APPENDIX B: EXAMPLES OF SUCCESS

This appendix contains illustrations of the ways in which the pilot earthquake education projects reached their target audiences and how their outreach efforts were extended by the efforts of others. The examples of success are selected from the evaluator's interviews with members of the projects' advisory boards and recipients of the projects' services.

The Memphis Chapter of the
American Red Cross, and a
Regional Soil Conservation
Service Office, Arkansas

Sharing the Project's Education Mission

A local earthquake education project does not have to be the only source of information on earthquake preparedness in a community. In Memphis the Director of Disaster Services at the local Red Cross Chapter was quick to recognize that earthquake preparedness needed to be provided to the community's residents. After the Earthquake Education Project began to publicize the local hazard, Ms. P. of the Red Cross noted not just an increase in requests for emergency preparedness information, but specifically for earthquake preparedness information.

The Disaster Services Director and a Volunteer Disaster Chairman for the local chapter attended one of the Earthquake Education Project's initial training workshops. The volunteer chairman also attended further training sessions where he received instructions in using some of the teaching aids, such as the "shake table" that demonstrates the type of effects that earthquake ground shaking has on buildings.

As one might have anticipated, the director herself was an active and interested participant in the Project's activities. She participated on the Project's advisory council, used her agency experience to help the Project with the design of publicity materials, and even contributed time to help staff the Project's Mid-South Fair information booth. Beyond that, she worked from the base of her own agency to promote earthquake education in the community.

Once the administration was convinced of the hazard's reality, it was natural for the Red Cross to incorporate the topic of earthquake safety into its own education mission. For example, after Red Cross staff received training in earthquake safety, the topic was likely to be included in general talks on disaster preparedness that the agency frequently provided. The Red Cross also altered its planning directives for staff and volunteers, to take into account the likelihood that in a major earthquake, traditional emergency

services would not be forthcoming in the short run and Red Cross personnel and volunteers may find themselves needing to organize people to respond.

The agency also began to respond to requests for earthquake education specifically. The Red Cross had a short film to use that was especially good for children's groups. And the agency stocked earthquake-specific brochures to distribute. The volunteer chairman who had been trained by the Project was able to make group presentations on earthquake preparedness when the Red Cross received a request. He had given talks, in particular to senior citizens groups, and to groups of Red Cross volunteers. On occasion he would borrow the teaching equipment from the Project to make these presentations even more effective. (The agency also referred some of these requests on to the Earthquake Education Project).

This sharing of the earthquake education mission by the Red Cross is perhaps not too surprising. The agency traditionally has a role to help prepare the public for disasters, as well as to help the public after disasters. If the agency staff is convinced that the earthquake hazard is a real one, it is likely the Red Cross will become a partner of sorts in earthquake education. However, there may well be other less expected partners.

One such example was found in the New Madrid earthquake region, when the Earthquake Education Project staff responded to a request to make a presentation to the U.S. Soil Conservation Services (SCS) staff. The presentation was requested to help the agency fulfill a requirement that all employees receive two safety-related programs a year. The staff member responsible for organizing the safety programs had heard about the Project on a television program, and thought it would be a good topic.

It turned out to be more than simply a "good topic". SCS staff from eleven counties attended the program provided by the Earthquake Education Project. Many of those in attendance found the information to be new and relevant to them personally. More importantly, many felt the information was important for the residents of the counties in which they

worked and began to disseminate it to their counties. Their own role as educators and information disseminators made this an easy task for them.

These SCS agents who attended the Project's presentation took earthquake safety posters and other informational materials to the schools and agency offices in the counties where they work. The agency began to receive inquiries from the small communities in their service areas about receiving earthquake education presentations. It was evident that specific training for agency personnel could assist them to add earthquake safety into their information-giving activities. For example, the agents already give various kinds of informational programs in the schools. With a few teaching aids and scripts, earthquake safety could easily become part of their programs.

The audience of SCS county representatives was also noteworthy in that it was particularly important to them, as technical people themselves, that the presentation they received had technical content with respect to earthquakes, and was presented by a technical person. This was not so much the case with the staff of the Red Cross, as an emergency preparedness agency whose own audiences were mainly interested in the details of preparedness, with less concern over the details of earthquakes beyond that they were likely.

