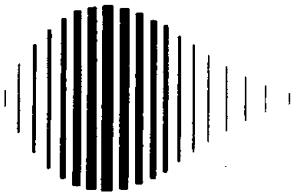


NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH

State University of New York at Buffalo

Earthquake Education Materials for Grades K-12

by

Katharyn E. K. Ross

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

Technical Report NCEER-91-0009

April 30, 1991

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.

NOTICE

This report was prepared by the National Center for Earthquake Engineering Research (NCEER). Neither NCEER, associates of NCEER, its sponsors, nor any person acting on their behalf:

a. makes any warranty, express or implied, with respect to the use of any information, apparatus, method, or process disclosed in this report or that such use may not infringe upon privately owned rights; or

b. assumes any liabilities of whatsoever kind with respect to the use of, or the damage resulting from the use of, any information, apparatus, method or process disclosed in this report.

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. NCEER-91-0009	2.	3. PB91-212142

4. Title and Subtitle
Earthquake Education Materials for Grades K-12

5. Report Date
April 30, 1991

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

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 supplementary 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. This report supersedes earlier versions of this same title and the publications NCEER Interim Bibliography of Earthquake Education Materials, NCEER-89-0010 and NCEER Bibliography of Earthquake Education Materials, NCEER-89-R010.

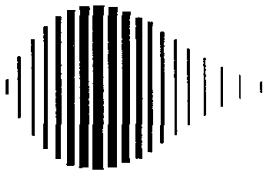
17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms
EARTHQUAKE EDUCATION. ELEMENTARY EDUCATION. GRADE SCHOOLS.
KINDERGARTEN. SECONDARY EDUCATION. HIGH SCHOOLS.
SCIENCE CURRICULUM. EARTHQUAKE AWARENESS. SCHOOL DISTRICTS.
SCHOOL SAFETY PREPAREDNESS. NATURAL HAZARDS CURRICULUM.
STATE EDUCATION DEPARTMENTS. AUDIOVISUAL MATERIALS.
EARTHQUAKE ENGINEERING.

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Release Unlimited	Unclassified	124
	20. Security Class (This Page) Unclassified	22. Price

(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)



Earthquake Education Materials For Grades K-12

by

Katharyn E.K. Ross[1]

April 30, 1991

Technical Report NCEER-91-0009

NSF Master Contract Number ECE 86-07591

1 Education Specialist, National Center for Earthquake Engineering Research

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
State University of New York at Buffalo
Red Jacket Quadrangle, Buffalo, NY 14261

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, Laurie McGinn, and Roseanne Wawrzyniak for all their assistance in the preparation of this publication.

TABLE OF CONTENTS

Section 1
Introduction

Earthquake education has an important role in both school and society. All 50 states are vulnerable to earthquakes and at least 39 of these are subject to moderate or major seismic risk, as are the most heavily populated parts of Canada. Millions of people are exposed to significant earthquake hazards. When the mobility of society is taken into consideration, the number of individuals who may one day experience a damaging earthquake is even greater. In this century, earthquakes in North America have resulted in more than a thousand deaths and billions in property damage. Earthquake education that provides an understanding of the causes of earthquakes, their impacts, and the necessary steps to reduce loss of life and property is essential to our physical and emotional well-being.

Children spend a significant portion of their day in schools. The school community needs to be well-prepared to meet school earthquake emergencies in order to protect the welfare of students and staff both during and after the ground shaking. The development of an effective disaster preparedness program requires an understanding of the natural processes involved and the type of dangers they pose to the school community. Psychological issues of anticipatory anxiety, emotional trauma, response and recovery must also be considered. Appropriate countermeasures to reduce earthquake damage and personal harm can then be included in school and home emergency response plans.

An on-going Earthquake Education program incorporated into all grade levels will provide a continually developing foundation of science and safety information for students and staff tailored to their learning and emotional needs. Students of all ages must be able to take self-protective actions during an earthquake. Factual information on the science of earthquakes will help place the need for learning safety actions within the context of naturally occurring phenomena like weather, will help dispel common misperceptions that could inadvertently result in physical and emotional harm, and will help build a future population of knowledgeable adults capable of making decisions concerning appropriate policies needed to reduce earthquake hazards.

Earthquake Education provides an opportunity to satisfy a number of goals in the areas of both science and safety:

1. Reducing loss of life and property damage in schools during earthquakes.

2. Reducing emotional damage through realistic, but not alarmist, presentations and providing coping strategies to students and staff.

3. Ensuring the inclusion of accurate scientific concepts about the causes of earthquakes in school programs and textbooks.

4. Building scientific literacy through a hazard education program.

5. Providing a model for the development of other science and safety programs using natural hazards to illustrate basic science principles and safety actions, i.e. hurricane education, tornado education, etc.

6. Providing examples of the application of science to daily life.

7. Empowering the school community to realize they can survive a major earthquake.

8. Transferring information on how to reduce earthquake damage and personal loss to the community through school children.

9. Building social responsibility.

10. Encouraging the selection of scientific and technical careers.

News accounts of damaging earthquakes occurring somewhere in the world are frequent. Scientific understanding of these earthquakes continues to grow. Earthquake education that incorporates these new lessons into the curriculum provides an exciting introduction to the dynamic role of science in society. These occurrences provide opportunities to strengthen the interaction between the classroom, the scientific community, and emergency managers through the discussion of the causes, effects, and impacts of recent events.

Education seeks to develop informed adults with the skills to address and find solutions to the problems that will face us. Earthquakes remain a potential hazard. Tomorrow's adults need to be aware of the dangers that earthquakes present to our communities and how to achieve a greater level of safety through 1) building codes to ensure more earthquake resistant structures, 2) training in earthquake safety actions to take during and after an earthquake, and 3) improved levels of preparedness in schools, homes and businesses. Earthquake education can provide insight into solving problems in science as well as making our environment a safer place to be.

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 continues to fulfill this purpose.

Section 2
Bibliographies

2.1 Selected References for Teachers/Parents

Alexander, T. (1975). Plate tectonics has a lot to tell us about the present and future earth. Smithsonian, 5(11), 38-47.

Alexander, T. (1975). A revolution called plate tectonics has given us a whole new earth. Smithsonian, 5(10), 30-40.

American Red Cross, Los Angeles Chapter. (1982). Safety and survival in an earthquake. Los Angeles, CA: American Red Cross.

Anderson, D. L. (1971). The San Andreas fault. Scientific American, 225(5), 52-68.

Atkinson, W. (1989). The next New Madrid earthquake: A survival guide for the midwest. Carbondale and Edwardsville, IL: Southern Illinois University.

Ballard, R. D. (1976). Window on earth's interior. National Geographic, 150, 228-249.

Bolt, B. A. (1978). Earthquakes: A primer. San Francisco, CA: W. H. Freeman. (241pp.)

Bolt, B. A. (1982). Inside the earth - evidence from earthquakes. San Francisco, CA: W. H. Freeman. (191pp.)

Bolt, B. A. (1988). Earthquakes. San Francisco, CA: W. H. Freeman. (282 pp.)

Boore, D. M. (1977). The motion of the ground in earthquakes. Scientific American, 237(6), 68-87.

Boore, D. M. (1977). Seismology. Geotimes, 22(1), 40-41.

Brown, B., & Brown, W. (1974). Historical catastrophies: Earthquakes. Washington, DC: Addison-Wesley. (191pp.)

Brown, F. M., & Bailey, W. (1978). Earth science. Chicago, IL: Scott Foresman. (530pp.)

Bullard, F. M. (1984). Volcanoes of the earth. Waukesha, WI: Kalmbach. (629 pp.)

Calder, N. (1972). The restless earth: A report on the new geology. New York: Viking Press. (152pp.)

Canby, T. Y. (1976). Can we predict earthquakes? National Geographic, 149, 830-835.

Canby, T. Y. (1990). Earthquake: Prelude to the big one? National Geographic, 177(5), 76-105.

Canby, T. Y., & Baire, J. (1973). California's San Andreas fault. National Geographic, 143, 38-52.

Christopher, E. (1962). The night the mountain fell. Misoula, MT: Earthquake Press. (88pp.)

Cooper, F. D. (1987). The prediction no one wants to hear: The great 'quake. Emergency Preparedness Digest, 14 (4), 2-6.

Dragert, H., and Rogers, G. C. (1988). Could a megathrust earthquake strike southwestern British Columbia? Geos, 17(3), 5-8.

Dvorak, J. (1991). Hawaii's volcanoes: Windows into the earth. Earth, 1(1), 28-35.

Earthquakes emit radio signals. (1991). Earth. 1(1), 69-70.

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

Eicher, D. L., et. al. (1984). The history of the earth's crust. Englewood Cliffs, NJ: Prentice-Hall. (224pp.)

FEMA. (1990). Guidebook for developing a school earthquake safety program. (FEMA 88).

Findley, R. (1981). Mt. St. Helens. National Geographic, 159, 50-65.

Findley, R. (1981). Mt. St. Helens aftermath. National Geographic, 160, 713-733.

Fodor, R. V. (1978). Earth in motion. New York: William Morrow. (95pp.)

Francis, P. (1976). Volcanoes. Baltimore, MD: Penguin Books. (368pp.)

Fuller, M. (1988). The New Madrid Earthquake. Memphis, TN: CUSEC, & Buffalo, NY: NCEER. Reprint of Bulletin 494, (1912). United States Geological Survey. (120pp.)*

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

Gates, G. O. (1990). Safety and Survival in an earthquake. Earthquakes & Volcanoes, 22(1), 26-32.

Gere, J. M., & Shah, H. C. (1984). Terra non firma: Understanding and preparing for earthquakes. New York: W.H. Freeman. (278pp.)

Golden, F. (1983). The trembling earth: Probing and predicting quakes. New York: Scribner's. (175pp.)

Graves, W. E. (1964). Alaska earthquake. National Geographic, 126, 112-139.

Halacy, D. S. (1974). Earthquakes: A natural history. Indianapolis, IN: Bobbs-Merrill. (162pp.)

Hanif, M. (1990). As the earth quakes...what happens? Science and Children, 27(4), 36-39.

Hanks, T. C. (1985). The national earthquake hazards reduction program - scientific status. Washington, D.C.: U.S. Government Printing Office. U.S. Geological Survey Bulletin 1659.

Harden, D. R. (1990). An introductory geology exercise on contouring intensities for the 1989 Loma Prieta earthquake. Journal of Geological Education, 38, 105-106.

Hassard, J. (1989). Adventures in geology. Alexandria, VA: American Geological Institute.

Hewitt, K. (1976). Earthquake hazards in the mountains. Natural History, LXXXV(5), 30-37.

Hodgson, J. H. (1964). Earthquakes and earth structure. Englewood Cliffs, NJ: Prentice-Hall. (166pp.)

Hurley, P. M. (1968). The confirmation of continental drift. Scientific American, 218(4), 52-62.

Iacopi, R. (1974). Earthquake country: How, why and where earthquakes strike in California. Menlo Park, CA: Lane. (160pp.)

Irving, R. (1962). Volcanoes and earthquakes. New York: Knopf. (160pp.)

Kanamori, H. (1978). Quantification of earthquakes. Nature, 271, 411-414.

Kauffman, M. E. (1990, January). Of rocks, wind, ice, and earthquakes. Connect, pp. 1-2.

Kerr, R. A. (1978). U.S. earthquake hazards: Real but uncertain in the east. Science, 201, 1001-1003.

Kerr, R. A. (1979). Earthquake prediction - Mexican quake shows one way to look for the big ones. Science, 203, 860-862.

Ketter, R. L. (1989, November). Earthquake lessons. World Monitor.

Kingdon, W. F. (1952). Caught in the Assan-Tibet earthquake. National Geographic, 101, 402-428.

Levin, H. L. (1978). The earth through time. Philadelphia, PA: W. B. Saunders. (597pp.)

Lockridge, P. (1990). Major earthquakes in the 80's in the United States. Earthquakes and Volcanoes, 22(2).

Macdonald, G. A. (1972). Volcanoes. Englewood Cliffs, NJ: Prentice-Hall. (510pp.)

Macdonald, G. A., Abbott, A. T., & Peterson, F. L. (1983). Volcanoes in the sea. Honolulu, HI: The University of Hawaii Press, (517 pp.)

Matthews, S. (1960). The night the mountain moved. National Geographic, 117, 329-339, 347-359.

Matthews, S. (1973). This changing earth. National Geographic, 143, 1-37.

Maybury, R. H. (Ed.). (1986). Violent forces of nature. Mt. Airy, MD: Lomond Publications. (369pp.)

McClelland, L., & Simkin, T. (1983). Volcanology. Geotimes, 28(2), 39-41.

McKenzie, D. P. (1972). Plate tectonics and sea floor spreading. American Scientist, 60, 425-435.

Melson, W. (1981). Planet earth: Volcano. Alexandria, VA: Time-Life Books. (176pp.)

Miller, M. M. (1964). Our restless earth. National Geographic, 126, 140-141.

Mogi, K. (1985). Earthquake prediction. Orlando, FL: Academic Press. (355pp.)

Najita, K., & Yuen, P. C. (1978). Ionospheric method of detecting tsunami-generating earthquakes. Physics Teacher, 16, 606.

National Geographic Society, Special Publications Division. (1978). Powers of nature. Washington, DC: National Geographic Society. (199pp.)

National Geographic Society. (1982). Our violent earth. Washington, DC: National Geographic Society. (104pp.)

Oakeshott, G. B. (1976). Volcanoes and earthquakes: Geologic violence. New York: McGraw-Hill. (143pp.)

Press, F. (1975). Earthquake prediction. Scientific American, 232(5), 14-23.

Ritchie, D. (1981). The ring of fire: Volcanoes, earthquakes, and the violent shore. New York: Atheneum. (258pp.)

Ross, K. E. K. (1990, January). "Are there any buildings left standing in San Francisco?" Connect, pp. 2-3.

Scientific American. (1980). Earthquakes and volcanoes. San Francisco, CA: W. H. Freeman. (154pp.)

Shapley, D. (1976). Chinese earthquakes: The Maoist approach to seismology. Science, 193, 656-657.

Soren, D. (1988). The day the world ended at Kourion. National Geographic, 174, 30-53.

Stoffel, D. B., & Stoffel, K. L. (1980). Mt. St. Helens seen close up on May 18. Geotimes, 25(10), 16-17.

Sullivan, W. (1974). Continents in motion - the new earth debate. New York: McGraw-Hill. (399pp.)

Thomas, Mrs. L., Jr. (1964). Night of terror. National Geographic, 126, 142-156.

Tributsch, H. (1982). When the snakes awake: Animals and earthquake prediction. Cambridge, MA: The MIT Press. (248pp.) (translated by Paul Langner).

