzzle rug and earthquake simulation table, computer software programs, books, magazines and pamphlets on all aspects of earthquake preparedness; and workshops on such topics as "Teacher training, for new curriculum materials," "Coping with children in trauma," and "Classroom hazard reduction." Programs are presented throughout the greater Los Angeles area on a cost-recovery basis. There is a travel charge of 25¢/mile beyond a 15-mile radius of the juncture of the 10 and 405 freeways.	$5.00/copy $6.00 by mail $3.00/copy wholesale $30 - $99 memberships receive a year's subscription to the newsletter and a copy of "Living with Our Faults." Newsletter alone is $15/year.
"Myths and Realities of Natural Disasters" Pan American Health Organization 525 Twenty-Third St. Washington, DC 20037	Adults involved in disaster planning in schools.	This explains the differences between the general perceptions of disasters (widespread myths) and what studies have proven to be true. This video attempts to explain why people might believe that there are always certain results such as plagues and mass hunger. It also outlines what should and should not be used in the aftermath of a disaster. Real life situations are used in this video to stress the importance of appropriate responses.	$25.00 Available in English or Spanish on either 3/4" U-matic, VHS, or Beta
"The Official Tommy Tsunami (Soo-Nah-Mee) and Ernie Earthquake Coloring Book"* Alaska Division of Emergency Services 3501 East Bogard Road Wasilla, Alaska 99687	K - 3	Contains large, clear drawings and gives preparedness tips for earthquakes as well as what to do during and after an earthquake. Gives signs of an upcoming tsunami.	Single copies free; can be reproduced.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Pre-School Earthquake Preparedness Guidebook* Southern California Earthquake Preparedness Project 600 So. Commonwealth Ave. Suite 1100 Los Angeles, CA 90005	Designed to assist pre-school owners, administrators, teachers and parents on how to develop an earthquake preparedness program.	Information in the Guidebook is divided into five categories: "User's Guide," "Pre-School Planning," "Pre-School Hazard Mitigation," "Pre-School Education/ Counseling," and "Pre-School Resources." Information focuses on addressing four major objectives: reducing the threat to life and property, developing self-sufficiency in responding to a damaging earthquake, providing care and safety to staff and children, and returning to normal operation as quickly as possible. Includes a list of items to put in an Earthquake Emergency Kit, list of "Emergency 'Do's and Don'ts' for Parents," sample emergency card and sample form for authorization for treatment of a minor.	$20.00
Quake Safe Patch Program* Girl Scouts of Santa Clara County 1310 S. Bascom Ave. San Jose, CA 95128-4502	Designed for Brownie - Senior Scouts	This program includes a Leader's Guide, a patch, an Earthquake Game and Puzzle Book, and a copy of a comic book featuring Yogi, the Be-Prepared Bear in Earthquake Preparedness for Children. The leader's guide contains requirements for each level of scouting, information about earthquakes, a script to simulate a quake, preparedness tips, a list of resources, and sections on what to do before and after an earthquake. There is also a section on "Understanding the Effects of Earthquakes on Children." The game and puzzle book contains activities for younger primary level children.	Single copies free.
"Ready Teddy" and "Shimmie, Shimmie, Shake" song scripts.* State of Arkansas Office of Emergency Services P.O. Box 758 Conway, Arkansas 72032	K - 3	Contains a cassette tape that can be used with a talking bear. The tape talks about earthquake awareness and has a song called "Shimmie, Shimmie, Shake." Can also obtain "Rumble Tumble Ready" buttons and certificates and "Shimmie, Shimmie, Shake" song scripts. The song is sung to the tune of "Old McDonald's Farm." First verse: "Rumble, rockin, shakin ground - shimmie-shimmie-shake! Whoops! it's hard not to fall down - shimmie-shimmie-shake! With a rattle rattle here and a rumble tumble there Here a rattle - there a rumble Everywhere a rumble tumble, Rumble, rockin, shakin ground - shimmie-shimmie-shake!" Adapted from Sylvia Herndon	No charge for single copies, certificates and scripts can be copied.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"Ready Teddy" coloring book* and "Rumble Tumble Ready for an Earthquake" buttons. Illinois Emergency Services and Disaster Agency 110 East Adams Street Springfield, Illinois 62706	Primary Grades	The coloring book goes nicely with the cassette tape from Arkansas. It includes a section on the causes of earthquakes, information about earthquakes in Illinois, and tips for what to do during and after an earthquake. Includes words to "Shimmie, Shimmie, Shake" and an "Earthquake Preparedness Test." Also available: "Good Buildings and Bad: Basics of Earthquake Vulnerability" for grades seven-twelve which contains basic information on buildings earthquake vulnerability including earthquake induced ground motion, structural movement, and a vulnerability checklist; "Earthquakes in the Illinois Area" for grades five-seven which contains general information on why earthquakes occur, specific information on the risk to the Central U.S. and Illinois, and safety tips; and "Earthquake Insurance Information" for grades seven-twelve which includes general information on earthquake insurance such as availability, cost, policies, deductibles, and demand.	Single copies free.
"Reducing Non-Structural Earthquake Damage -- A Practical Guide for Schools" Bay Area Regional Earthquake Preparedness Project Metro Center, #152 101 8th Street Oakland, CA 94607		This 13 minute video tape identifies major non-structural hazards in the school site and suggests ways to reduce these hazards.	Available in 1/2" or 3/4" VHS from: Final Cut 1000 Atlantic Ave. Suite 103 Alameda, CA 94501 (415) 522-5169 $35, including postage, within the United States.
The School Earthquake Preparedness Handbook by Irene Groot Earthquake Resource Associates 6323 Paso Los Cerritos San Jose, CA 95120	School administrators; Public safety officers; Parent groups	The School Earthquake Preparedness Handbook provides busy school administrators and other concerned individuals with a ready-to-implement system for preparing a school for an earthquake. Its clear, concise, easy-to-follow system includes such features as check lists, discussion guides, sample letters, signs, etc. Eighteen different planning areas are covered, including: staff readiness exam, hazard assessment checklist, drill procedures, student supervision, first aid, student release procedures, parents, communications, fire fighting, water, sanitation, search and rescue, student preparation, school bus operation, shelter, and writing the school plan. Each chapter is designed as a stand-alone action plan or as an integrated unit within a total school/district plan. Packaged in a notebook format for ease of use by planning teams.	$40.00 for single copies; $25.00 for quantities of 10 or more; 6.5% sales tax for California residents.

*Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Weather Times* "Out of Harms' Way"* Disaster Services American Red Cross National Headquarters 17th and D Streets, NW Washington, DC 20006	Middle School to College would find something of interest	Weather Times is a newspaper that highlights information about earthquakes, hurricanes, floods, winter storms, tornadoes, and lightning. It includes a "Kid's Quiz," crossword puzzle, a chart of the world's most devastating disasters, and information about the Red Cross Disaster Program and the Weather Channel. "Out of Harms' Way" is a 25 minute videotape that shows footage from thunderstorms (highlighting lightning danger), tornadoes, floods, winter storms, earthquakes, and hurricanes. It talks about safety during each and includes sections on "Children and Disaster" and "General Safety Rules."	Single copy free; one time order only.

*Copies available for viewing at NCEER

3.4 Selected Software

Program Name	Available From:*	Grades	Computer	Program Information
"Continental Drift"	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692 1-800-962-2660	9-12	Apple II+/Ne 48K Disk Minimum DOS required: 3.3	Explores concepts behind continental drift. Programs questions and content can be modified by the teacher using Mentor Master.
"Continental Drift"- part of Earth Science series.	Prentice-Hall Sylvan Avenue Englewood Cliffs, NJ 07632	6-12	Apple Series, IBM PC, PC jr, Tandy 1000; Requires DOS 2.1, double-sided disk drive, RGB color monitor, and color graphic adapter.	Students can journey back in time to look at and map the earth's surface as it appeared at various times in its past.
"The Earth and Its Composition"	Right on Programs 755 New York Ave. Huntington, NY 11743 (516) 424-7777	Grade 3	Apple Series Commodore 64, 128	This two-part program first introduces the student to the basic components that make up the earth on which we live. Water, mountains, air, and volcanoes are explained. The second part of the program is a game to test the knowledge and retention of the student. Right answers are rewarded and incorrect answers are corrected without penalty. This comes with a reproducible Activity Packet and Teacher's Guide.