An Earthquake Education Project Spin-off

In Tennessee, Arkansas, and Mississippi over a thousand Girl Scouts and their families have had the opportunity to learn important steps to take in responding to natural hazards in their area. Thanks to the concern of a staff member for the regional Girl Scout Council, scouts in a 10 county area around Memphis, Tennessee, have a new patch they can earn--"Natural Hazards Preparedness." Earthquakes are one of the hazards for which these girls work to prepare themselves and their families.

The Earthquake Education Project in Memphis came to the attention of Ms. G., of the regional Girl Scout Council, when a Project staff member inquired if the scouting program would be interested in earthquake education. Ms. G. had come from California, and had a special personal interest and concern about earthquakes. She had been dismayed to find that the Memphis area, too, had an earthquake hazard. This helped to motivate her to find a way to help prepare people for an earthquake. The regional Girl Scout Council serves over 10,000 youth a year. Many Girl Scout activities also involve families and serve the community in some specific way.

Ms. G. conceived the idea of a special patch to add to those that the Girl Scouts of that region could earn as part of their scouting program. She obtained acceptance of the idea for the patch from the regional council, and set about producing the Leader's Guide for the patch. She obtained important technical and preparedness ideas and materials from the Project, and from the local emergency management director. Once she had collected the necessary information, she applied her skills as an educator to define a set of learning exercises that would be meaningful and fun.

A community-minded engineering firm provided the duplicating services and materials for the Leader's manuals. A member of this firm served on the Project's advisory board and suggested his firm provide the support. The Council publicized the new patch program through its newsletters so Leaders would know that the materials were available. The

manuals are free to Girl Scout Leaders, thanks to the engineering firm's contribution to the program.

For the earthquake hazard portion of the manual, the scouts are provided with ways to learn about the history of earthquakes in their area, earthquake myths around the world, how to make the rooms in their homes safer from earthquakes, what to do during an earthquake, and what to do after an earthquake. The exercises designed to teach these things have to apply to a range of different age groups, so it has been important to try to help Leaders think about how to use and adapt the materials for their troop.

The Council likes to know if new activities are effective. As with other patches, Leaders who used the materials were asked to fill out an evaluation sheet. The patch's creator was encouraged by the evaluations. Not all leaders liked all the activities in the manual, but all activities were found useful and meaningful by at least some of the leaders. The evaluation also asked leaders to be specific about what changes the scouts reported to have been made at their homes. The evaluation sheets provided evidence that the patch helped lead to changes at the girls' homes to reduce the risk to family members from items that might fall or break during an earthquake.

Many troops also engaged in community service projects, in which several troops would work together on, for example, a community education activity like an Earthquake Hazard Awareness Day. The education activity might be done in a public place like a neighborhood community center or a shopping mall. The Girl Scouts were among those collaborating to distribute an earthquake safety poster during Earthquake Safety Week in Memphis. A design class at the University developed a poster for the Earthquake Education Project and a local insurance company paid the printing costs. The Girl Scouts participated in the distribution of thousands of these posters, mostly to schools and businesses. Posters also were displayed in the churches and other locations that the troops use as meeting places.

And yet another benefit fell to the Project from its association with Ms. G, of the Girl Scout Council. She

herself attended one of the Project's training workshops and became an active "volunteer" for the Project, helping with a later workshop and working at Project information booths. Also, with the information and skills she gained at the workshop, she has been active on her own in the training of others. For example, she trained many Girl Scout leaders in earthquake education, worked to bring about earthquake preparedness at the Girl Scout Council headquarters, and made a presentation on the earthquake hazard and earthquake safety to the executive directors of the various United Way agencies (there are 53 of them) in the Memphis area.

Earthquake Education and Emergency Services Directors

Mr. H., is a county director of emergency services in one of the states affected by the massive 1812 New Madrid earthquake. He believes that public education about earthquakes can help make his job easier when the time comes to respond to an earthquake disaster affecting his county. With respect to a hazard like earthquakes he thinks it is of primary importance that the emergency services people understand the hazard and take appropriate steps to prepare for it; but of next importance, the public should be provided the opportunity to understand what is likely to happen. He thought the best place to start would be with the schools in his county.