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

Ulrich, G. (1991). Earth beat: Report on a burn incident, June 12, 1985, east rift, Kilauea volcano. Earth, 1(1), 10-14.

Vecchione, P. (ed.). (1990). Fault lines: Children's earthquake poetry, Santa Cruz, CA: Gault School Press.

Vink, G. E., Morgan, W. J., & Vogt, P. R. (1985). The earth's hot spots. Scientific American, 252(4), 50-57.

Walker, B., & the editors of Time-Life Books. (1981). Planet earth: Earthquake. Alexander, VA: Time-Life. (176pp.)

Waltham, T. (1978). Catastrophe: The violent earth. New York: Crown Publishers. (170pp.)

Webster, B. (1977, July 8). Studying the eerie light of earthquakes. The New York Times, section B, pg. 1.

Wegener, A. (1966). The Origin of continents and oceans. New York: Dover. (246pp.)

Wenkam, R. (1987). The edge of fire. Waukesha, WI: Kalmbach. (160 pp.)

Wesson, R. L., & Wallace, R. E. (1985). Predicting the next great earthquake in California. Scientific American, 252(2), 35-43.

Williams, R. L. (1983). Science tries to break new ground in predicting great earthquakes. Smithsonian, 14(4), 41-50.

Wood, R.M. (1987). Earthquakes and volcanoes: Causes, effects and predictions. New York: Weidenfeld and Nicolson.

Wyllie, P. J. (1976). The way the earth works: An introduction to the new global geology and revolutionary development. New York: John Wiley. (296pp.)

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

2.2 Selected References to Help with Teaching/Writing Curriculum

Armstrong, R. E., Fox, P. J., & Yasso, W. E. (1978). Sea-floor spreading and transform faults. Journal of Geological Education, 26, 19-21.

Bartholomew, R., Lene, G., Smith, D., & White, B. (1978). Imaginary continents; a geologic puzzle. Journal of Geological Education, 26, 195-197.

Bartholomew, R., & Stoever, E. C., Jr. (1978). Making CEEP modules readable for 8th-10th grade students. Journal of Geological Education, 26, 193-194.

Callister, J. C. (1989). Brief review in earth science. Englewood Cliffs, NJ: Prentice Hall.

Cazeau, C. J. (1977, February). Earthquake. Instructor, 86(6), pp. 76-82.

Christman, R. (1982). About films. Journal of Geological Education, 30, 122-124.

Christman, R. (1984). Secondary-school earth science: A column for teachers. Journal of Geological Education, 32, 191.

DeBruin, J. (1991, January-February). Hands-on natural disasters. (Reproducible). Good Apple, p. 12.

Deery, R. (1985). Earthquakes and volcanoes (The natural disaster series). Carthage, IL: Good Apple. (workbook and teacher's lesson notes)

Duschl, R. S. (1987). Causes of earthquakes. Science Activities, 24(3), 8-14.

FEMA/NSTA. (1988). Earthquakes. (FEMA-159).

Finson, K. D., & Enochs, L. G. (1987). Earth science, K-12. The Science Teacher, 54(3), 22-24.

Glenn, W. H. (1983). Drifting - continents on the move. The Science Teacher, 50(2), 20-26.

Glenn, W. H. (1983). The jigsaw earth - putting the pieces together. The Science Teacher, 50(1), 31-37.

Hanif, M. (1990). As the earth quakes...what happens? Science and Children, 27(4), 36-39.

Harris, J. W. (1980). Building a 'firm foundation' - educating about geologic disasters. The Science Teacher, 47(9), 22-25.

Hassard, J. (1989). Adventures in geology. Alexandria, VA: American Geological Institute.

Isenberg, C., Miasik, J., Mesure, S., & Hoyland, J. (1983). Detecting earthquakes: Part 2. Physics Education, 18(2), 64-67.

Kauffman, M. E. (1990, January). Of rocks, wind, ice, and earthquakes. Connect, pp. 1-2.

Korporaal, A., Huff, C., Carlson, G., & Vallier, T. (1978). How fast is the ocean floor moving? Journal of Geological Education, 26, 104-107.

Korporaal, A., & Stoever, E. C., Jr. (1978). Some basic postulates of crustal evolution education project model of curriculum development. Journal of Geological Education, 26, 101-103.

Lary, B. E., & Krockover, G. H. (1987). Maps, plates, and Mount Saint Helens. The Science Teacher, 54(5), 59-61.

Lowman, P., Wilkes, K., & Ridky, R. W. (1978). Earthquakes and plate boundaries. Journal of Geological Education, 26, 69-72.

Markle, S. (1987, March). Earthquake! Instructor, pp. 97-99.

Mayer, V. J. (1984). Crustal evolution education project materials: National evaluation. School Science and Mathematics, 84, 7-26.

Mayer, V. J., & Kozlow, M. J. (1980). An evaluation of a time-series single-subject design used in an intensive study of concept understanding. Journal of Research in Science Teaching, 17, 455-61.

Mayer, V. J., & Stoever, E. C., Jr. (1978). NAGT Crustal Evolution Education Project: A unique model for science curriculum materials development and evaluation. Science Education, 62, 173-179.

McClelland, L., & Simkin, T. (1983). Volcanology. Geotimes, 28(2), 39-41.

Meister, T. (1991, January-February). Ferocious natural forces: A unit on the earth's natural disasters. Good Apple, pp. 10-11.

Montori, L., & Lally, J. (1974). Earthquake! an example of how to develop reading skills using a topic of current interest. Pittsburg Unified School District, California. (ERIC Document Reproduction Service No. ED 241 891)

Morris, D. (1976). Teaching about the child and world environment: Elementary teacher's kit (kit #5420.) New York: United Nations Children's Fund, United States Committee. (ERIC Document Reproduction Service No. ED 130 927)

Mylroie, J. E. (1978). Student participation in a P- and S-wave demonstration. The Physics Teacher, 16, 479-480.

Raymo, C. (1983). The crust of our earth. Englewood Cliffs, NJ: Prentice-Hall.

Redfern, R. (1983). The making of a continent. New York: Times Books.

Reitherman, R. K. (1982, March). Earthquake, what to do - and why. California Geology, pp. 59-65.

Ridky, R. W., & Stoever, E. C., Jr. (1978). A modern curriculum in historical perspective. Journal of Geological Education, 26, 67-68.

Ross, K. E. K. (1990, January). "Are there any buildings left standing in San Francisco?" Connect, pp. 2-3.

Ross, K. E. K., & Shuell, T. J. (October, 1990). The earthqauke information test: Validating an instrument for determining student misconceptions. Paper presented at Meeting of the Northeastern Educational Research Association, Ellenville, NY. (ERIC Document Tracking No. TM015824.

Shimmy-shimmy-shake! an introduction to earthquakes. (1990, June/July). The Mailbox, pp. 10-15.

Stewart, D. M. (1977). Earthquakes: Predictable disaster? The Science Teacher, 44(7), 35-43.

Stoever, E. C., Jr. (1975). Recommendations and guidelines, incorporation of results of current crustal evolution studies into K-12 curricula. Journal of Geological Education, 23, 38-46.

Stoever, E. C., Jr., & Korporaal, A. R. (1979). Crustal evolution introduced. Geotimes, 24(11), 19-20.

Sullivan, R. (1980). Shake 'em up. Early years, 10(5), 34-36.

Sullivan, R. (1981). Earthquake games and curriculum development. San Francisco, CA: San Francisco State University.

Teters, P., Gabel, D., & Geary, P. (1984, Nov./Dec.). Elementary teachers' perspectives on improving science education. Science and Children, 22, pp. 41-43.

Thier, H. D. (1985). Societal issues and concerns: A new emphasis for science education. Science Education, 69(2), 155-162.

Vento, C. J. (1976, March). A peanut butter disaster. Audio-visual Instruction, pp. 64-65.

Verdon, A. J. (1988). Teaching tomorrow's earth scientists. Geotimes, 33(12), 7.

Webster, B. (1977, July 8). Studying the eerie light of earthquakes. The New York Times, section B, pg. 1.

Wohlwerth, N. (1982). Children suffering in disaster. Hazard Monthly, 11(9), 8-9.

Yasso, W. E., & Stoever, E. C., Jr. (1978). History of a CEEP module. Journal of Geological Education, 26, 18.

Zlegler, H. (1982). Child care centers run by Brethren disaster volunteers. Hazard Monthly, 11(9), 9-10.

2.3 Selected Articles for Grades K-3

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.

A big earthquake: When will it come? (1988, October 28). Weekly Reader, Edition 3. For grade 3.

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.

Duckworth, C. (1990, May). Meet a real quake watcher. Ranger Rick, pp. 20-21. For ages 5-12.

Earthquake! (1990, March). National Geographic World, pp. 8-13. For ages 8-13.

Evans, C. W. (1988, May). Volcano visit. Chickadee, pp. 24-25. For ages 4-8.

Evans, C. W. (1990, May). Great shakes: It's Doctor Quake! Ranger Rick, pp. 14-19. For ages 5-12.

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

Lin, S. C. (1990, March). Earthquake! hurricane! Boys' Life, pp. 32-35. For ages 8-18.

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.

Natural disasters. (1986, April). Cobblestone, pp. 4-5. 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.

Poynter, M. (1990, April). The killer waves. Cricket, pp. 44-47. For ages 6-12.

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

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.

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

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.

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

Vigneron, F. H. (1990, December). After the earthquake. Jack & Jill, pp. 26-29. For ages 6-8.

Volcano comics. (1990, July-August). Kid City, pp. 16-17. For ages 6-10.

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

2.4 Selected Books for Grades K-3

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; Follett Library Book Company - Elementary 1987/88 catalog; Follett Library Book Company - K-12, 1987/88 hardbound, paperback catalog; Project Quake, "Resources - Books."

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

Baker, K. (1989). The magic fan. San Diego, CA: Harcourt, Brace, Jovanovich.

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

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

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

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

Cole, J. (1987). The magic school bus inside the earth. New York: Scholastic. Readability analysis: Wheeler Smith-K, Spache-1.5-2.2. (40 pp.)

Curran, E. (1985). Mountains and volcanoes: What do you see? Mahwah, NJ: Troll Associates. Reading level: 1.0, interest level: grades K-3.

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

Fradin, D. (1982). Disaster! volcanoes. Chicago, IL: Children's First. (63pp.)

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

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

Kaufman, J. (1978). Joe Kaufmans about the big sky, about the high hills. New York: Golden Press. For ages 6-8. (69pp.)

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.

Lewis, T. P. (1971). Hill of fire. New York: Harper & Row. (63pp.) *

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

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

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.

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

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

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

Simon, S. (1979). Danger from below: Earthquakes past, present, and future. New York: Four Winds. For grades 3-6. (86pp.)

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

Vita-Finzi, C. (1989). A pop-up guide: Planet earth; volcanoes; earthquakes; mountains; and the mighty forces that shape our world. New York: Simon and Schuster. For grages 3 and up. (10 pp.)

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

*Book available at NCEER.

2.5 Selected Articles for Grades 4-6

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.

After the big quake. (California earthquake, 1989; includes map). (1989, November 3). Current Events, pp. 1-2. For ages 10-16.

Andres, L. (1990, October). Can you predict a quake? Superscience Blue, pp. 26-27. For ages 9-12.

The big quake of 1906. (1989, November 3). Current Events, p. 20. For ages 10-16.

Black, B. (1990, March 9). Learning from earthquakes. Scholastic News, Citizen Edition 5 and Edition 6, p. 1.

Black, B. (1990, March 9). Quake-proof building. Scholastic News, Explorer Edition 4, Hands-on Science Supplement.

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.

Bracing for the big one. (1990, October). Superscience Blue, pp. 15-17. For ages 9-12.

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

Can winds trigger earthquakes? (1989, May 12). Current Science, p. 14, For grades 6-10.

Canby, T. Y. (1990). Earthquake: Prelude to the big one? National Geographic, 177(5), 76-105.

Chayet, B. (1990, March 9). Bending without breaking. Scholastic News, Citizen Edition 5 and Edition 6, Hands-on Sceince Supplement.

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.

Deadly quakes shake the world. (1990, October 5). Current Science, p. 9. For ages 10-16.

Deepest hole being drilled for science. (1987, May 1). Current Science, p. 13. For ages 10-16.

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

Duckworth, C. (1990, May). Meet a real quake watcher. Ranger Rick, pp. 20-21. For grades 5-12.

Earth wobbles every few weeks. (1988, November 18). Current Science, p. 15. For ages 10-16.

Earthquake! (1990, March). National Geographic World, pp. 8-13. For ages 8-13.

Earthquake kills about a thousand people. (1987, January 2). Current Science, p. 14. For ages 10-16.

Earthquake shakes up southern California. (1987, October 23). Current Events, pp. 1-2. For ages 10-16.

Earthquake! when will the big one hit? (1987, November 20). Junior Scholastic, pp. 12-13. For ages 10-14.

Evans, C. W. (1988, May). Volcano visit. Chickadee, pp. 24-25. For ages 4-8.

Evans, C. W. (1988, June). It shakes, it roars. it throws melted rock into the sky: It's a volcano! Ranger Rick, pp. 24-31. For ages 5-12.

Evans, C. W. (1990, May). Great shakes: It's Doctor Quake! Ranger Rick, pp. 14-19. For ages 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.

Huge ice sheets prevent earthquakes. (1988, September 9). Current Science, p. 12, For ages 10-16.

The huge wave that wasn't. (1986, September 19). Current Science, p. 10. For ages 10-16.

Ice erupts from volcanoes. (1988, December 16). Current Science, p. 10. For ages 10-16.

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

Kendrick, K., & Chayet, B. (1990, October). Shaky predictions. Superscience Blue, pp. 10-15. For ages 9-12.

Killer earthquake hits Mexico. (1985, October 18). Junior Scholastic, p. 13. For ages 10-14.

Lin, S. C. (1990, March). Earthquake! hurricane! Boy's Life, pp. 32-35. For ages 8-18.

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. (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 ages 10-16.

More explosions rock "Lake of Death." (1987, March 27). Current Science, p. 12. For ages 10-16.

Most powerful quakes in U.S. (1988, February 5). Current Science, p. 14. For ages 10-16.

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

Mount St. Helens won't blow its top again. (1988, October 21). Current Science, pp. 14-15. For ages 10-16.

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

New method may predict earthquakes. (1990, February 16). Current Science, p. 13. For ages 10-16.

New volcanoes form off Oregon coast. (1990, December 14). Current Science, p. 14. For ages 10-16.

O'Connor, J. (1985, November 29). Mexico after the earthquake. Junior Scholastic, pp. 2-4. For ages 10-14.

Oil wells trigger earthquakes. (1990, February 2). Current Science, p. 12. For ages 10-16.