Program Name	Available From:*	Grades	Computer	Program Information
"Earth: The Inside Story"	Educational Activities, Inc. Dept. 88 P.O. Box 392 Freeport, NY 11520 (516) 223-4666	4-9	Apple, 48K IBM, PC Jr. and MS-DOS compatibles, 128K Tandy 1000 and Tandy 2000	This tutorial program with attractive color graphics teaches students about: the earth's layers, volcanism, the Continental Drift theory, plate tectonics, seismology, earthquakes, the Ring of Fire, 4 types of mountain building and the formation of the three different types of rock. Students also learn about the operations of seismographs and the meaning and use of the Richter Scale. Includes reproducible activity Masters.
"Earthquake"	Micro-ED, Inc. P.O. Box 24750 Edina, MN 55424 (612) 929-2242	6-9	Commodore 64 (64K) Apple IIE	Given shock waves, find the epicenter.
"Earthquake Simulator"	Focus Media 839 Stewart Ave. P.O. Box 865 Garden City, NY 11530 Also available from: Cambridge Development Laboratory, Inc.	7-12	Apple series, color monitor recommended; Disk	This is one in a series of earth science computer programs. Provides a simulation, tutorial and review. Graphically demonstrates earthquake waves, faults, folding. Each of the program's modules is supported with the Student Workbook containing worksheets which can be completed by students either at the computer or back at their desks.

Program Name	Available From:*	Grades	Computer	Program Information
"The Earthquake Simulator"	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692 1-800-962-2660	7-12	Apple II Series	Put yourself in control of beautifully animated color simulations of the Earth's crustal movement. Demonstrate plate movement, including subduction zones and ridge development. Observe and compare earthquake waves, and locate epicenters. Utilize the programs to demonstrate various types of faults, as well as anticlines and synclines. Each of the program's modules is supported with the Student Workbook containing worksheets for activities. Program includes: 1 Teacher's Lesson Planner, 1 Student Workbook, 1 double-sided disk and backup. Additional Student Workbooks available in sets of 10.
"Earthquakes"	Cambridge Development Laboratory, Inc. 42 Fourth Ave. Waltham, MA 02154 1-800-637-0047	5-9	Apple Screen displays can be reproduced on a printer.	Provides hands-on experience plotting real earthquakes and volcanoes on a world map. Data comes from USGS and National Earthquake Information Service. After plotting earthquakes, can superimpose tectonic plate boundaries. Note: Is no longer listed in the catalog, but is still available.

Program Name	Available From:*	Grades	Computer	Program Information
"Earthquakes"	Science Kit and Boreal Laboratories Catalog (1986/87) 777 East Park Drive Tonawanda, NY 14150-6782 NY Schools: 1-716-874-6020 Also available from: Cambridge Development Laboratory, Inc.		Apple + 48K Disk	Will plot epicenters of all earthquakes with magnitude greater than 5.0 on the Richter scale.
"Earthquakes"- part of Earth Science series	Prentice-Hall Sylvan Ave. Englewood Cliffs, NJ 07632	6-12	Apple Series, IBM PC, PC jr, Tandy 1000 Requires DOS 2.1, double-sided disk drive, RGB monitor, and color graphic adapter	Students discover patterns in locations of earthquake origination points, and observe and control factors that cause earthquakes. They then use seismographs to record seismic waves and interpret resulting seismograms. Students use devices such as tiltmeters in earthquake prediction situations.
"Earthquakes/ Latitude-Longitude"	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692 1-800-962-2660	General Program effective at all levels: 6-12	Apple II+/IIe 48K Disk Minimum DOS required: 3.3	Gives hands-on experience plotting earthquakes and latitude-longitude lines. Includes a detailed Teacher's Guide with instructions for modifying the program to include new seismic data.

Program Name	Available From:*	Grades	Computer	Program Information
"Earthquakes" Picture File	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692 1-800-962-2660 Also available from: Cambridge Development Laboratory, Inc.	General Program effective at all levels: 6-12	Apple II+/IIe 48K Disk Minimum DOS required: 3.3	This is not a problem-solving program but a source of high-resolution, color diagrams that can be used as an electronic blackboard or in conjunction with any compatible authoring program, i.e. Mentor Master. This one includes: seismograph, wave speed, locating a quake, worldwide distribution, shadow zones, wave propagation, and earthquake disasters chart.
"The Earth Moves" A Simulation Program	Aquarius Instructional P.O. Box 128 Indian Rocks Beach, FL 34635-0128	For Life Science, Earth Science and Physical Science classes	2 Disk Set Apple	This contains two programs: "Folds and Faults" and "Earthquakes." "Folds and Faults" allows students to watch geological processes change the landscape. Students are able to select folds, faults, erosion, deposition or intrusions in any sequence to see how the earth moves. Includes teacher's guide with reproducible skill sheets. "Earthquakes" gives students hands-on experience plotting earthquakes and latitude/ longitude lines. Includes reproducible plotting map.
"Earth Science"	Nasco Science Modesto, California 1-800-558-9595	Upper elementary-junior high	Atari 400/800	Helps students determine an earthquake's epicenter and learn to identify minerals in different sections of this program.