The collaboration with Mr. H. is a good example of how the Memphis Earthquake Education Project was able to work with an emergency services agency to get their message to a broader area. Mr. H. started out with a vague awareness of the existence of an earthquake hazard in the Central U.S. He decided he wanted to know more about it, since it could be important to his official responsibilities. Upon checking with Memphis State University he discovered there was a nearby source of expertise in earthquakes in the form of the Tennessee Earthquake Information Center, and he found out about the newly initiated Earthquake Education Project.

DeSoto County is relatively rural in character, with a population just over 60,000. Besides scattered small towns there is an extension of an urban industrial sector into the county, including chemical facilities. Mr. H.'s style is to talk with other folks with responsibility, to try to get them interested, and to be sure he has the information they need when they come to him with questions.

Mr. H. found out about the Project just in time to attend a workshop it was holding. He was impressed with what was taught at the workshop and decided to promote an earthquake education campaign in his county. His strategy was to begin with school children, and then fan out from

there as possible. He talked to the Superintendent of Education for the county. The Project staff was invited to make a presentation to the school principals in the county, and later to give in-service training at some of the schools. Besides the direct effects on the staff and students in the schools, the education effort received newspaper coverage in the county. Mr. H. also wrote letters to the parent-teacher associations suggesting they work with their schools on emergency response planning for earthquakes.

Mr. H. became a sort of one-person "speakers' bureau" for earthquake education in his county. He gave talks on the earthquake hazard and on earthquake safety when his office received a request for that kind of information. When the Project in Memphis received requests for talks in his county, they usually would refer the caller to Mr. H. He has distributed thousands of copies of a poster called "Blueprint for Earthquake Safety" as well as other FEMA material on earthquake preparedness.

Whenever the opportunity arises in the course of his contacts around the county, he advocates the addition of earthquake planning to industrial emergency planning and provides general advice on non-structural adjustments facilities might make. He counsels other county agencies about the hazard and some of the steps that can be taken to reduce future damage in the county, should an earthquake occur. Thus, in some instances, he first brings the message to a group or an organization; in others, he is there, prepared to answer questions for persons who become concerned about earthquakes because of something else they heard. This adds to the number of channels through which the people in his county are becoming aware of the earthquake hazard and of earthquake safety measures.

Mr. H. has listened carefully to what the experts in the area are saying about the earthquake hazard. He has arrived at the conclusion that the practical approach at this time is to plan for the most likely damaging event, rather than the most extreme. An indicator of how seriously he has come to take the message about the hazard can be found in the position of earthquakes in the vulnerability analysis he has

made for his county for FEMA--in 1986 he had ranked the earthquake hazard above all other natural hazards.

Mr. H. had definitely capitalized on what he had learned from the Earthquake Education Project. But he had one recommendation for the Project. He pointed out that initially he had found them--he would recommend that a Project like that from the beginning seek to work with the emergency management agencies in their vicinity.

A Memphis Nursing Home Administrator,
and a Representative of the AARP

Reaching Senior Citizens

The Memphis Earthquake Education Project found there was interest among the community's senior citizens in learning about earthquake safety.

One way to extend safety measures to the elderly is to provide information to those who care for them. For example, nursing care facilities are likely to be required to have disaster planning and drills. In-service training for the staff of these facilities encourages the inclusion of earthquakes as part of this disaster planning, and helps to make the staff aware of specific safety elements related to the earthquake hazard.

An administrator of a combined apartment dwelling and nursing home facility in Memphis invited the Project to provide such in-service training to its staff. She also had requested the Project to make a presentation to the residents. She related there was a certain difficulty with respect to earthquakes (since they have been infrequent) and her residents, in that the senior citizens were likely to say they wouldn't live long enough to have to worry about an earthquake happening. A carefully crafted message will be necessary to avoid this attitude! Maybe a visit to some of the living quarters to demonstrate safety measures would have helped.

The Memphis Project also had publicized its services to the American Association of Retired Persons (AARP). Members of this group are known for their enthusiasm and interest in living and learning. A few AARP members took the challenge to become volunteers for the Earthquake Education Project, because of their interest in the topic of earthquakes or geology or in learning. One eventually became a part-time staff member, being responsible for coordinating the participation of other volunteers, and performing many useful odd jobs around the Project office.