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.

Poynter, M. (1990, April). The killer waves. Cricket, pp. 44-47. For ages 6-12.

Quake quiz. (1990, January 5). Current Science, p. 6. For ages 10-16.

Quake shakes up earthquake class. (1989, December 1). Current Science, p. 14. For ages 10-16.

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 ages 10-16.

Reichlin, L. (1986, February 14). Volcano disaster: When will the next one strike? Current Science, pp. 6-7. For ages 10-16.

Reichlin, L. (1986, October 31). Superquake: When will it strike? Current Science, pp. 4-5. For ages 10-16.

Reichlin, L. (1987, February 27). Erupting volcanoes threaten villages. Current Science, pp. 4-5. For ages 10-16.

Reichlin, L. (1988, January 8). Damaging quake: A warning of the big one? Current Science, pp. 6-7. For ages 10-16.

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 ages 10-16.

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 ages 10-16.

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.

Students lend a hand. (1989, January 27). Junior Scholastic, p. 7. For ages 10-14.

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 ages 10-16.

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 ages 10-16.

Vitton, E. (1989, December 1). Scholastic News, Explorer Edition 4, pp. 4-5.

Volcanic eruption triggered famine many years ago. (1988, April 1). Current Science, p. 14. For ages 10-16.

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

Volcano comics. (1990, July-August). Kid City, pp. 16-17. For ages 6-10.

Volcano erupts under sea. (1988, January 22). Current Science, p. 8. For ages 10-16.

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

Walter, B. (1990, February 16). Volcano! deadly force. Junior Scholastic, pp. 10-11. For ages 10-14.

Westrup, H. (1990, January 5). Giant quake: When will it strike? Current Science, pp. 4-5. For ages 10-16.

Westrup, H. (1990, March 16). Predicting volcanic eruptions saves thousands of lives. Current Science, pp. 4-5. For ages 10-16.

Westrup, H. (1990, September 7). Volcanic eruption buries entire town. Current Science, pp. 4-5. For ages 10-16.

What triggers volcanic eruptions? (1988, April 29). Current Science, p. 8. For ages 10-16.

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

Worst quakes of the 20th century. (1989, March 17). Current Science, p. 15. For ages 10-16.

Young quake victims go home. (1989, September 22). Current Science, p. 14. For ages 10-16.

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.)

Baker, K. (1989). The magic fan. San Diego, CA: Harcourt, Brace, Jovanovich.

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.)

Branley, F. M. (1990). Earthquakes. New York: Harper Collins. For grades 5-9. (32 pp.)

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. Readability analysis: Wheeler Smith-K, Spache-1.5-2.2. (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.)

Jennings, T. (1989). Volcanoes and earthquakes. New York: Marshal Cavendish. For grades 4-5. (48 pp.)

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.

Levine, E. (1987). If you lived at the time of the great San Francisco earthquake. New York: Scholastic.

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.)

Markle, S. (1987). Digging deeper. New York: Lothrop, Lee, and Shepard. (111 pp.)

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). The violent earth. New York: Random House. Reading level: 3.0, interest level: grades 3-6. (24pp.)

Salvadori, M. (1990). The art of construction. Chicago, IL: Chicago Review Press. For ages 10 and up.

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.)

Vita-Finzi, C. (1989). A pop-up guide: Planet earth; volcanoes; earthquakes; mountains; and the mighty forces that shape our world. New York: Simon and Schuster. For grades 3 and up. (10pp.)

Walker, B., & the editors of Time-Life Books. (1982). Earthquake (Planet Earth Series). Alexandria, VA: Time-Life. For ages 11-19. Reading level: 12+ (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.

** Book translated into braille and available from the National Library Service for the Blind and Physically Handicapped, The Library of Congress.

*** Book available on cassette (RC 19586) and available from the National Library Service for the Blind and Physically Handicapped, The Library of Congress.

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.

After the big quake. (California earthquake, 1989; includes map). (1989, November 3). Current Events, pp. 1-2. For ages 10-16.

Andres, L. (1990, October). Can you predict a quake? Superscience Blue, pp. 26-27. For ages 9-12.

Bedway, B. (1990, February 23). Building for a landscape on the loose. Science World, pp. 9+. For ages 12-15.

The big quake of 1906. (1989, November 3). Current Events, p. 20. For ages 10-16.

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.

Bracing for the big one. (1990, October). Superscience Blue, pp. 15-17. For ages 9-12.

Brennan, H. (1989, March 24). Armenia: Scientists survey the damage. Science World, p. 3. For ages 12-15.

Brennan, H., & Goodman B. (1989, April 12). Quakes from man-made lakes. Science World, pp. 6-9. For ages 12-15.

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

Brune, J. (1989, March 10). Quake up, sleepy head. ScienceWorld, p. 5. For ages 12-15.

Can winds trigger earthquakes? (1989, May 12). Current Science, p. 14. For ages 10-16.

Canby, T. Y. (1990). Earthquake: Prelude to the big one? National Geographic, 177(5), 76-105. For grades 5-Adult.

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.

Deadly quakes shake the world. (1990, October 5). Current Science, p. 9. For ages 10-16.

Deepest hole being drilled for science. (1987, May 1). Current Science, p. 13. For ages 10-16.

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

Earth wobbles every few weeks. (1988, November 18). Current Science, p. 15. For ages 10-16.

Earthquake! (1990, March). National Geographic World, pp. 8-13. For ages 8-13.

Earthquake damage in the U.S. (1988, April 22). Science World, p. 5. For ages 12-15.

Earthquake kills about a thousand people. (1987, January 2). Current Science, p. 14. For ages 10-16.

Earthquake shakes up southern California. (1987, October 23). Current Events, pp. 1-2. For ages 10-16.

Earthquake! when will the big one hit? (1987, November 20). Junior Scholastic, pp. 12-13. For ages 10-14.

Earthquakes! (1989, January 27). Junior Scholastic, pp. 6-7. For ages 10-14.

Fritz, S. (1985, November 29). Major earthquake hits Mexico City. Science World, pp. 4-7. For ages 12-15.

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 ages 12-15.

Goodman, B. (1988, April 8). Waiting for the big one--in eastern North America. Science World, p. 6. For ages 12-15.

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

Heller, K., & Brune, J. (1989, April 7). Tectonic terror. Science World, pp. 6-9. For ages 12-15.

Huge ice sheets prevent earthquakes. (1988, September 9). Current Science, p. 12. For ages 10-16.

The huge wave that wasn't. (1986, September 19). Current Science, p. 10. For ages 10-16.

Ice erupts from volcanoes. (1988, December 16). Current Science, p. 10. For ages 10-16.

Kendrick, K., & Chayet, B. (1990, October). Shaky predictions. Superscience Blue, pp. 10-15. For ages 9-12.

Kilgore, J. (1987, April 6). Earthquake: A.D. 365. Science World, pp. 16-19. For ages 12-15.

Killer earthquake hits Mexico. (1985, October 18). Junior Scholastic, p. 13. For ages 10-14.

Lin, S. C. (1990, March). Earthquake! hurricane! Boys' Life, pp. 32-35. For ages 8-18.

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 ages 10-16.

More explosions rock "Lake of Death." (1987, March 27). Current Science, p. 12. For ages 10-16.

Most powerful quakes in U.S. (1988, February 5). Current Science, p. 14. For ages 10-16.

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

Mount St. Helens won't blow its top again. (1988, October 21). Current Science, pp. 14-15. For ages 10-16.

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

New method may predict earthquakes. (1990, February 16). Current Science, p. 13. For ages 10-16.

New volcanoes form off Oregon coast. (1990, December 14). Current Science, p. 14. For ages 10-16.

O'Connor, J. (1985, November 29). Mexico after the earthquake. Junior Scholastic, pp. 2-4. For ages 10-14.

October 17, 1989, 5:04 P.M. (1989, December 15). Science World, pp. 2-3. For ages 12-15.

Oil wells trigger earthquakes. (1990, February 2). Current Science, p. 12. For ages 10-16.

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

Plaut, J. (1990, September 21). Cruel summer. Science World, p. 4. For ages 12-15.

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.

Pope, G. (1989, April 21). Volcano guts. Science World, p. 5. For ages 12-15.

Pope, G. (1990, September 7). River of fire. Science World, p. 3. For ages 12-15.

Proujan, C. (1985, November 29). Build a model tiltmeter--an earthquake warning system. Science World, p. 9. For ages 12-15.

Proujan, C. (1985, November 29). Tiltmeters--when tilt means danger! Science World, p. 8. For ages 12-15.

Quake shakes up earthquake class. (1989, December 1). Current Science, p. 14. For ages 10-16.

Quake quiz. (1990, January 5). Current Science, p. 6. For ages 10-16.

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 ages 10-16.

Reichlin, L. (1986, February 14). Volcano disaster: When will the next one strike? Current Science, pp. 6-7. For ages 10-16.

Reichlin, L. (1986, October 31). Superquake: When will it strike? Current Science, pp. 4-5. For ages 10-16.

Reichlin, L. (1987, February 27). Erupting volcanoes threaten villages. Current Science, pp. 4-5. For ages 10-16.

Reichlin, L. (1988, January 8). Damaging quake: A warning of the big one? Current Science, pp. 6-7. For ages 10-16.

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 ages 10-16.

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 ages 10-16.

Rosenstock, L. (1989, March 17). Can buildings be made to survive earthquakes? Current Science, pp. 6-7. For ages 10-16.

Samz, J. (1987, November 6). Volcanoes on other worlds. Science World, pp. 16-18. For ages 12-15.

Samz, J. (1988, February 12). The strange case of the missing polar earthquakes. Science World, p. 6. For ages 12-15.

Satellite warns of tsunamis. (1989, April 14). Current Science, p. 12. For ages 10-16.

Scientists predict: Big quake will strike eastern U.S. (1989, January 6). Current Science, p. 7. For ages 10-16.

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.

Students lend a hand. (1989, January 27). Junior Scholastic, p. 7. For ages 10-14.

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 ages 10-16.

Two killer quakes strike Asia. (1989, January 20). Current Science, p. 14. For ages 10-16.

U.S. volcano may be active for decades. (1987, April 17). Current Science, p. 12. For ages 10-16.

Volcanic eruption triggered famine many years ago. (1988, April 1). Current Science, p. 14. For ages 10-16.

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 ages 10-16.

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

Walter, B. (1990, February 16). Volcano! deadly force. Junior Scholastic, pp. 10-11. For ages 10-14.

Westrup, H. (1990, January 5). Giant quake: When will it strike? Current Science, pp. 4-5. For ages 10-16.

Westrup, H. (1990, March 16). Predicting volcanic eruptions saves thousands of lives. Current Science, pp. 4-5. For ages 10-16.

Westrup, H. (1990, September 7). Volcanic eruption buries entire town. Current Science, pp. 4-5. For ages 10-16.

What triggers volcanic eruptions? (1988, April 29). Current Science, p. 8. For ages 10-16.

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

Worst quakes of the 20th century. (1989, March 17). Current Science, p. 15. For ages 10-16.

Young quake victims go home. (1989, September 22). Current Science, p. 14. For ages 10-16.

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.)

Salvadori, M. (1990). The art of construction. Chicago, IL: Chicago Review Press. For ages 10 and up.

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. For ages 11-19. Reading level: 12+. (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.

**Book available in braille (BRB 10970) from the National Library Service for the Blind and Physically Handicapped, The Library of Congress.

2.9 Animals and Earthquakes

Can California chimps predict earthquakes? (1976, November 4). New Scientist, 72 (1025), p. 275.

Kerr, R. A. (1980, May 16). Quake prediction by animals gaining respect. Science, 208 (4445), p. 695.

Ling-Huang, S. (1987, November-December). Can animals help to predict earthquakes? Earthquake Information Bulletin, pp. 231-33.

Logan, J. M. (1977, February 3). Animal behavior and earthquake prediction. Nature, 265 (5593), pp. 404-5.

Magida, P. (1977, September). If pandas scream ... an earthquake is coming! International Wildlife, pp. 37-39.

Monagan, D. (1981, June). How animals predict earthquakes. Science Digest, 89 (5), pp. 92-95, 124.

Reasenberg, P. (1978, January-February). Unusual animal behavior before earthquakes. Earthquake Information Bulletin, pp. 42-49.

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

Shaw, E. (1977, November). Can animals anticipate earthquakes? Natural History, LXXXVI (9), pp. 14-20.

Simon, R. B. (1975, November-December). Animal behavior and earthquakes. Earthquake Information Bulletin, pp. 9-11.

Tributsch, H. (1982). When the snakes awake: Animals and earthquake prediction. Cambridge, MA: MIT. (translated by Paul Langner).

Section 3
Educational Resources

3.1 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 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	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 Await the Quake Game can be purchased through the Lawrence Hall of Science Eureka catalog.	Have been field-tested throughout California in grades 4-8.	"Mini-Kit" $30, plus $5 shipping and handling.

* Indicates principal authors

3.1 Earthquake Education - Curricula Summary (Continued)

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
I Can Make X the Difference Chair Emergency Preparedness Committee Utah State PTA 1037 E. South Temple Salt Lake City, UT 84102	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: 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.	$3.50/copy plus postage.
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.131-136) 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, 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 supplement 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 - $21.95, except for "Quake Estate"-$29 and "The Eruption of Mount Saint Helen's"-$31.

* Indicates principal authors

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
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 question-naires given to students aided in the revision of the curriculum to a 1-hour program.	$10.00

* Indicates principal authors

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Earthquakes: A Teacher's Package for K-6 /FEMA 159 Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	K-6	Developed for FEMA by the National Science Teachers Association	This 280-page package was developed by the National Science Teachers Association. It contains hands-on classroom activities that support virtually all elementary subject areas. Designed for the classroom teachers with little or no background in earth science, the six-unit package focuses on: • Defining an earthquake; • Why and where earthquakes occur; • Physical results of earthquakes; • Measuring earthquakes; • Recognizing an earthquake; and • Earthquake safety and survival. The Teacher's Package includes Background, Earthquake Legends, Scope and Sequence Charts, and Line Masters. Also available: FEMA 88a Earthquake Safety for Children. This 4-part booklet for teachers contains excerpts from Units 5 and 6 of Earthquakes - A Teacher's Package for K-6 (FEMA 159). It provides classroom activities designed to prepare students to cope safely when an earthquake occurs. The booklet covers: • What happens during an earthquake; • Hazard Hunts; • Assembling emergency kits; and • Earthquake simulation and drills.	Has been field tested in Alaska, Calif., Indiana, Maryland, Missouri, Montana, NY, So. Carolina, Tennessee, and Washington	Distribution of publications is limited to one free copy per school while supplies last. Send single copy requests on school letterhead to FEMA. Also available from NSTA (202) 328-5800, for $15.00 soft cover (#PB-77/1) or 3-hole punch (#PB-77/2).