Program Name	Available From:*	Grades	Computer	Program Information
"Geology" Picture File	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692 1-800-962-2660 Also available from: Cambridge Development Laboratory, Inc.	General Program effective at all levels: 6-12	Apple II+/IIe 48K Disk Minimum DOS required: 3.3	This is not a problem-solving program but a source of high-resolution, color diagrams that can be used as an electronic blackboard or in conjunction with any compatible authoring program, i.e. Mentor Master. Includes: glaciers, river maturation, rock cycle, water cycle, earth's cross section, volcanoes, earthquakes, tectonic plates, tectonic plates cross section, island chain cross section, mountain types, relative age, igneous intrusions, types of wells.
"Geology in Action: Experiments and Puzzles"	Cambridge Development Laboratory, Inc. 42 Fourth Ave. Waltham, MA 02154 1-800-637-0047	6-12	Apple	Allows students to experiment with different variables that teach them about the evolution of landscapes while learning basic geological concepts. Problems can be set for students or the program can be used to demonstrate basic geological processes such as faulting, sedimentation, volcanoes, and erosion. Includes Teaching Guide and backup.

Program Name	Available From:*	Grades	Computer	Program Information
"Macmillan Earth Science Scienceprobe"	Cambridge Development Laboratory, Inc. 42 Fourth Ave. Waltham, MA 02154 1-800-637-0047	6-9	Apple	This package lets students apply science concepts to solving challenging problems. Each activity includes: a specific problem to solve, scientific data to be used in problem solving, immediate evaluation of solution, and an automatic manager that stores that student's scores. Includes seismology, meteorology, hydrology and paleontology.
"Plate Tectonics" - part of Earth Science series.	Prentice-Hall Sylvan Ave. Englewood Cliffs, NJ 07632	6-12	Apple Series, IBM PC, PC jr., Tandy 1000, 2 disk drives	Uses graphics, text, questions to demonstrate how earth's crust is divided into plates and how volcanoes, mountains, earthquakes relate to plate movement. Reviewed: Science and Children, Feb. 1987.
"Plate Tectonics" - part of Geomorphology Series.	Cambridge Development Laboratory, Inc. 42 Fourth Ave. Waltham, MA 02154 1-800-637-0047	7-College	Apple	Discusses continental drift, breakup of Pangea, sea floor spreading and lithosphere plates. Shows the formation of submarine trenches, colliding or convergent boundaries and the forces that cause the plates to move.

Program Name	Available From:*	Grades	Computer	Program Information
Science ToolKit Module 2: "Earthquake Lab"	Broderbund Software, Inc. 17 Paul Drive San Rafael, CA 94903-2101 (415) 492-3200 Also available from: Cambridge Development Laboratory, Inc. (Apple and IBM)	4-12	Apple II + IIe/IIc and Apple II GS with at least 64K memory. One or two disk drives, printer (optional). To use an Apple II+ an adapter is needed for the game port.	This is both a software and hardware package that requires Science ToolKit Master Module. It is used to detect and record earthquake waves with the included "seismoscope." The "seismoscope," made of cardboard and plastic, is an optional lever type seismograph with a claimed magnification of 2000. It can detect hammer blows and books dropped at a range of up to 20 feet. The software draws a strip chart graph of the detected data.
"Volcanoes"	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Rd. P.O. Box 92912 Rochester, NY 14692 1-800-962-2660	Advanced high school (9-12), college	Apple II/IIe, 48K, Disk Minimum DOS required: 3.3	Simulates behavior of different active and dormant volcanoes and teaches the use of cartesian coordinates, simple mapping, volcanic terminology, seismic studies etc. Includes master copies of maps suitable for reproduction.
"Volcanoes" - part of Earth Science series	Prentice-Hall Sylvan Ave. Englewood Cliffs, NJ 07632	6-12	Apple Series, IBM PC, PC jr., Tandy 1000, 2 disk drives.	Students discover geographical patterns in volcano activity and plate interactions, compare the basic types of volcanoes with the subsurface activity and the composition of magma involved, and investigate the harmful and beneficial effects of volcanic eruption.

Program Name	Available From:*	Grades	Computer	Program Information
"Volcanoes Deluxe" "Volcanoes" Apple II series	Earthware Computer Services P.O. Box 30039 Eugene, OR 97403 Also available from: Cambridge Development Laboratory	5-12	For the PC and Apple II GS. Deluxe PC requires CGA; Apple 11 GS requires 1.2 Meg RAM, Networkable. Color monitor recommended, Disk	Students investigate simulated volcanic situations and predict eruptions. Teaches deductive reasoning, map reading skills and cooperation. Used in applied physics, geology, and geography courses. "Volcanoes" is a less graphic version of Volcanoes Deluxe. This is a simulation game where students study and learn how to predict earthquakes. Reviewed: Science and Children, May 1987.