Many individual AARP chapters about the city also requested a presentation from the Project staff. A typical AARP get-together will involve a monthly chapter meeting, maybe a pot-luck supper, and a presentation. Many chapters have a very active membership, a large percentage of whom will turn out for a presentation.

One theme recurred from those who had been involved either as a senior citizen themselves, or with establishing contact with senior citizens: when making presentations to these groups, it is best to assume that the majority of the audience is not very interested in the more technical aspects of the topic, such as what earthquakes are and how they are caused. Many senior citizens find these details difficult to follow, but will be interested in hearing about the safety aspects. Thus, some films and other materials that might be used with other groups will not be appropriate for these groups.

One AARP contact person also related that she had a friend who had not attended the earthquake safety presentation. Her friend had said that she would just run outside if there was an earthquake. The story-teller proudly related that she had been able, because of having attended the presentation, to tell her friend that the **worst** thing one could do was run outside--"because during an earthquake the earth might open up and swallow you!"

So, it may also be true that some care needs be taken when discussing earthquake myths.... At least the person had learned the right response--even if for the wrong reason!

Role of the Media

In Charleston, Ms. P., TV station executive, observes that if there hasn't been a disaster in a long time, it will be necessary to start at "square one" to get local officials and the public interested in disaster preparedness. "The media is square one," she adds.

Ms. P. served as an advisory board member for the Charleston Earthquake Education Project. In this role she was able to keep abreast of what the Project was doing, and was able to provide advice on strategy for media relations. She pointed out that when an issue arises or an earthquake occurs, the media will want to know: What are we dealing with, and what should be done?

Ms. P.'s major advice to the Project Director was that the **media** have to be educated in order to encourage and enable them to work actively to provide public information about earthquakes and earthquake preparedness. She urged and assisted the Earthquake Education Project in presenting a workshop for local media. This workshop provided media representatives with background information on the local hazard, and stated where further information could be obtained. Needless to say, the local Project quickly came to be seen as a major source of information.

Some precedent for this had been established because the Charleston area does from time to time have small earthquakes that can be felt within a few miles of the epicenter. These are easily recorded on the seismographic equipment at the nearby college where the Earthquake Education Project Office is located. Since the Project Director was able to act as a source of almost immediate information about these earthquakes, and was a willing and enthusiastic information-provider, news coverage of these occasional events has increased considerably in recent years. In turn, public interest in these events increased because they had become aware of there being something to learn about them. Ms. P. notes that the station receives many more calls from curious

residents after these small tremors than they used to in the past.

Ms. P. states that it is her philosophy not to engage in scare tactics when publicizing a hazard and the need to prepare for it. Her preference is to work on making people aware of the hazard, without dwelling on the most extreme elements of it, and to emphasize the need and means to be prepared, should something happen. She believes that a topic like earthquake preparedness can be kept alive in the media for many years, if it is carefully and creatively handled. Earthquakes differ from other hazards, such as hurricanes and tornadoes, which involve warning periods. News coverage during a warning period is one thing; developing ways to publicize ahead of time what to do **when** an earthquake occurs is another. Especially when you want to keep it in the realm of "news" so people will be interested.

Ms. P. was impressed with what the local Earthquake Education Project had been able to accomplish, and the many ways they had been able to make learning about earthquakes fun for children, and interesting for others. She noted that there are many kinds of project activities that can be interesting to the public. One media strategy for a project is: "If you do something, brag about it!"

Getting the Whole School Involved

At St. MMM's in Memphis, the school has a special guidebook for how teachers and students can prepare for an earthquake. This guidebook is the result of the efforts of the 8th grade science students at St. MMM's. Accepting a challenge from their principal to help prepare the school for one of Memphis' little recognized hazards, the students put together a set of ideas for what can be done at the school to increase earthquake safety. The guidebook suggests some easy things they can do in their own classrooms, like shift heavy items to lower shelves for storage, and move desks away from things that might fall. The guidebook also contains a list of items that should be included in an earthquake emergency pack to be kept in each classroom.