* Indicates principal authors

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 talk 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.

* Indicates principal authors

3.1 Earthquake Education - Curricula Summary (Continued)

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, and Memphis. 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.

* Indicates principal authors

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Northwest Earthquake Workshop for Teachers (N.E.W.T.) Washington State Division of Emergency Management 4220 East Martin Way Olympia, WA 98504 (206) 459-9191	Not organized by grade level; activities grouped in a conceptual hierarchy of simple concepts to more complex ones.		The goal of this curriculum is two-fold: to promote a better understanding of science processes through the investigation of Earthquake phenomena by providing conceptually sequenced, hands-on activities and to promote scientific literacy by encouraging the learner to develop and utilize the science process skills necessary for doing science and for living in a complex technological society. This curriculum is not organized by grade level. Within each section/concept, the activities are organized from the most simple to the most complex. Depending on the grade level taught, a teacher will tend to teach the activities listed near the beginning or ends of the sections. Concepts include: • The intensity of earthquake shaking within an area is directly affected by the local geology and soil type. • Structures behave differently during earthquake shaking due to differences in building size and shape, building materials and construction. • Earthquakes are a frightening experience. However, there are ways to minimize the risks and damage. Appendices include a pre-test, Resource List, and Earthquake Histories of Washington, Oregon, Idaho, Montana and Alaska.		Very limited availability. For further information contact: Joel Aggergard, Washington State Division of Emergency Management (206) 493-2785.

* Indicates principal authors

3.1 Earthquake Education - Curricula Summary (Continued)

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
Plate Tectonic Cycle - Earth's Moving Force Math Science Nucleus 3710 Yale Way Fremont, CA 94538 *Dr. Joyce Blueford	K-6	1991 Math/Science Nucleus, Second Edition	Plate Tectonic Cycle - Earth's Moving Force (259 pp., 72 lesson plans including 28 innovative hands-on lab activities; 12/grade level K-6). In the Plate Tectonic Cycle, students learn that the Earth is dynamic as it spins on its axis, revolving around the Sun. The Earth is restless inside, as it tries to cool its interior. The crust of the Earth is pulled and pushed causing earthquakes and volcanoes along the boundaries of plates. Hands-on activities teach students how scientists investigate the Earth by looking at data derived from earthquakes and volcanoes and to think about present theories about why the Earth's surface moves. Learning about earthquakes and volcanic hazards will help children to understand disasters that sometimes occur. This volume represents 4 weeks of a 34 week elementary science program per grade level called the Integrating Science, Math, and Technology (I. Science MaTe) Program.	Formally test piloted program for 8 years; currently used in schools throughout California.	Plate Tectonic Cycle book - $17.95 plus $2.50 shipping and handling (259 pp.). Hands-on material and childrens' books also available, request information sheet for current prices.
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 three. Plan to use teacher workshops to disseminate this curriculum.	$7.50 + postage.

* Indicates principal authors

Name/Address	For Grades	Copyright	Content	Test Piloted	Cost
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

3.2 Supplemental Informational Material

Name/Address	Grade Level	Contents	Cost
"Schools and Earthquakes - Building Schools to Withstand Earthquakes" Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	School staff, PTA	This 14-minute video complements Seismic Considerations: Elementary and Secondary Schools (FEMA 149). It conveys the lifesaving and economic benefits of including earthquake resistant design in new school construction.	Videos are available for loan: Broadcast quality on 3/4" tape or standard 1/2" VHS.
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

3.2 Supplemental Informational Material (Continued)

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. Blossom the Clown discusses preparedness for natural disasters. 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. Also available: "Big Bird Get Ready! For Floods" kit. 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 66); and FEMA 88, Guidebook for Developing a School Earthquake Safety Program.	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, send school letterhead, 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
Colors of the Earthquake* Quake Tales* Carol Hill Mintie White School 515 Palm Watsonville, CA 95076 (408) 728-6321	K - 6	Colors of the Earthquake contains children's art illustrating Carrol Moran's poem reflecting the emotions of the aftermath of the Loma Prieta earthquake. Quake Tales is an anthology of children's writings about their experiences during and after the Loma Prieta earthquake.	Each booklet is $4.00 and includes price of shipping.
Coping with Children's Reactions to Earthquakes and Other Disasters* FEMA 48 (FEMA 66 Spanish version.) Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	School staff, PTA	This pamphlet was developed by the San Fernando Valley Child Guidance Clinic after the 1971 San Fernando Earthquake. It is intended to help parents and teachers deal with children's fears and anxieties following a disaster.	One free copy/school while supplies last. Send single copy requests on school letterhead.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"Critical Time; Earthquake Response Planning & Schools"* Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	School staff, PTA	This 14 minute videotape was produced for FEMA by the Missouri Emergency Management Agency. It is intended to complement the Guidebook for Developing a School Earthquake Safety Program (FEMA 88). It discusses the responsibilities of school administrators, teachers, and staff to acquire the knowledge and skills needed to protect and care for the student population until outside help is available.	Videos are available for loan: Broadcast quality on 3/4" tape or standard 1/2" VHS.
Customized Disaster Survival Manuals Disaster Survival Planning, Inc. Headquarters: 669 Pacific Cove Drive Port Hueneme, CA 93041 (805) 984-9547	Pre-school thru Grade 12.	Course # 902 "How To Prepare Classroom or Small School Plans:" A one-day workshop to teach representatives what information they need to gather under four categories: Location & Resources, Communications, Disaster Survival, and Training. At the end of the day, representatives will be equipped to prepare their own manuals for their school. The company also offers to send its representatives to your school to prepare the manuals for you.	Course #901 - $200 per representative. Group discounts and on-site training are available. Rep. On-Site Fees: $15 to $25/hour.
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. Disaster Child Care Response Program provides 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 86 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.	$160.00, postage paid. Write for further information.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Earthquake Hazards Around the Home* CALEEP Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-8718 FAX: (415) 642-1055	Primary Grades	A coloring book that features the rooms in a house and identifies potential earthquake hazards in each. Also available: • Finding Earthquake Hazards Close to Home/Neighborhood Field Trip • Living Safely in Your School Buildings - a pamphlet and activity guide for administrators to help them plan for earthquake preparedness in their schools. Includes: surveying the hazards at your school site, developing an emergency plan for your school, and earthquake awareness drills for schools.	$5.00 for classroom set of 35. 100 brochures $11.00 $2.00
Earthquake I Am Prepared* One & Only Publishing 2221 Las Palmas "H" Carlsbad, CA 92009 (619) 931-7777, 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

* Copies available for viewing at NCEER

3.2 Supplemental Informational Material (Continued)

Name/Address	Grade Level	Contents	Cost
"Earthquake Information" Books & Open File Reports U.S. Geological Survey Box 25425, Federal Center Denver, Colorado 80225	Elementary, Middle and High School Classes Available from Books and Open-File Reports	Earthquakes (Booklet) San Andreas Fault (Booklet) Safety and Survival (Leaflet) Severity of an Earthquake (Leaflet)	Single copies available FREE from Books and Open-File Reports
"Earthquake Information" Superintendent of Documents (see address above)	Middle and High Schools Classes	Preliminary Determination of Epicenter. Gives date, time, location, depth, and region for worldwide earthquakes of magnitude 3 and above.	Annual subscription: $21.00 (domestic); $26.25 (foreign) Available from Superintendent of Documents. Single copies ($3.00 domestic, $3.50 foreign) available from USGS, Books & Open-File Reports.
"Earthquake Information" Superintendent of Documents U.S. Government Printing Office Washington, DC 20402	Middle and High School Classes	Earthquakes and Volcanoes is published bimonthly by the U.S. Geological Survey to provide current information on earthquakes and seismology, volcanoes, and related natural hazards of interest to both generalized and specialized readers.	Annual subscription rates: $6.50 (domestic); $8.15 (foreign). Make check or money order payable to the Superintendent of Documents. To order by VISA or MASTERCARD call 202-783-3238.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
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. Includes worksheets with masters on the following: Common Expectations About the Role of Emergency Activities After an Earthquake, Common Earthquake Hazards, Hazards Found in the Coalinga Schools After the Earthquake, Procedures to Reduce Earthquake Hazards, Emergency Procedures, Emergency Plans, Basic Brainstorming Rules, and Earthquake Plan Checklist.	$7.00 + $2.00 postage and handling.
"Earthquake-Predictable Disaster" Ztek Co. P.O. Box 1055 Louisville, KY 40201-1055 (800) 247-1603 FAX: (502) 584-9090		A NOVA videodisc documentary in which students can learn how certain scientists can be about the size, time and location of major earthquakes (L00475, available July, 1991). Also available: "Born of Fire," a National Geographic videodisc in which students can see how the movements of the plates of the earth's crust cause earthquakes and volcanic eruptions (L00014).	$30 each.
Earthquake Preparedness and Safety Tips Emergency Management Section City of Santa Ana Fire Department 120 West Walnut Santa Ana, CA 92701	K-4	This is a 16 page, tri-lingual (English with Spanish and Vietnamese captions) coloring book.	Send 8½" x 11" self-addressed, stamped envelope for single copy.

* Copies available for viewing at NCEER

3.2 Supplemental Informational Material (Continued)

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 32 page, 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 explanatory, 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" slide/cassette program $150.00; Videotape $175. "Earthquake Sounds Tape" $10.00. "How To Survive A Major Earthquake" $6.00. "Table-Talk Tent Cards" $30.00. "Earthquake Fault Map" $25.00 (rolled); $50.00 (mounted).
"Earthquake Preparedness: The School Bus Driver" American Motion Pictures Company 2247 15th Avenue West Seattle, WA 98119 (206) 282-1776	School Bus Drivers, School District Administrators	This is a 16:44 minute videotape of an earthquake preparedness presentation targeted for school bus drivers. This videotape and support materials were developed by Seattle School District Support Services, Laidlaw Transit, Inc., EBI O'Ryan (a private enterprise), School Earthquake Safety & Education Project, and American Motion Pictures Company. It provides information on earthquake zones, typical earthquake damage and goes through a scenario of a morning school-bus route earthquake disaster. Ends with recommendations for appropriate actions.	$20 including tax and shipping.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"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 Checklist (FEMA 46) Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	General	One of several pamphlets describing how to prepare for an earthquake, what to do during an earthquake, and what hazards to avoid afterwards. Also available: Family Earthquake Safety - Home Hazard Hunt and Drill (FEMA 113), a booklet of family preparedness activities which includes: • How to identify and correct hazards in the home; • Where to go for protection when your house starts to shake; • How to hold family earthquake drills; and • How to cope during the aftermath of the earthquake.	Distribution of publications is limited to one free copy per school while supplies last. Send single copy requests on school letterhead.
Earthquake Safety Guide For Children--What To Do if You Are Alone* Los Angeles Chapter, American Red Cross Contract Educational Services 2700 Wilshire Boulevard P.O. Box 57930 Los Angeles, CA 90057-0930	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 (206) 685-1186 FAX: (206) 543-8051	(1.) Pre-school - 3 (2.) 4 - 6	1. "When the Unusual Happens" consists of 3 lesson plans; 1 10-minute audio-visual 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. ** Copies available for preview at Health Sciences Center for Educational Resources	(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 Sound Cassette Tape* Emergency Preparedness Committee Utah State PTA 1640 North 1400 West Provo, UT 84604 (801) 375-8416	K - 12	A one minute cassette tape of earthquake sounds beginning with a rumbling noise that includes sounds of breaking glass, books falling and walls creaking. No screaming, crying or sounds that may terrify children.	$1.50 per tape includes mailing costs.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
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) Seismograph Model - Hubbard and Volcano Kit available from Nasco (1-800-558-9595)	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 (SK 66016-01). The seismograph model includes a recording needle, a support with a suspended weight, and a recording tape. It demonstrates the principles of seismograph recording, and comes with a teacher's guide (SK 64110). 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 (SK 60147). The Seismograms for the 1964 Alaskan Earthquake Kit include 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 (SK 60209).	$17.40 (SK 91/92 catalog) $19.90 (SK 91/92 catalog) $10.00 (SK 91/92 catalog) $25.50 (SK 91/92 catalog) Fisher Educational Materials: Earthquake Watch Kit - $15.00 (88/89 catalog) Seismograph Model - $19.95 (88/89 catalog) Nasco: Seismograph model- $14.00 (1989 catalog) Volcano Kit - $14.00 (1989 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" Scott Resources P.O. Box 2121B Ft. Collins, CO 80522 (303) 484-7445 FAX: (303) 484-8067	7 - 12	This videotape is part of a series of videotapes available in both VHS or Beta format that focuses on the study of earth science topics. Each is a "video field trip" that explores a specific geologic process. This one focuses on the causes and effects of movement within the earth. Faults, fractures, epicenters, and P and S waves are discussed (20 minutes). Also have videotapes on: • "Faulting and Folding" - explores the processes that result in the faulting and folding of the Earth's crust. Uses footage from Loma Prieta earthquake of 1989 to illustrate the ways that faults and folds affect humans (15 minutes). • "Mount St. Helens; What Geologists Learned" - incorporates footage of the eruption of Mt. St. Helens and subsequent eruptions in exploring the causes of volcanism (grades 9-12) (40 minutes). • "Plate Tectonics - The Puzzle of the Continents" - explores the fundamentals of the Plate Tectonics Theory from Wegener's observations on continental drift to the latest computer analysis of movements at plate boundaries (15 minutes). • "Volcanoes of the United States" - takes students to the regions of the United States where volcanic activity has been most concentrated (20 minutes).	$56.50 each for "Earthquakes," "Volcanoes of the United States," "Faulting and Folding," and "Plate Tectonics - The Puzzle of the Continents." $79.95 for "Mount St. Helens" (1991 catalog).
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.	$6.95 for 48 pp. reproducible booklet, plus shipping and handling. Set of 4 titles: $27.80.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"Earthquakes: Building a Plan for Preschools" Emergency Management Division City of Irvine, California P.O. Box 19575 Irvine, CA 92713 (714) 724-7149	School staff, PTA	This consists of five VHS videotapes of the City of Irvine's 1988 conference on emergency preparedness for preschools. Subjects covered include: The Earthquake Threat, Making a Plan, Non-Structural Hazards, Psychological, and Medical. Also available: "School Disaster Preparedness Workshop," three VHS videotapes of the Orange County Cities Emergency Management Organization's 1989 workshop for schools. Subjects covered include: Evaluating Hazards, Non-structural Hazard Mitigation, Team Concept/The Buddy System, American Red Cross and Schools, Working with your City, First Aid Team, Search and Rescue, How to Finance your Disaster Plan, Damage Assessment for Schools, Communications for Schools, How to Write a Disaster Plan and Student Release/Security.	$35.00 $20.00
"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	General	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 for loan only in 1/2" and 3/4" VHS.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"Earthquakes: Environments and Effects" CALEEP Lawrence Hall of Science University of California at Berkeley Berkeley, CA 94720 (415) 642-8718 FAX: (415) 642-1055	4-Adult	This 15 minute interactive videotape takes viewers on an exploration of various environments before and after earthquakes. Participants learn what to expect near oceans and bays, in hilly terrain, in cities, and in rural areas. A detailed leader's guide is provided. Questions and suggested stop points for discussion make the experience interactive for students.	$20.00 (½" VHS).
Earthquakes in Illinois Illinois Emergency Services and Disaster Agency 110 East Adams Springfield, IL 62706	9-12	Pamphlet explains the more technical aspects of midwestern earthquakes. Also available: • Earthquakes in the Illinois Area - For students in grades 7-8, this pamphlet explains the origins of earthquakes and reviews the location of the New Madrid Fault. Safety tips are also included. • Home Preparedness Kit List - Reviews essential items to be included in a disaster survival kit. • Modified Mercalli Map - Shows counties at risk in Illinois from a Richter 7.6 event in the New Madrid Seismic zone.	Single copies free.
Emergency 'Q' Tips #1 and #2* Earthquake Education Center Charleston Southern University 9200 University Blvd. P.O. Box 10087 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 Charleston Southern University 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
"Get Up! We Need to See You Standing" Personal Touch Video 1525 Tudor Court Modesto, CA 95351 (209) 544-0186	General - for awareness for school staff	A videotape showing a dramatic, sensitive account of the earthquake of 1989 in Santa Cruz County, California. Also available is a sequel, "Prepare, Survive, Recover," which shows how the city of Santa Cruz, California dealt with a major disaster and is now recovering.	$29.95 + California sales tax if California resident.
Guidebook for Developing a School Earthquake Safety Program/FEMA 88* Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	Designed to assist school community to develop and tailor an earth-quake safety program for the school.	This 50-page guide is designed to assist the school community of principal, teachers, staff, students, and parents develop and tailor an earthquake safety program for their school. The guide takes a step-by-step approach to: • Identify potential earthquake hazards; • Prepare and conduct earthquake drills; • Plan for immediate response and care requirements; • Develop alternative plans for communication with emergency service personnel; and • Plan for the aftermath of a damaging earthquake and the long-term shelter and care requirements. Also available: "Critical Time; Earthquake Response Planning & Schools," a 14 minute videotape produced for FEMA by the Missouri Emergency Management Agency, intended to complement the Guidebook for Developing a School Earthquake Safety Program.	Distribution of publications is limited to one free copy per school while supplies last. Send single copy requests on school letterhead to FEMA. Videos are available for loan: Broadcast quality on 3/4" tape of standard 1/2" VHS.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Guidelines for School Earthquake Safety Planning Southern California Earthquake Preparedness Project 1110 E. Green St., Suite 300 Pasadena, CA 91106	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, 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 700 State Dr. Los Angeles, CA 90037 (213) 744-2008	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 reference library providing school disaster planners access to state-of-the-art resources; "Let's Make the Earth Shake" - a specially designed program for children in grades 3-6; "It's Our Fault" - a 45 minute slide presentation ideal for junior and senior high school assemblies, parent and teacher meetings, neighborhood and civic presentations, and office training sessions. 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, Spanish, French, Portugese, or Japanese, on either 3/4" U-matic, VHS, or Beta. For Japanese version contact: Dr. T. Ukai, Senri Critical Care Medical Center, 1-1 Tsukunodai, Suite 565, Osaka.