* Sources listed include publishers and/or dealers who have the software noted. It is not meant to be an all-inclusive listing of sources but a beginning resource list for teachers.

3.5 Selected List of Resource Organizations

American National Red Cross
Disaster Services
18th and E Street N.W.
Washington, D.C. 20006

Bay Area Regional Earthquake Preparedness Project (BAREPP)
MetroCenter 101 8th Street
Suite 152
Oakland, CA 94607
(415) 540-2713

California Earthquake Education Project
Lawrence Hall of Science
University of California
Berkeley, CA 94720
(415) 327-6017

Center for Earthquake Research and Information
Memphis State University
Memphis, Tennessee 38152
(901) 678-2007

Earthquake Education Center
Baptist College at Charleston
P.O. Box 10087
Charleston, SC 29411
(803) 797-4208

Emergency Preparedness Canada
Public Information
2nd floor, Jackson Building
122 Bank Street
Ottawa, Ontario
Canada K1A OW6
(613) 991-7077

Environmental Volunteers
2448 Watson Court
Palo Alto, CA 94303
(415) 424-8035

Federal Emergency Management Agency
Earthquake and Natural Hazards Division, SL-NT
500 C Street, S.W.
Washington, D.C. 20472
(202) 646-2800

Lafferty & Associates, Inc.
4529 Angeles Crest Hiway
Suite 215, P.O. Box 1026
La Canada, CA 91011
(818) 952-5483

Math/Science Nucleus
3710 Yale Way
Fremont, CA 94538
(415) 490-MATH

National Center for Earthquake Engineering Research
State University of New York at Buffalo
Red Jacket Quadrangle
Buffalo, NY 14261
(716) 636-3391

Quake Safe
10573 W. Pico Blvd.
Suite 174
Los Angeles, CA 90064
(213) 744-2008

Seismological Society of America
201 Plaza Professional Building
El Cerrito, CA 94530
(415) 525-5474

Southern California Earthquake Preparedness Project (SCEPP)
600 S. Commonwealth Avenue
Suite 1100
Los Angeles, CA 90005
(213) 739-6695

U.S. Geological Survey
Public Inquiries Office
302 National Center
Reston, Virginia 22092
(703) 648-6891

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
LIST OF PUBLISHED TECHNICAL REPORTS

The National Center for Earthquake Engineering Research (NCEER) publishes technical reports on a variety of subjects related to earthquake engineering written by authors funded through NCEER. These reports are available from both NCEER's Publications Department and the National Technical Information Service (NTIS). Requests for reports should be directed to the Publications Department, National Center for Earthquake Engineering Research, State University of New York at Buffalo, Red Jacket Quadrangle, Buffalo, New York 14261. Reports can also be requested through NTIS, 5285 Port Royal Road, Springfield, Virginia 22161. NTIS accession numbers are shown in parenthesis, if available.

NCEER-87-0001 "First-Year Program in Research, Education and Technology Transfer," 3/5/87, (PB88-134275/AS).

NCEER-87-0002 "Experimental Evaluation of Instantaneous Optimal Algorithms for Structural Control," by R.C. Lin, T.T. Soong and A.M. Reinhorn, 4/20/87, (PB88-134341/AS).

NCEER-87-0003 "Experimentation Using the Earthquake Simulation Facilities at University at Buffalo," by A.M. Reinhorn and R.L. Ketter, to be published.

NCEER-87-0004 "The System Characteristics and Performance of a Shaking Table," by J.S. Hwang, K.C. Chang and G.C. Lee, 6/1/87, (PB88-134259/AS).

NCEER-87-0005 "A Finite Element Formulation for Nonlinear Viscoplastic Material Using a Q Model," by O. Gyebi and G. Dasgupta, 11/2/87, (PB88-213764/AS).

NCEER-87-0006 "Symbolic Manipulation Program (SMP) - Algebraic Codes for Two and Three Dimensional Finite Element Formulations," by X. Lee and G. Dasgupta, 11/9/87, (PB88-219522/AS).

NCEER-87-0007 "Instantaneous Optimal Control Laws for Tall Buildings Under Seismic Excitations," by J.N. Yang, A. Akbarpour and P. Ghaemmaghami, 6/10/87, (PB88-134333/AS).

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