The students included in the guidebook ways they can help each other if they ever need to evacuate their school because there has been an earthquake. They examined the school grounds to find a place that would be safer from falling items and power lines. This will be the area students are to go to if the principal tells them they should leave the school building after an earthquake. The students then provided a plan for older students to team up with younger students during an evacuation, in order to provide assistance and assurance to their schoolmates.

Ms. F., principal at St. MMM's, also boasts that her students are well trained in what to do during an earthquake. When she held a surprise drill one day while students were in the cafeteria, they quickly demonstrated that they had learned the lesson of "drop and cover" through practicing in their own classrooms.

How did the students get interested in planning for an earthquake emergency at their school?

Early in the school year, Ms. F., principal of St. MMM elementary and middle school, attended an all day in-service training day provided for the teachers of the diocese schools in the Memphis area. As part of the training day, a special

workshop on earthquake education was offered to key administrators and science teachers. This workshop was conducted by the Earthquake Education Project staff. The scientists from the Project gave a general presentation about the causes and consequences of earthquakes, the local earthquake hazard, and how school staff can prepare for an earthquake. Then the Project staff demonstrated an approach for teaching about earthquakes, using a set of teaching aids that can be used to teach about earthquakes and earthquake safety.

During this in-service workshop the Project staff asked if any of the school staff there would like to start an earthquake education program for their school, with the assistance of the Project. Several principals at the workshop were quick to take the Project staff up on this offer.

A representative of the diocese schools depicts the school system as having a general orientation toward safety. Earthquakes were not something the diocese schools had given much thought to in the past, but individual principals make many of the decisions about what is important for their school. The workshop not only called the attention of these principals to the local hazard, but provided specific ideas about simple things that could be done to improve the safety of the diocese students and the preparedness of school staff.

The Project staff had worked hard at getting the information to those in the schools who would be likely to have the most use for it. They had suggested which school staff members should attend the special workshop on earthquake education. They also had suggested that those attending the workshop be prepared to consider earthquake safety at their school by having with them a map of their building and other information about their own individual school which would make some of the workshop information even more relevant. Those attending the workshop were provided with a copy of FEMA's detailed *Guidebook for Developing a School Earthquake Safety Program.*

After St. MMM's decided to develop an earthquake safety program, Ms. F. arranged for the Project staff to make a

presentation to her administrative staff, the maintenance staff and the school's "board", which was made up of parents associated with St. MMM's. In the case of St. MMM's the parent-teacher organization is an interested and supportive partner for many school activities.

Even more importantly, the school's board has a large say in allocation of funds for school activities, and the parish pastor is the principal's immediate supervisor and an easily accessible advisor. This was an important aspect for St. MMM's, since it enables the principal to find out very quickly what support she could expect in implementing activities, unlike what is often the case in large, centralized school districts where individual principals are far removed from the centers of decision-making and priority setting.

The Project staff gave a presentation to the faculty of St. MMM's, on earthquake causes and on earthquake safety. Again, the special set of teaching aids, which can be borrowed from the Project, was used for this demonstration. The teachers also were provided with a packet of materials on how to conduct earthquake drills. A presentation was given to a school assembly. Ms. F. felt that one highlight of this assembly for the younger children was the participation of a firefighter to talk to the kids about what they would need to do after an earthquake, in case the fire department wasn't able to come help right away.

Following on this presentation to the teachers, the science teacher borrowed the kit of teaching materials from the Project and did a teaching session for all the students in the school. The science teacher also made a presentation on earthquake safety to the parents, which included a discussion of home earthquake safety.

Ms. F. related that she had been able to begin making the school safer with the help of the school's board and her maintenance staff. Plans had been made to make storage space outside the school for heavy objects that typically had been stored in high cabinets inside. The board had accepted the fact that some financial resources would be necessary for

making the classrooms safer, and was working out ways to obtain this.

The maintenance staff had given specific attention to actions they would need to take in the event of an earthquake, such as turning off certain valves. They also had plans for installing an escape window in classrooms. They intended to remove the blinds on the outside of the windows, to reduce the likelihood that windows would break to the inside during an earthquake. Some book shelves around the school had been bolted to the wall and some other things were planned for making classrooms and the science lab safer.

Ms. F. indicated that she believed it is important to talk to parents more than once about the topic. She had plans to mention the school's earthquake safety to the parents from time to time, and perhaps to again make a presentation on it at the parents' meeting prior to the start of school the following year. She thought at that time she would be able to tell them about some of progress that was being made.