* Copies available for viewing at NCEER

3.2 Supplemental Informational Material (Continued)

Name/Address	Grade Level	Contents	Cost
"Officer Ollie's Earthquake Show" Emergency Management Division City of Irvine, California P.O. Box 19575 Irvine, CA 92713 (714) 724-7149	Pre-school, elementary grades	This is a 5 minute VHS video for children containing earthquake safety tips using puppets of Irvine Police Officer, child and raccoon. Also available: Zoo Friends Earthquake Safety Tips, a 12 page picture booklet of earthquake tips designed to be read by an adult to a pre-reader.	$7.50 for videotape $3.50 for picture booklet
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
"Overview of Loma Prieta Earthquake of October 1989" Earthquake Engineering Research Institute 6431 Fairmount Avenue, Suite 7 El Cerrito, CA 94530-3624 Phone: (415) 525-3668 FAX: (415) 525-1815	Highschool - adults	This 10 minute videotape is an edited version of the 57 minute Loma Prieta videotape also available from EERI. Designed for classroom use and non-technical audiences, the tape uses live footage to explain the earthquake and the range of impacts. Excellent visual aid for earthquake preparedness education. VHS format, color. Also available: • "Loma Prieta Earthquake of October 1989" - a 57-minute videotape featuring presentations by EERI and NAS reconnaissance team members on seismology, geotechnical issues, lifelines, building performance, and emergency response. Original slides and footage. Discussions of lessons for design and practice. VHS format, color. International tape conversion (PAL) available for $55 (members $50). • "Armenia Earthquake of December 1988" - a 60-minute videotape of the EERI briefing on the devastating Soviet Earthquake. Ten members of the U.S. Investigation Team present slides and live footage. The presentations address seismology, geotechnical issues, lifelines, structural performance, search and rescue, emergency response, industrial building performance, and policy issues. Produced by EERI with funding provided by the National Science Foundation. VHS format, color. International tape conversion (PAL) available for $50 (members $45).	$15 - Request an Audio Visual and Publications Catalog and use order form at the back. $45 (members $40) $40 (members $35) All orders must be prepaid in U.S. dollars drawn on a U.S. bank, or charged to VISA or MasterCard. Make checks payable to EERI. Within the United States: Prices for all videotapes include first-class postage. California residents add 7% sales tax. Allow 4 to 6 weeks delivery time. Outside the United States: For orders of videotapes add $6 for air postage. Videotapes are not shipped by surface mail.

* Copies available for viewing at NCEER

3.2 Supplemental Informational Material (Continued)

Name/Address	Grade Level	Contents	Cost
Pre-School Earthquake Preparedness Guidebook* Southern California Earthquake Preparedness Project 1110 E. Green St., Suite 300 Pasadena, CA 91106 (818) 795-9055	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 from a damaging earthquake, developing self-sufficiency in responding to a damaging earthquake, providing care and safety to staff and children under the center's care, 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," activities to help explain earthquakes to small children, sample emergency card, and sample form for authorization for treatment of a minor.	$20.00
Quake, Rattle and Roll* by Ruth Deery Scholar Dollar Press 3148 Laurel Road Longview, WA 98632 (206) 423-4658	3 - 7	This 25 page book contains classroom activities for earthquake preparedness. Safety searches, dramatizations, simulations, picture study and consideration of community resources are followed by a brief exploration of mythological and scientific explanations of earthquakes. Activities also illustrate tsunamis, landslides, and liquefaction. Includes a seismic map of Washington state, a current risk map of the area affected by the New Madrid fault, and an overall risk map of the United States.	$5.00 ppd. (1-9 copies) $4.50 ppd. (10-99 copies) $4.00 ppd. (100-up) Washington residents add 7.6% sales tax.
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 contain activities for younger primary level children.	Single copies free.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
"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; audiotapes, certificates and scripts can be copied. Can also obtain information about materials adapted for the visually impaired.
"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 or Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812		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. From FEMA, video available for loan: Broadcast quality on 3/4" tape or standard 1/2" VHS.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
School Preparedness Supplies and Student Emergency Comfort Kits* Emergency Management Division City of Irvine, California P.O. Box 19575 Irvine, CA 92713 (714) 724-7149	General	This is a 3-page article written by Dr. Frances E. Winslow, Emergency Management Coordinator, City of Irvine, California, based upon preparedness measures in that City. Also available: Emergency Communications: Irvine Alternatives, a two page article written by Dr. Frances E. Winslow, based upon emergency communications plans made in that City.	$2.50 each
Seismic Considerations: Elementary and Secondary Schools - FEMA 149 Marilyn MacCabe FEMA - Earthquake Ed. (625) Washington, DC 20472 (202) 646-2812	School staff, PTA	This 102-page (including appendices) guidebook was prepared by the Building Seismic Safety Council. The guide discusses the cost and benefits of applying seismic design in the construction of new school facilities. It also explains how school buildings are damaged by earthquakes, and how damage occurs to nonstructural components and building contents.	One free copy/school while supplies last. Send single copy requests on school letterhead.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Ward's Horizontal Seismograph Ward's Natural Science Establishment, Inc. 5100 West Henrietta Rd. P.O. Box 92912 Rochester, NY 14692-9012 Toll free: (800) 962-2660	Working seismograph for classroom use.	This consists of a 40" x 22" seismometer base with an adjustable weighted boom and coil/magnet arrangement that transmits a seismic wave signal through a pre-amp into a power amplifier and strip chart recorder. The power amplifier (120 VAC, 60Hz, 44W) features separate offset and gain controls, along with 50 feet of connecting cable. The recorder (120VAC, 60 Hz, 6W) has a detachable power cord. The recorder maintains a constant chart speed of 12 inches per hour, with automatic time markings every five minutes. The Seismograph also features a damping fluid reservoir, damping fin and 8 oz. bottle of damping fluid. The damping fluid ensures that the pendulum action of the boom remains steady until seismic activity occurs. After an activity occurs, the damping fluid reduces the oscillation and returns the boom to its neutral position. Wards includes a 30-day supply of 3" printed grid chart paper and a package of 5 disposable pen cartridges, along with all mounting and assembly hardware. To completely explain how to set up the seismograph and start it running, a clearly written User's Manual with step-by-step instructions and student activities is included. Also included is a 36-page, full-color reference book Earthquakes. As an added benefit, you can register your seismograph in the Ward's Seismograph Network. You'll receive special mailings several times each year updating lists of fellow Ward's Seismograph users. That way, you and your class can communicate directly with other seismograph stations to compare data and triangulate results (13Y4100).	Introductory price: $1,795.00.
"While There's Still Time" UCLA Extension P.O. Box 24901 Department K Los Angeles, CA 90024-0901	Is intended for adult and mature teen audiences. The subject matter is not suitable for viewing by younger children.	"While There's Still Time," a videotape, is designed to promote earthquake preparedness in schools in California and other earthquake-prone areas. This videotape is copyrighted, 1990, by the Regents of the University of California and cannot be duplicated without the express written consent of the Regents of the University of California. A planning guide focuses on creative solutions to common problems. Also available: "Before It's Too Late," a 17-minute videotape to help promote school earthquake safety and facilitate disaster planning at your site. A comprehensive guide provides content, discussion questions, resources, and worksheets to facilitate planning.	Copies of: "While There's Still Time" (HA 006) - $50/copy. "Before It's Too Late" (HA 003) - $50/copy. Make checks payable to: The Regents of the University of California. California residents add local sales tax.

* Copies available for viewing at NCEER

Name/Address	Grade Level	Contents	Cost
Windows on Earth Science Earth Science Optical Data Corporation 30 Technology Drive Box 4919 Warren, NJ 07060	The Windows on Earth Science is for elementary and middle school. Earth Science is for Junior Highschool to College.	This is a laser videodisc program which provides visual data with instantaneous retrieval of information. Includes slides, films, diagrams and maps. Topics include (but are not limited to) earthquakes, plate tectonics, and volcanoes. It can accompany any earth science curriculum. "Windows" program does not have a software component. Earth Science can be used with or without a computer. In the learning station mode, would use either Apple Macintosh or 2 GS.	Would need to have a videodisc player. The LDV 2200 model can be purchased for $845. "Windows" program is $595 and "Earth Science" program is $895.

* Copies available for viewing at NCEER

3.3 Magazines for Children

Subscription Address	Subscription Cost	Reprint Policy *	Recent Articles Related to Earthquakes, Volcanoes, Tsunami **
BOYS' LIFE Subscription Service 1325 West Walnut Hill Lane P.O. Box 152079 Irving, TX 75015-2079	A one-year subscription to BOYS' LIFE costs $15.60; add $7.20 postage for subscriptions sent outside USA. For Boy Scout members, one-year subscription is $7.80.	The reprint program has been discontinued, but readers may still purchase single copies of BOYS' LIFE within the last 12 months at $1.75 per copy.	"Earthquake! Hurricane!" by S.C. Lin, March, 1990. "Big Waves in the Harbors" by D.M. Souza, July, 1988. "Climbing the Killer Volcano" by S. Stuckey, June, 1988. "Volcanoes of Science and Legend" by S. Curtis, June, 1987. "Earthquake" by C. Mercer, October, 1986.
CHICKADEE P.O. Box 11314 Des Moines, IA 50340	A one-year subscription to CHICKADEE (10 issues) costs $14.95. Two years costs $24.95.	Back issues are $4.00 per issue, and are subject to availability.	"Volcano Visit" by C. Wakeman Evans, May, 1988. "Volcanoes, Did you know that...," May, 1988.

* Copies of articles can also be obtained through Interlibrary Loan. If you are affiliated with a school, contact the school librarian. If you are not associated with a school, go to the reference desk at your public library and request the article. Allow at least 2 weeks to obtain an article through Interlibrary Loan.

** This is not intended to be a complete list, just a sampling of articles.

3.3 Magazines for Children (Continued)

Subscription Address	Subscription Cost	Reprint Policy *	Recent Articles Related to Earthquakes, Volcanoes, Tsunami **
COBBLESTONE 30 Grove Street Peterborough, NH 03458	A one-year subscription to COBBLESTONE (12 issues) costs $22.95; $8.00 additional outside U.S.; no APO or Foreign Air Mail.	Back issues are available upon request at $3.95 per issue, plus 10% for shipping and handling.	"Nature's Violent Side" by C. Blohm, April, 1986. "Prepare for Disaster" by I. Abrams, April, 1986. "The New Madrid Earthquake: 1811" by P. and C. Roop, April, 1986. "The San Francisco Earthquake and Fire" by P. and C. Roop, April, 1986. "Charles Richter: 'Earthquake Man' " biography by C. Plude, April, 1986. "The Richter Scale" by C. Plude, April, 1986. "Tsunamis: When the Ocean Roars" by P. Barnes-Svarney, April, 1986. "Mount St. Helens: An American Volcano," May, 1981. "Mount St. Helens: A Geologist's Point of View" by J. Rasmussen, May, 1981. "Aftershock: Rescue and Rebuilding" by S. Macy, May, 1981.
FACES 30 Grove Street Peterborough, NH 03458	A one-year subscription to FACES (10 issues) costs $21.95; $6.00 additional outside U.S.	Back issues are available upon request at $3.95 per issue, plus 10% for shipping and handling.	"The Island that blew up" by Margaret Cooper, January, 1986.