The education aspect of the program--teaching the kids themselves about earthquakes--was an important element. Her teachers had used the topic in a variety of ways. The science teachers had used the topic where appropriate. Several students at her school had entered the poster and essay contest sponsored by the Earthquake Education Project. Also, every classroom has a poster that provides tips on what to do before during and after an earthquake.

How School Staff Can Contribute

Ms. B., the School Secretary at a Seattle elementary school, is proof that someone besides the principal can take the lead to make things happen at her school. Ms. B. was very interested in the Earthquake Safety and Education Project's workshop when she heard about it and she attended it on her own time.

Since then she has helped her school make important steps toward being prepared in the event of a damaging earthquake in the Seattle area. Ms. B. is wholeheartedly supported by her principal, who sees to it that others in the school are brought together to learn about what is being done and what their role will be after an earthquake.

Ms. B. has prepared an "earthquake backpack" that she keeps in the school office where it can be easily grabbed after an earthquake. The emergency backpack contains several survival items. In it she also keeps a record of all the students who attend the school. She has class pictures and a set of file cards with each child's name and emergency phone numbers.

Ms. B. keeps a jug of emergency water and a supply of cups in the office. She also has located a ham operator who lives near the school, who will help the school staff reach parents.

The things she heard about at the workshop made her wonder if she herself really would know how to handle some of the potential problems after an earthquake. She found that by calling her local utility office she was able to obtain much safety information. For example, the representative from the electric company told her what earthquakes can do to power lines. One thing he mentioned was that downed power lines after an earthquake could create barriers to and from the school, such as for the bus routes.

She learned how to use the school fire extinguishers, how to turn off the electrical system, how to drain the water

system to get water, how to turn off the alarm system, and how to turn off the fan in the furnace so it won't further fan any fires. She organized the teachers to tour the building and identify possible hazards.

Ms. B. has some other ideas, but has not been able to put them all into action yet. For example, she thinks it would be a good idea for many of the teachers to have first aid training. Also, she would like the school food service to store some food that could be used in an emergency. As yet, she has not been able to get the cooperation she would like on these things. But in the meantime, Ms. B. has been able to take what she learned at the workshops and help make her school safer and better prepared for the next Seattle earthquake.

Teaching the Gifted and Talented

Ms. K. described her students as being like most kids anywhere--easy to get excited about the topic of earthquakes. She describes earthquakes as representing a nice mix of drama and science. Earthquakes are scary along with being interesting. And for her purposes in the teaching of gifted and talented students, earthquakes create a set of individual, school, and community problems that the students can grapple with.

Ms. K. teaches in the Charleston school's program for gifted and talented students. She works with small groups of elementary students one day a week. These students spend the rest of the week in their own schools with their regular class. She works with a group of students across three years. The first year the students work on understanding the concept of "needs", the second year with "problems", and the third year with "change."

As part of her graduate training in history, Ms. B. had studied the oral history of Charleston's 1886 earthquake. She was pleased when the science coordinator for her school district proposed she attend a workshop to be provided by the recently initiated Earthquake Education Project. Both what she learned in the workshop, and the special help she occasionally requests from the Project's director, have contributed to the teaching unit she does on earthquakes.

In keeping with her teaching framework of needs, problems, and change, Ms. K.'s students first worked with assessing needs for reducing the risks in their classroom, homes and the community. The second year, the students focused on the problems that are associated with having an earthquake hazard and with an actual earthquake event. Her second year students had begun planning their activities for the third year. Their plans included the development of a skit or presentation that they could use to persuade decision makers of the importance of preparing for earthquakes. Besides working with their own schools, the students had proposed going directly to the city council, to propose

community changes that were needed to ensure better preparedness.

The problem of the hazard had been considered important enough that the students had already made some changes in their own room to make it safer, should an earthquake occur. They also practiced "drop and cover" actions, in preparation for an earthquake. Since they only spent part of their week with Ms. K., they could carry back to their own regular classrooms the new things they learned.

The Project Director had visited to Ms. K.'s school to make a presentation. Other teachers had taken their students to see the seismological equipment used by the College. Because of the influence of the Earthquake Education Project, and of Ms. K.'s interest in the subject, her own school, beyond her classroom, was beginning to make plans for improving the earthquake safety and preparedness of the entire school. Another teacher had become actively interested in earthquake safety. Drop and cover drills were been held for other classes. There are plans for trying to get the PTA involved in the school's earthquake safety in the upcoming year.

Ms. K. acknowledged that her students were very enthusiastic about next year's plans for talking to city officials. Already, at age ten or eleven, these students could understand that change occurred at many levels. They had worked on improving safety in their classroom, their homes, and their schools. And they were eager to work for change at higher levels as well, where all the community could benefit.

Earthquake Safety and Special Education

Ms. D. is the special education teacher at a Seattle elementary school. She is from California, where she had taught blind children earthquake preparedness. By bringing an earthquake unit to the dozen or so "learning disabled" students with whom she works for part of each day, she has put safety measures in place and caught the attention of her teaching colleagues.

The principal selected her to attend one of the Earthquake Education and Safety Project's workshops on school safety planning. The workshop introduced Ms. D. to curriculum materials and safety information and introduced a set of "hands-on" teaching aids related to earthquakes. Using what she learned at the workshop she prepared a unit for teaching her students about earthquakes and earthquake preparedness. She found her students to be interested in the topic and in learning about preparedness. She heard reports from other teachers that some of her students, who often do not participate actively in their other classes, had talked about what they had learned from the unit on earthquakes. This was noteworthy to her. It also created an opportunity for her to talk to other teachers in the school about how she was using what she had learned at the workshop.

She created a unit for teaching her students about earthquakes. She talked about what earthquakes are, what the dangers are, what to do during an earthquake, and what safety measures to take at school and at home. She had the students, who come from different grades, each write a paper on it at their level of capability.

She also had given her students a homework assignment to have the other members of their family practice how they would protect themselves during an earthquake. They then wrote a report about what the members in their family now planned to do during an earthquake.

Her activities included working with the kids to identify and correct some of the hazards in their own

classroom. They had moved some of the furniture around so it wouldn't be a hazard to people in the room during an earthquake, and moved some heavy boxes to a lower place. They also had toured the whole school and talked about other hazards, and gone out on the playground to select the safest place to gather after an earthquake, if they had to evacuate the building.

Even after she has completed her teaching unit on earthquakes, she still does impromptu "drop and cover" drills occasionally. For these she calls out "earthquake" and the students take cover as they have learned. Her students have gotten this maneuver down to just a few seconds.

Earthquake Safety for Handicapped Students

Dr. C. is in charge of the school district's special elementary school for retarded, handicapped, and emotionally disabled students. This school facility is located in a medical center building at a University in Tennessee. Her staff of 11 work with about 50 special students. Dr. C., as a faculty member of the university, also supervises special education teacher training.

When the Earthquake Education Project offered a special optional workshop at a district-wide principals' in-service development workshop, Dr. C. was one of the principals who thought the topic sounded interesting. The presentation she saw not only convinced her that it was important to take the hazard seriously, but also assured her there were many things that could be done around her school facility to enhance the safety of her students with respect to an earthquake.

Even though about two-thirds of her students are educable, Dr. C. felt it most important to first prepare her staff for the responsibilities they would have should an earthquake occur, and to do what she could to make her classrooms safer. She feels that it is particularly important that staff in a facility such as hers have thought ahead of time about what will have to be done, due to the special and varied limitations of her students.

One of the in-service days for the staff of the school was dedicated to having the Project staff make a presentation and tour the parts of the building that the students use. The Project staff made suggestions about things that could be done to the classrooms and talked some about how to deal with the special needs of the students. Dr. C. noted that her teachers themselves are trained to adapt materials and procedures for students with special needs, so it was not necessary for the Project staff to be able to do that for her.

Dr. C. had then taken several actions to prepare the school rooms and her staff. She made an evacuation plan that specifies the major routes and the place to meet. Along with the development of the plan, a new procedure was implemented for maintaining accountability of the students. Every staff member carries with him or her at all times an attendance card for each child in the building that day. This card indicates where the child is at every hour of the day. Staff also have moved furniture in the classrooms based on where there would be risks from falling or breaking objects. Dr. C. has obtained a first aid kit for each room, and stored extra water. She has posters around the building that list what to do before, during and after an earthquake.