* Copies of articles can also be obtained through Interlibrary Loan. If you are affiliated with a school, contact the school librarian. If you are not associated with a school, go to the reference desk at your public library and request the article. Allow at least 2 weeks to obtain an article through Interlibrary Loan.

** This is not intended to be a complete list, just a sampling of articles.

Subscription Address	Subscription Cost	Reprint Policy *	Recent Articles Related to Earthquakes, Volcanoes, Tsunami **
HIGHLIGHTS FOR CHILDREN Customer Service Dept. 2300 West Fifth Avenue P.O. Box 269 Columbus, OH 43216-0269	A one-year subscription (11 issues) costs $19.95.	A copy of a single issue of HIGHLIGHTS costs $2.95. Copies of back issues can be obtained by writing the Customer Service Department.	"The News from Neptune" by John Mood, June 1990. "What Happened to the Dinosaurs?" by Jack Myers, September 1990. "Surtsey is Born" by J. Kabourek, May 1989. "The Changing Look of Mount St. Helens" by L. Peters, May 1986. "Mount St. Helens," December (Resource), 1981. "Earthquake Prediction," March 1980. "A Journey to the Center of the Earth," May 1971. "Our Quaking Earth," March 1971. "What's New in the World?" February (Resource) 1971. "Volcanoes: Windows in the Earth," May 1968.
NATIONAL GEOGRAPHIC WORLD Post Office Box 2330 Washington, DC 20077-9955	A one-year subscription (12 monthly issue) for U.S., $12.95; for Canada $17.95 (U.S. funds); for all other countries; $20.75.	Single copy cost: $1.60, United States; $2.25 in U.S. funds, Canada; for all other countries, $2.60.	"Earthquake!" March, 1990.

* Copies of articles can also be obtained through Interlibrary Loan. If you are affiliated with a school, contact the school librarian. If you are not associated with a school, go to the reference desk at your public library and request the article. Allow at least 2 weeks to obtain an article through Interlibrary Loan.

** This is not intended to be a complete list, just a sampling of articles.

3.3 Magazines for Children (Continued)

Subscription Address	Subscription Cost	Reprint Policy *	Recent Articles Related to Earthquakes, Volcanoes, Tsunami **
OWL P.O. Box 11314 Des Moines, IA 50340	A one-year subscription (10 issues) costs $14.95. Two years costs $24.95.	Back issues are $4.00 per issue, and are subject to availability.	"Why Are There Volcanoes on Earth?" April, 1981.
RANGER RICK National Wildlife Federation 1400 Sixteenth Street, NW Washington, DC 20077-9964	One year membership dues are $15.00; includes 12 issues of RANGER RICK. An additional fee of $8.00 is required outside the U.S.	Ranger Rick is reproduced on "Talking Books" by the Library of Congress and distributed free by regional libraries.	"Great Shakes: It's Doctor Quake!" by C. Wakeman Evans, May, 1990. "Meet a Real Quake Watcher" by C. Duckworth, May, 1990. "It Shakes. It Roars. It Throws Melted Rock into the Sky: It's a VOLCANO!" by C. Wakeman Evans, June 1988.
SCIENCE WORLD Scholastic, Inc. 2931 East McCarty Street P.O. Box 3710 Jefferson City, MO 65102-9957	Eighteen issues (bi-weekly during the school year) cost $5.95 for 10 or more subscriptions to the same address; 1-9 subscriptions each $9.50 per student; $20 teachers edition.	Back issues can be obtained by writing: Customer Service Scholastic, Inc. 2931 East McCarty Street Jefferson, MO 65101 Back issues cost $2.50 for teachers editions and $1.25 for student editions; subject to availability.	"Deep Heat" by J. Fishman, January 25, 1991. "Quakes from Man-Made Lakes" by H. Brennan and B. Goodman, April, 1989. "Tectonic Terror" by K. Heller and J. Brune, April, 1989. "Armenia: Scientists Survey the Damage" by H. Brennan, March, 1989. "Quake Up, Sleepyhead" by J. Brune, March, 1989.

* Copies of articles can also be obtained through Interlibrary Loan. If you are affiliated with a school, contact the school librarian. If you are not associated with a school, go to the reference desk at your public library and request the article. Allow at least 2 weeks to obtain an article through Interlibrary Loan.

** This is not intended to be a complete list, just a sampling of articles.

Subscription Address	Subscription Cost	Reprint Policy *	Recent Articles Related to Earthquakes, Volcanoes, Tsunami **
SUPERSCIENCE BLUE Scholastic, Inc. P.O. Box 3710 2931 East McCarty Street Jefferson City, MO 65102-9957	Eight issues during the school year, $5.75/year 10 or more subscriptions to the same address. 1-9 subscriptions, each $11.50. $20.00 Teachers' Edition, per school year. Each Teachers' Edition subscription includes a copy of the student edition.	Single copies: $1.25 student; $2.50 Teachers' Edition. Teachers can write for permission to reproduce selected articles for use in workshops or with their class.	"Earthquake Power" in October, 1990 issue. Includes articles on the following: "Science and Society: Earthquake!," "Shaking Predictions," "Bracing for the Big One," and "SuperGraph: Predict a Quake."

* Copies of articles can also be obtained through Interlibrary Loan. If you are affiliated with a school, contact the school librarian. If you are not associated with a school, go to the reference desk at your public library and request the article. Allow at least 2 weeks to obtain an article through Interlibrary Loan.

** This is not intended to be a complete list, just a sampling of articles.

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 14692-9012 (800) 962-2660 (716) 359-2502	9-12	Apple II+/IIe 48K Disk Minimum DOS required: 3.3	Explores concepts behind continental drift. Program's 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 (800) 848-9500 (201) 592-2540	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.

* 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.

Program Name	Available From: *	Grades	Computer	Program Information
"Earth: The Inside Story"	Educational Activities, Inc. Dept. 88 P.O. Box 392 Freeport, NY 11520 (800) 645-3739 (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.

* 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.

Program Name	Available From: *	Grades	Computer	Program Information
"Earthquake Simulator"	Focus Media 839 Stewart Ave. P.O. Box 865 Garden City, NY 11530 (800) 645-8989 (516) 794-8900	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. Students observe anticlines and synclines, faults, and future movement of the San Andreas fault. 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.
	Also available from: Cambridge Development Laboratory, Inc.	7-12	Apple	

* 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.

3.4 Selected Software (Continued)

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 14692-9012 (800) 962-2660 (716) 359-2502	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. 214 Third Ave. Waltham, MA 02154 (800) 637-0047 (617) 890-4640	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.

* 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.

Program Name	Available From: *	Grades	Computer	Program Information
"Earthquakes"	Science Kit and Boreal Laboratories 777 East Park Drive Tonawanda, NY 14150-6782 (800) 828-7777 (716) 874-6020 Also available from: Cambridge Development Laboratory, Inc.		Apple II+ 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 (800) 848-9500 (201) 592-2540	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 14692-9012 (800) 962-2660 (716) 359-2502	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.

* 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.

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 14692-9012 (800) 962-2660 (716) 359-2502 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.

* 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.

Program Name	Available From: *	Grades	Computer	Program Information
"Earth Science"	Nasco West, Inc. P.O. Box 3837 Modesto, California 95352 (800) 558-9595 (209) 529-6957	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.
"Geology" Picture File	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692-9012 (800) 962-2660 (716) 359-2502 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.

* 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.

3.4 Selected Software (Continued)

Program Name	Available From: *	Grades	Computer	Program Information
"Geology in Action: Experiments and Puzzles"	Cambridge Development Laboratory, Inc. 214 Third Ave. Waltham, MA 02154 (800) 637-0047 (617) 890-4640	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.
"Macmillan Earth Science Scienceprobe"	Cambridge Development Laboratory, Inc. 214 Third Ave. Waltham, MA 02154 (800) 637-0047 (617) 890-4640	6-9	Apple	This package lets students apply science concepts to solve 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.

* 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.

Program Name	Available From: *	Grades	Computer	Program Information
"Plate Tectonics" - part of Earth Science series.	Prentice-Hall Sylvan Ave. Englewood Cliffs, NJ 07632 (800) 848-9500 (201) 592-2540	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.
"The Restless Earth"	Cambridge Development Laboratory, Inc. 214 Third Ave. Walham, MA 02154 (800) 637-0047 (617) 890-4640	9-12	Apple	Provides highly graphic tutorial with many student options for review and remediation.
Science ToolKit Module 2: "Earthquake Lab"	Broderbund Software, Inc. 17 Paul Drive San Rafael, CA 94903-2101 (415) 492-3200 (415) 479-1700 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.

* 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.

3.4 Selected Software (Continued)

Program Name	Available From: *	Grades	Computer	Program Information
"Volcanoes"	Ward's Natural Science Establishment, Inc. 5100 West Henrietta Rd. P.O. Box 92912 Rochester, NY 14692-9012 (800) 962-2660 (716) 359-2502	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 (800) 848-9500 (201) 592-2540	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.
"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

Organization:	Source For:
American National Red Cross Disaster Services 18th and E Street N.W. Washington, D.C. 20006	Variety of disaster materials
Arkansas Office of Emergency Services P.O. Box 758 Conway, AR 72032 (501) 329-5601	"Ready Teddy" tape, "Rumble, Tumble Ready" buttons, (K-3) Braille translations of FEMA Documents
Bay Area Regional Earthquake Preparedness Project (BAREPP) MetroCenter 101 8th Street, Suite 152 Oakland, CA 94607 (415) 540-2713	Earthquake Planning and Preparedness Activities for Childcare Providers
California Earthquake Education Project Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 327-6017	CALEEP materials including "Earthquake Hazards Around the Home" coloring book
Center for Earthquake Research and Information Memphis State University Memphis, TN 38152 (901) 687-2007	Reprints of articles related to seismographs, the Earth- quake Education Project and New Madrid Seismic Zone
Center for Earthquake Studies Southeast Missouri State University One University Plaza Cape Giradeau, MO 63701-4799	New Madrid Earthquake Fuller (reprint) "How to Build and Use Your Earthquake Liquefaction Model" The Effects of Earthquakes in the Central United States
Earthquake Education Center Charleston Southern University 9200 University Blvd., P.O. Box 10087 Charleston, SC 29411 (803) 797-4208 or (803) 797-4207	"Emergency 'Q' Tips" 1 & 2 Information about earthquakes in South Carolina

Emergency Management Division City of Irvine One Civic Center Plaza Irvine, CA 92713 (714) 724-7149	Officer Ollie's Earthquake Show - videotape; Zoo Friends Earthquake Safety Tips; videotapes of school preparedness workshops
Emergency Preparedness Canada Public Information 2nd floor, Jackson Building 122 Bank Street Ottawa, Ontario Canada K1A 0W6 (613) 991-7077	Earthquakes in Canada videotape; also emergency preparedness booklets in French & English
Environmental Volunteers 2448 Watson Court Palo Alto, CA 94303 (415) 424-8035	Hands-On Earthquake Learning Package with hands-on teaching materials including motor driven shaking table
Federal Emergency Management Agency Earthquake and Natural Hazards Division SL-NT 500 C Street, S.W. Washington, D.C. 20472 (202) 646-2800	Guidebook for Developing a School Earthquake Safety Program (FEMA 88), (FEMA 88A) Earthquakes: A Teachers Package for K-6 (FEMA 159) Big Bird Get Ready for Earthquakes (CTW)
Geological Survey of Canada 601 Booth Street Ottawa, Ontario Canada K1A OE8 (613) 995-5745	References on Earthquakes; Tectonics, Maps and Earthquake occurrences
Lafferty & Associates, Inc. 4529 Angeles Crest Hiway Suite 308, P.O. Box 1026 La Canada, CA 91011 (818) 952-5483	Preparedness handbook; videotapes: "Shake, Rattle, & Roll," "How to Survive a Major Earthquake"
Math/Science Nucleus 3710 Yale Way Fremont, CA 94538 (415) 490-MATH	"Plate Tectonic Cycle" curriculum (K-6)

Ministry of Education 620 Superior Street Victoria, B.C. Canada V8V 2M4 (604) 356-7821	Seismic Upgrading for School Buildings; School Earthquake Safety Guidebook
National Center for Earthquake Engineering Research State University of New York at Buffalo Red Jacket Quadrangle Buffalo, NY 14261 (716) 636-3391	Bibliography of Earthquake Education Materials Fact Sheets Earthquake Engineering Publications
National Research Council of Canada Institute for Research in Construction Building M-22, Montreal Road Ottawa, Ontario Canada K1A OR6 (613) 993-2607	Earthquake Building Codes; Guidelines for Building
Quake Safe 700 State Drive Los Angeles, CA 90037 (213) 744-2008	Newsletter, programs for children
Seismological Society of America 201 Plaza Professional Building El Cerrito, CA 94530 (415) 525-5474	"A Catalog of Earthquake Related Sounds" - tape with 21 entries
Southern California Earthquake Preparedness Project (SCEPP) P.O. Box 50310 Pasadena, CA 91115-3010 (818) 795-9055	Pre-School Earthquake Preparedness Guide
University of British Columbia Centre for Human Settlements 2206 East Mall Vancouver, B.C. Canada V6T 1W5 (604) 228-5254	Catalog of Emergency Preparedness and Earthquake Information

University of California at Los Angeles
(UCLA) Extension
10995 Le Conte Avenue
Suite 639
Los Angeles, CA 90024-2883
(213) 825-4191

Videotapes, certificate program and classes in school earthquake preparedness

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

References on earthquakes; catalogs, maps of earthquake occurrences.

NATIONAL CENTER FOR EARTHQUAKE ENGINEERING RESEARCH
LIST OF 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). This report is available only through NTIS (see address given above).

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).

NCEER-87-0008 "IDARC: Inelastic Damage Analysis of Reinforced Concrete Frame - Shear-Wall Structures," by Y.J. Park, A.M. Reinhorn and S.K. Kunnath, 7/20/87, (PB88-134325/AS).

NCEER-87-0009 "Liquefaction Potential for New York State: A Preliminary Report on Sites in Manhattan and Buffalo," by M. Budhu, V. Vijayakumar, R.F. Giese and L. Baumgras, 8/31/87, (PB88-163704/AS). This report is available only through NTIS (see address given above).

NCEER-87-0010 "Vertical and Torsional Vibration of Foundations in Inhomogeneous Media," by A.S. Veletsos and K.W. Dotson, 6/1/87, (PB88-134291/AS).

NCEER-87-0011 "Seismic Probabilistic Risk Assessment and Seismic Margins Studies for Nuclear Power Plants," by Howard H.M. Hwang, 6/15/87, (PB88-134267/AS).

NCEER-87-0012 "Parametric Studies of Frequency Response of Secondary Systems Under Ground-Acceleration Excitations," by Y. Yong and Y.K. Lin, 6/10/87, (PB88-134309/AS).

NCEER-87-0013 "Frequency Response of Secondary Systems Under Seismic Excitation," by J.A. HoLung, J. Cai and Y.K. Lin, 7/31/87, (PB88-134317/AS).

NCEER-87-0014 "Modelling Earthquake Ground Motions in Seismically Active Regions Using Parametric Time Series Methods," by G.W. Ellis and A.S. Cakmak, 8/25/87, (PB88-134283/AS).

NCEER-87-0015 "Detection and Assessment of Seismic Structural Damage," by E. DiPasquale and A.S. Cakmak, 8/25/87, (PB88-163712/AS).

NCEER-87-0016 "Pipeline Experiment at Parkfield, California," by J. Isenberg and E. Richardson, 9/15/87, (PB88-163720/AS). This report is available only through NTIS (see address given above).

NCEER-87-0017 "Digital Simulation of Seismic Ground Motion," by M. Shinozuka, G. Deodatis and T. Harada, 8/31/87, (PB88-155197/AS). This report is available only through NTIS (see address given above).

NCEER-87-0018 "Practical Considerations for Structural Control: System Uncertainty, System Time Delay and Truncation of Small Control Forces," J.N. Yang and A. Akbarpour, 8/10/87, (PB88-163738/AS).

NCEER-87-0019 "Modal Analysis of Nonclassically Damped Structural Systems Using Canonical Transformation," by J.N. Yang, S. Sarkani and F.X. Long, 9/27/87, (PB88-187851/AS).

NCEER-87-0020 "A Nonstationary Solution in Random Vibration Theory," by J.R. Red-Horse and P.D. Spanos, 11/3/87, (PB88-163746/AS).

NCEER-87-0021 "Horizontal Impedances for Radially Inhomogeneous Viscoelastic Soil Layers," by A.S. Veletsos and K.W. Dotson, 10/15/87, (PB88-150859/AS).

NCEER-87-0022 "Seismic Damage Assessment of Reinforced Concrete Members," by Y.S. Chung, C. Meyer and M. Shinozuka, 10/9/87, (PB88-150867/AS). This report is available only through NTIS (see address given above).

NCEER-87-0023 "Active Structural Control in Civil Engineering," by T.T. Soong, 11/11/87, (PB88-187778/AS).

NCEER-87-0024 Vertical and Torsional Impedances for Radially Inhomogeneous Viscoelastic Soil Layers," by K.W. Dotson and A.S. Veletsos, 12/87, (PB88-187786/AS).

NCEER-87-0025 "Proceedings from the Symposium on Seismic Hazards, Ground Motions, Soil-Liquefaction and Engineering Practice in Eastern North America," October 20-22, 1987, edited by K.H. Jacob, 12/87, (PB88-188115/AS).

NCEER-87-0026 "Report on the Whittier-Narrows, California, Earthquake of October 1, 1987," by J. Pantelic and A. Reinhorn, 11/87, (PB88-187752/AS). This report is available only through NTIS (see address given above).

NCEER-87-0027 "Design of a Modular Program for Transient Nonlinear Analysis of Large 3-D Building Structures," by S. Srivastav and J.F. Abel, 12/30/87, (PB88-187950/AS).

NCEER-87-0028 "Second-Year Program in Research, Education and Technology Transfer," 3/8/88, (PB88-219480/AS).

NCEER-88-0001 "Workshop on Seismic Computer Analysis and Design of Buildings With Interactive Graphics," by W. McGuire, J.F. Abel and C.H. Conley, 1/18/88, (PB88-187760/AS).

NCEER-88-0002 "Optimal Control of Nonlinear Flexible Structures," by J.N. Yang, F.X. Long and D. Wong, 1/22/88, (PB88-213772/AS).

NCEER-88-0003 "Substructuring Techniques in the Time Domain for Primary-Secondary Structural Systems," by G.D. Manolis and G. Juhn, 2/10/88, (PB88-213780/AS).

NCEER-88-0004 "Iterative Seismic Analysis of Primary-Secondary Systems," by A. Singhal, L.D. Lutes and P.D. Spanos, 2/23/88, (PB88-213798/AS).

NCEER-88-0005 "Stochastic Finite Element Expansion for Random Media," by P.D. Spanos and R. Ghanem, 3/14/88, (PB88-213806/AS).

NCEER-88-0006 "Combining Structural Optimization and Structural Control," by F.Y. Cheng and C.P. Pantelides, 1/10/88, (PB88-213814/AS).

NCEER-88-0007 "Seismic Performance Assessment of Code-Designed Structures," by H.H-M. Hwang, J-W. Jaw and H-J. Shau, 3/20/88, (PB88-219423/AS).

NCEER-88-0008 "Reliability Analysis of Code-Designed Structures Under Natural Hazards," by H.H-M. Hwang, H. Ushiba and M. Shinozuka, 2/29/88, (PB88-229471/AS).

NCEER-88-0009 "Seismic Fragility Analysis of Shear Wall Structures," by J-W Jaw and H.H-M. Hwang, 4/30/88, (PB89-102867/AS).

NCEER-88-0010 "Base Isolation of a Multi-Story Building Under a Harmonic Ground Motion - A Comparison of Performances of Various Systems," by F-G Fan, G. Ahmadi and I.G. Tadjbakhsh, 5/18/88, (PB89-122238/AS).

NCEER-88-0011 "Seismic Floor Response Spectra for a Combined System by Green's Functions," by F.M. Lavelle, L.A. Bergman and P.D. Spanos, 5/1/88, (PB89-102875/AS).

NCEER-88-0012 "A New Solution Technique for Randomly Excited Hysteretic Structures," by G.Q. Cai and Y.K. Lin, 5/16/88, (PB89-102883/AS).

NCEER-88-0013 "A Study of Radiation Damping and Soil-Structure Interaction Effects in the Centrifuge," by K. Weissman, supervised by J.H. Prevost, 5/24/88, (PB89-144703/AS).

NCEER-88-0014 "Parameter Identification and Implementation of a Kinematic Plasticity Model for Frictional Soils," by J.H. Prevost and D.V. Griffiths, to be published.

NCEER-88-0015 "Two- and Three- Dimensional Dynamic Finite Element Analyses of the Long Valley Dam," by D.V. Griffiths and J.H. Prevost, 6/17/88, (PB89-144711/AS).

NCEER-88-0016 "Damage Assessment of Reinforced Concrete Structures in Eastern United States," by A.M. Reinhorn, M.J. Seidel, S.K. Kunnath and Y.J. Park, 6/15/88, (PB89-122220/AS).

NCEER-88-0017 "Dynamic Compliance of Vertically Loaded Strip Foundations in Multilayered Viscoelastic Soils," by S. Ahmad and A.S.M. Israil, 6/17/88, (PB89-102891/AS).

NCEER-88-0018 "An Experimental Study of Seismic Structural Response With Added Viscoelastic Dampers," by R.C. Lin, Z. Liang, T.T. Soong and R.H. Zhang, 6/30/88, (PB89-122212/AS).

NCEER-88-0019 "Experimental Investigation of Primary - Secondary System Interaction," by G.D. Manolis, G. Juhn and A.M. Reinhorn, 5/27/88, (PB89-122204/AS).

NCEER-88-0020 "A Response Spectrum Approach For Analysis of Nonclassically Damped Structures," by J.N. Yang, S. Sarkani and F.X. Long, 4/22/88, (PB89-102909/AS).

NCEER-88-0021 "Seismic Interaction of Structures and Soils: Stochastic Approach," by A.S. Veletsos and A.M. Prasad, 7/21/88, (PB89-122196/AS).

NCEER-88-0022 "Identification of the Serviceability Limit State and Detection of Seismic Structural Damage," by E. DiPasquale and A.S. Cakmak, 6/15/88, (PB89-122188/AS).

NCEER-88-0023 "Multi-Hazard Risk Analysis: Case of a Simple Offshore Structure," by B.K. Bhartia and E.H. Vanmarcke, 7/21/88, (PB89-145213/AS).

NCEER-88-0024 "Automated Seismic Design of Reinforced Concrete Buildings," by Y.S. Chung, C. Meyer and M. Shinozuka, 7/5/88, (PB89-122170/AS).

NCEER-88-0025 "Experimental Study of Active Control of MDOF Structures Under Seismic Excitations," by L.L. Chung, R.C. Lin, T.T. Soong and A.M. Reinhorn, 7/10/88, (PB89-122600/AS).

NCEER-88-0026 "Earthquake Simulation Tests of a Low-Rise Metal Structure," by J.S. Hwang, K.C. Chang, G.C. Lee and R.L. Ketter, 8/1/88, (PB89-102917/AS).

NCEER-88-0027 "Systems Study of Urban Response and Reconstruction Due to Catastrophic Earthquakes," by F. Kozin and H.K. Zhou, 9/22/88, (PB90-162348/AS).

NCEER-88-0028 "Seismic Fragility Analysis of Plane Frame Structures," by H.H-M. Hwang and Y.K. Low, 7/31/88, (PB89-131445/AS).

NCEER-88-0029 "Response Analysis of Stochastic Structures," by A. Kardara, C. Bucher and M. Shinozuka, 9/22/88, (PB89-174429/AS).

NCEER-88-0030 "Nonnormal Accelerations Due to Yielding in a Primary Structure," by D.C.K. Chen and L.D. Lutes, 9/19/88, (PB89-131437/AS).

NCEER-88-0031 "Design Approaches for Soil-Structure Interaction," by A.S. Veletsos, A.M. Prasad and Y. Tang, 12/30/88, (PB89-174437/AS).

NCEER-88-0032 "A Re-evaluation of Design Spectra for Seismic Damage Control," by C.J. Turkstra and A.G. Tallin, 11/7/88, (PB89-145221/AS).

NCEER-88-0033 "The Behavior and Design of Noncontact Lap Splices Subjected to Repeated Inelastic Tensile Loading," by V.E. Sagan, P. Gergely and R.N. White, 12/8/88, (PB89-163737/AS).

NCEER-88-0034 "Seismic Response of Pile Foundations," by S.M. Mamoon, P.K. Banerjee and S. Ahmad, 11/1/88, (PB89-145239/AS).

NCEER-88-0035 "Modeling of R/C Building Structures With Flexible Floor Diaphragms (IDARC2)," by A.M. Reinhorn, S.K. Kunnath and N. Panahshahi, 9/7/88, (PB89-207153/AS).

NCEER-88-0036 "Solution of the Dam-Reservoir Interaction Problem Using a Combination of FEM, BEM with Particular Integrals, Modal Analysis, and Substructuring," by C-S. Tsai, G.C. Lee and R.L. Ketter, 12/31/88, (PB89-207146/AS).

NCEER-88-0037 "Optimal Placement of Actuators for Structural Control," by F.Y. Cheng and C.P. Pantelides, 8/15/88, (PB89-162846/AS).

NCEER-88-0038 "Teflon Bearings in Aseismic Base Isolation: Experimental Studies and Mathematical Modeling," by A. Mokha, M.C. Constantinou and A.M. Reinhorn, 12/5/88, (PB89-218457/AS).

NCEER-88-0039 "Seismic Behavior of Flat Slab High-Rise Buildings in the New York City Area," by P. Weidlinger and M. Ettouney, 10/15/88, (PB90-145681/AS).

NCEER-88-0040 "Evaluation of the Earthquake Resistance of Existing Buildings in New York City," by P. Weidlinger and M. Ettouney, 10/15/88, to be published.

NCEER-88-0041 "Small-Scale Modeling Techniques for Reinforced Concrete Structures Subjected to Seismic Loads," by W. Kim, A. El-Attar and R.N. White, 11/22/88, (PB89-189625/AS).

NCEER-88-0042 "Modeling Strong Ground Motion from Multiple Event Earthquakes," by G.W. Ellis and A.S. Cakmak, 10/15/88, (PB89-174445/AS).

NCEER-88-0043 "Nonstationary Models of Seismic Ground Acceleration," by M. Grigoriu, S.E. Ruiz and E. Rosenblueth, 7/15/88, (PB89-189617/AS).

NCEER-88-0044 "SARCF User's Guide: Seismic Analysis of Reinforced Concrete Frames," by Y.S. Chung, C. Meyer and M. Shinozuka, 11/9/88, (PB89-174452/AS).

NCEER-88-0045 "First Expert Panel Meeting on Disaster Research and Planning," edited by J. Pantelic and J. Stoyle, 9/15/88, (PB89-174460/AS).

NCEER-88-0046 "Preliminary Studies of the Effect of Degrading Infill Walls on the Nonlinear Seismic Response of Steel Frames," by C.Z. Chrysostomou, P. Gergely and J.F. Abel, 12/19/88, (PB89-208383/AS).

NCEER-88-0047 "Reinforced Concrete Frame Component Testing Facility - Design, Construction, Instrumentation and Operation," by S.P. Pessiki, C. Conley, T. Bond, P. Gergely and R.N. White, 12/16/88, (PB89-174478/AS).

NCEER-89-0001 "Effects of Protective Cushion and Soil Compliancy on the Response of Equipment Within a Seismically Excited Building," by J.A. HoLung, 2/16/89, (PB89-207179/AS).

NCEER-89-0002 "Statistical Evaluation of Response Modification Factors for Reinforced Concrete Structures," by H.H-M. Hwang and J-W. Jaw, 2/17/89, (PB89-207187/AS).

NCEER-89-0003 "Hysteretic Columns Under Random Excitation," by G-Q. Cai and Y.K. Lin, 1/9/89, (PB89-196513/AS).

NCEER-89-0004 "Experimental Study of 'Elephant Foot Bulge' Instability of Thin-Walled Metal Tanks," by Z-H. Jia and R.L. Ketter, 2/22/89, (PB89-207195/AS).

NCEER-89-0005 "Experiment on Performance of Buried Pipelines Across San Andreas Fault," by J. Isenberg, E. Richardson and T.D. O'Rourke, 3/10/89, (PB89-218440/AS).

NCEER-89-0006 "A Knowledge-Based Approach to Structural Design of Earthquake-Resistant Buildings," by M. Subramani, P. Gergely, C.H. Conley, J.F. Abel and A.H. Zaghw, 1/15/89, (PB89-218465/AS).

NCEER-89-0007 "Liquefaction Hazards and Their Effects on Buried Pipelines," by T.D. O'Rourke and P.A. Lane, 2/1/89, (PB89-218481).

NCEER-89-0008 "Fundamentals of System Identification in Structural Dynamics," by H. Imai, C-B. Yun, O. Maruyama and M. Shinozuka, 1/26/89, (PB89-207211/AS).

NCEER-89-0009 "Effects of the 1985 Michoacan Earthquake on Water Systems and Other Buried Lifelines in Mexico," by A.G. Ayala and M.J. O'Rourke, 3/8/89, (PB89-207229/AS).

NCEER-89-R010 "NCEER Bibliography of Earthquake Education Materials," by K.E.K. Ross, Second Revision, 9/1/89, (PB90-125352/AS).

NCEER-89-0011 "Inelastic Three-Dimensional Response Analysis of Reinforced Concrete Building Structures (IDARC-3D), Part I - Modeling," by S.K. Kunnath and A.M. Reinhorn, 4/17/89, (PB90-114612/AS).

NCEER-89-0012 "Recommended Modifications to ATC-14," by C.D. Poland and J.O. Malley, 4/12/89, (PB90-108648/AS).

NCEER-89-0013 "Repair and Strengthening of Beam-to-Column Connections Subjected to Earthquake Loading," by M. Corazao and A.J. Durrani, 2/28/89, (PB90-109885/AS).

NCEER-89-0014 "Program EXKAL2 for Identification of Structural Dynamic Systems," by O. Maruyama, C-B. Yun, M. Hoshiya and M. Shinozuka, 5/19/89, (PB90-109877/AS).

NCEER-89-0015 "Response of Frames With Bolted Semi-Rigid Connections, Part I - Experimental Study and Analytical Predictions," by P.J. DiCorso, A.M. Reinhorn, J.R. Dickerson, J.B. Radziminski and W.L. Harper, 6/1/89, to be published.

NCEER-89-0016 "ARMA Monte Carlo Simulation in Probabilistic Structural Analysis," by P.D. Spanos and M.P. Mignolet, 7/10/89, (PB90-109893/AS).

NCEER-89-P017 "Preliminary Proceedings from the Conference on Disaster Preparedness - The Place of Earthquake Education in Our Schools," Edited by K.E.K. Ross, 6/23/89.

NCEER-89-0017 "Proceedings from the Conference on Disaster Preparedness - The Place of Earthquake Education in Our Schools," Edited by K.E.K. Ross, 12/31/89, (PB90-207895).

NCEER-89-0018 "Multidimensional Models of Hysteretic Material Behavior for Vibration Analysis of Shape Memory Energy Absorbing Devices, by E.J. Graesser and F.A. Cozzarelli, 6/7/89, (PB90-164146/AS).

NCEER-89-0019 "Nonlinear Dynamic Analysis of Three-Dimensional Base Isolated Structures (3D-BASIS)," by S. Nagarajaiah, A.M. Reinhorn and M.C. Constantinou, 8/3/89, (PB90-161936/AS).

NCEER-89-0020 "Structural Control Considering Time-Rate of Control Forces and Control Rate Constraints," by F.Y. Cheng and C.P. Pantelides, 8/3/89, (PB90-120445/AS).

NCEER-89-0021 "Subsurface Conditions of Memphis and Shelby County," by K.W. Ng, T-S. Chang and H-H.M. Hwang, 7/26/89, (PB90-120437/AS).

NCEER-89-0022 "Seismic Wave Propagation Effects on Straight Jointed Buried Pipelines," by K. Elhmadi and M.J. O'Rourke, 8/24/89, (PB90-162322/AS).

NCEER-89-0023 "Workshop on Serviceability Analysis of Water Delivery Systems," edited by M. Grigoriu, 3/6/89, (PB90-127424/AS).

NCEER-89-0024 "Shaking Table Study of a 1/5 Scale Steel Frame Composed of Tapered Members," by K.C. Chang, J.S. Hwang and G.C. Lee, 9/18/89, (PB90-160169/AS).

NCEER-89-0025 "DYNA1D: A Computer Program for Nonlinear Seismic Site Response Analysis - Technical Documentation," by Jean H. Prevost, 9/14/89, (PB90-161944/AS).

NCEER-89-0026 "1:4 Scale Model Studies of Active Tendon Systems and Active Mass Dampers for Aseismic Protection," by A.M. Reinhorn, T.T. Soong, R.C. Lin, Y.P. Yang, Y. Fukao, H. Abe and M. Nakai, 9/15/89, (PB90-173246/AS).

NCEER-89-0027 "Scattering of Waves by Inclusions in a Nonhomogeneous Elastic Half Space Solved by Boundary Element Methods," by P.K. Hadley, A. Askar and A.S. Cakmak, 6/15/89, (PB90-145699/AS).

NCEER-89-0028 "Statistical Evaluation of Deflection Amplification Factors for Reinforced Concrete Structures," by H.H.M. Hwang, J-W. Jaw and A.L. Ch'ng, 8/31/89, (PB90-164633/AS).

NCEER-89-0029 "Bedrock Accelerations in Memphis Area Due to Large New Madrid Earthquakes," by H.H.M. Hwang, C.H.S. Chen and G. Yu, 11/7/89, (PB90-162330/AS).

NCEER-89-0030 "Seismic Behavior and Response Sensitivity of Secondary Structural Systems," by Y.Q. Chen and T.T. Soong, 10/23/89, (PB90-164658/AS).

NCEER-89-0031 "Random Vibration and Reliability Analysis of Primary-Secondary Structural Systems," by Y. Ibrahim, M. Grigoriu and T.T. Soong, 11/10/89, (PB90-161951/AS).

NCEER-89-0032 "Proceedings from the Second U.S. - Japan Workshop on Liquefaction, Large Ground Deformation and Their Effects on Lifelines, September 26-29, 1989," Edited by T.D. O'Rourke and M. Hamada, 12/1/89, (PB90-209388/AS).

NCEER-89-0033 "Deterministic Model for Seismic Damage Evaluation of Reinforced Concrete Structures," by J.M. Bracci, A.M. Reinhorn, J.B. Mander and S.K. Kunnath, 9/27/89.

NCEER-89-0034 "On the Relation Between Local and Global Damage Indices," by E. DiPasquale and A.S. Cakmak, 8/15/89, (PB90-173865).

NCEER-89-0035 "Cyclic Undrained Behavior of Nonplastic and Low Plasticity Silts," by A.J. Walker and H.E. Stewart, 7/26/89, (PB90-183518/AS).

NCEER-89-0036 "Liquefaction Potential of Surficial Deposits in the City of Buffalo, New York," by M. Budhu, R. Giese and L. Baumgrass, 1/17/89, (PB90-208455/AS).

NCEER-89-0037 "A Determinstic Assessment of Effects of Ground Motion Incoherence," by A.S. Veletsos and Y. Tang, 7/15/89, (PB90-164294/AS).

NCEER-89-0038 "Workshop on Ground Motion Parameters for Seismic Hazard Mapping," July 17-18, 1989, edited by R.V. Whitman, 12/1/89, (PB90-173923/AS).

NCEER-89-0039 "Seismic Effects on Elevated Transit Lines of the New York City Transit Authority," by C.J. Costantino, C.A. Miller and E. Heymsfield, 12/26/89, (PB90-207887/AS).

NCEER-89-0040 "Centrifugal Modeling of Dynamic Soil-Structure Interaction," by K. Weissman, Supervised by J.H. Prevost, 5/10/89, (PB90-207879/AS).

NCEER-89-0041 "Linearized Identification of Buildings With Cores for Seismic Vulnerability Assessment," by I-K. Ho and A.E. Aktan, 11/1/89.

NCEER-90-0001 "Geotechnical and Lifeline Aspects of the October 17, 1989 Loma Prieta Earthquake in San Francisco," by T.D. O'Rourke, H.E. Stewart, F.T. Blackburn and T.S. Dickerman, 1/90, (PB90-208596/AS).

NCEER-90-0002 "Nonnormal Secondary Response Due to Yielding in a Primary Structure," by D.C.K. Chen and L.D. Lutes, 2/28/90.

NCEER-90-0003 "Earthquake Education Materials for Grades K-12," by K.E.K. Ross, 4/16/90.

NCEER-90-0004 "Catalog of Strong Motion Stations in Eastern North America," by R.W. Busby, 4/3/90.

NCEER-90-0005 "NCEER Strong-Motion Data Base: A User Manuel for the GeoBase Release (Version 1.0 for the Sun3)," by P. Friberg and K. Jacob, 3/31/90.

NCEER-90-0006 "Seismic Hazard Along a Crude Oil Pipeline in the Event of an 1811-1812 Type New Madrid Earthquake," by H.H.M. Hwang and C-H.S. Chen, 4/16/90.

NCEER-90-0007 "Site-Specific Response Spectra for Memphis Sheahan Pumping Station," by H.H.M. Hwang and C.S. Lee, 5/15/90.

NCEER-90-0008 "Pilot Study on Seismic Vulnerability of Crude Oil Transmission Systems," by T. Ariman, R. Dobry, M. Grigoriu, F. Kozin, M. O'Rourke, T. O'Rourke and M. Shinozuka, 5/25/90.

NCEER-90-0009 "A Program to Generate Site Dependent Time Histories: EQGEN," by G.W. Ellis, M. Srinivasan and A.S. Cakmak, 1/30/90.

NCEER-90-0010 "Active Isolation for Seismic Protection of Operating Rooms," by M.E. Talbott, Supervised by M. Shinozuka, 6/8/9.

NCEER-90-0011 "Program LINEARID for Identification of Linear Structural Dynamic Systems," by C-B. Yun and M. Shinozuka, 6/25/90.

NCEER-90-0012 "Two-Dimensional Two-Phase Elasto-Plastic Seismic Response of Earth Dams," by A.N. Yiagos, Supervised by J.H. Prevost, 6/20/90.

NCEER-90-0013 "Secondary Systems in Base-Isolated Structures: Experimental Investigation, Stochastic Response and Stochastic Sensitivity," by G.D. Manolis, G. Juhn, M.C. Constantinou and A.M. Reinhorn, 7/1/90.

NCEER-90-0014 "Seismic Behavior of Lightly-Reinforced Concrete Column and Beam-Column Joint Details," by S.P. Pessiki, C.H. Conley, P. Gergely and R.N. White, 8/22/90.

NCEER-90-0015 "Two Hybrid Control Systems for Building Structures Under Strong Earthquakes," by J.N. Yang and A. Danielians, 6/29/90.

NCEER-90-0016 "Instantaneous Optimal Control with Acceleration and Velocity Feedback," by J.N. Yang and Z. Li, 6/29/90.

NCEER-90-0017 "Reconnaissance Report on the Northern Iran Earthquake of June 21, 1990," by M. Mehrain, 10/4/90.

NCEER-90-0018 "Evaluation of Liquefaction Potential in Memphis and Shelby County," by T.S. Chang, P.S. Tang, C.S. Lee and H. Hwang, 8/10/90.

NCEER-90-0019 "Experimental and Analytical Study of a Combined Sliding Disc Bearing and Helical Steel Spring Isolation System," by M.C. Constantinou, A.S. Mokha and A.M. Reinhorn, 10/4/90.

NCEER-90-0020 "Experimental Study and Analytical Prediction of Earthquake Response of a Sliding Isolation System with a Spherical Surface," by A.S. Mokha, M.C. Constantinou and A.M. Reinhorn, 10/11/90.

NCEER-90-0021 "Dynamic Interaction Factors for Floating Pile Groups," by G. Gazetas, K. Fan, A. Kaynia and E. Kausel, 9/10/90.

NCEER-90-0022 "Evaluation of Seismic Damage Indices for Reinforced Concrete Structures," by S. Rodríguez-Gómez and A.S. Cakmak, 9/30/90.

NCEER-90-0023 "Study of Site Response at a Selected Memphis Site," by H. Desai, S. Ahmad, E.S. Gazetas and M.R. Oh, 10/11/90.

NCEER-90-0024 "A User's Guide to Strongmo: Version 1.0 of NCEER's Strong-Motion Data Access Tool for PCs and Terminals," by P.A. Friberg and C.A.T. Susch, 11/15/90.

NCEER-90-0025 "A Three-Dimensional Analytical Study of Spatial Variability of Seismic Ground Motions," by L-L. Hong and A.H.-S. Ang, 10/30/90.

NCEER-90-0026 "MUMOID User's Guide - A Program for the Identification of Modal Parameters," by S. Rodríguez-Gómez and E. DiPasquale, 9/30/90.

NCEER-90-0027 "SARCF-II User's Guide - Seismic Analysis of Reinforced Concrete Frames," by S. Rodríguez-Gómez, Y.S. Chung and C. Meyer, 9/30/90.

NCEER-90-0028 "Viscous Dampers: Testing, Modeling and Application in Vibration and Seismic Isolation," by N. Makris and M.C. Constantinou, 12/20/90.

NCEER-90-0029 "Soil Effects on Earthquake Ground Motions in the Memphis Area," by H. Hwang, C.S. Lee, K.W. Ng and T.S. Chang, 8/2/90.

NCEER-91-0001 "Proceedings from the Third Japan-U.S. Workshop on Earthquake Resistant Design of Lifeline Facilities and Countermeasures for Soil Liquefaction, December 17-19, 1990," edited by T.D. O'Rourke and M. Hamada, 2/1/91.

NCEER-91-0002 "Physical Space Solutions of Non-Proportionally Damped Systems," by M. Tong, Z. Liang and G.C. Lee, 1/15/91.

NCEER-91-0003 "Kinematic Seismic Response of Single Piles and Pile Groups," by K. Fan, G. Gazetas, A. Kaynia, E. Kausel and S. Ahmad, 1/10/91.

NCEER-91-0004 "Theory of Complex Damping," by Z. Liang and G. Lee, to be published.

NCEER-91-0005 "3D-BASIS - Nonlinear Dynamic Analysis of Three Dimensional Base Isolated Structures: Part II," by S. Nagarajaiah, A.M. Reinhorn and M.C. Constantinou, 2/28/91.

NCEER-91-0006 "A Multidimensional Hysteretic Model for Plasticity Deforming Metals in Energy Absorbing Devices," by E.J. Graesser and F.A. Cozzarelli, 4/9/91.

NCEER-91-0007 "A Framework for Customizable Knowledge-Based Expert Systems with an Application to a KBES for Evaluating the Seismic Resistance of Existing Buildings," by E.G. Ibarra-Anaya and S.J. Fenves, 4/9/91.

NCEER-91-0008 "Nonlinear Analysis of 3-D Frames with Semi-Rigid Connections Using the Capacity Spectrum Method," by G.G. Deierlein, S-H. Hsieh, Y-J. Shen and J.F. Abel, 2/12/91, to be published.

NCEER-91-0009 "Earthquake Education Materials for Grades K-12," by K.E.K. Ross, 4/30/91.