She has asked the university maintenance department to do some of the other more difficult things that are needed, like bolting bookshelves and tethering equipment. She also would like to have the larger windows in some of the rooms coated with plastic to keep the glass from flying around if a window breaks.

Dr. C.'s classrooms are in a university building, where several other activities besides her school are carried out. Since it did not make sense to her to simply address safety issues in her rooms, she has discussed earthquake safety with the administrative person who manages the entire building. She pointed out that, in her opinion, the next logical step after making her building safer would be for the university to develop an overall earthquake safety plan. The university includes a large medical center, where many people come everyday, and many others live. She has raised the issue with the safety department of the campus and talked to the university fire marshal. Thus, Dr. C. herself has become an important transmitter of the message of the Earthquake Education Project.

Demonstrating Success with a Pilot School

One Charleston area elementary school illustrates the way in which a highly motivated and enthusiastic school administration can organize staff and parents around the development of an earthquake education and safety program. When the Earthquake Education Center began working with schools in the Charleston area, the principal of WWW Elementary volunteered his school to serve as a "pilot school". The Center provided the guidance for the development of the program, hoping that this and other pilot schools would serve to demonstrate to the district that earthquake safety programs were important and that they could be implemented without major cost and without disrupting the other educational programs in the schools.

The Center's work with WWW Elementary School began with the participation of five teachers and the assistant principal in a "Train-the-Trainer" workshop to demonstrate approaches to teaching about earthquakes and earthquake safety. The enthusiasm of these faculty members about earthquake education as a result of the workshop led to the principal agreeing that the school would pilot an earthquake education and safety program. The Center staff met with the school's administration to plan activities for the following school year.

An earthquake steering committee was established at the beginning of the 1984 school year. The committee, with the support of the school administration planned a number of activities for the 84-85 school year. These included a first aid workshop for teachers, a classroom hazards hunt, school earthquake drills, and the involvement of the PTA in building and participating in the earthquake safety program. The committee made use of FEMA's *Guidebook for Developing a School Earthquake Safety Program* in their planning. Appendix B of the *Guidebook* was seen as being particularly helpful, since it gave teachers ideas and support for classroom activities.

During the school year the earthquake committee's goals were generally realized. The Red Cross provided a first aid course to all WWW Elementary teachers during in-service training in January. A classroom hazard hunt was conducted in 49 classrooms resulting in the identification and resolution of 20 safety problems. The first of several drop and cover drills was conducted in November. The drill was followed by an evaluation that indicated that the students and teachers performed fairly well.

The Center staff provided considerable support during the first year of WWW's program. This included meeting periodically with the school's earthquake steering committee, meeting with the school administration, providing in-service training to all of the teachers in the school, presenting earthquake safety information to individual classes, and hosting 6th grade classes on field trips to the seismology laboratory at the college where the Center was located.

The steering committee's plan for the second year of the WWW program included the design and conduct of a school earthquake evacuation drill and the creation of a communications system in the event of an earthquake. Building blueprints were examined to determine where electrical and gas lines affected proposed evacuation routes. An improved evacuation plan was created. Because of this exercise, previously undetected hazards in the existing fire evacuation plan were identified. Efforts were undertaken to provide redundant lighting and bullhorns in case of failure in the primary devices. A drill was undertaken where primary exits were blocked and teachers and students had to rely on secondary exits. The drill went well according to the school administration.

The PTA was involved in several ways. By making them aware of remaining hazards in the school, the school administration felt that parents were becoming supportive of an aggressive school earthquake safety program. The PTA was involved in the creation of a card that informs parents of what to do in case of an earthquake. The PTA also participated in the development of "phone trees" for use in communicating to the parents following an earthquake. (It should be noted that this may be problematical, since after

an earthquake the phone system may become overloaded and not function.)

According to the WWW administrators interviewed, the benefits of the program to the school were not restricted to safety issues. The principal stated that the earthquake safety information was easy to integrate into the normal curriculum. At WWW Elementary, earthquake safety was used as a theme in creative writing. WWW Elementary students also participated in the Center's earthquake theme poster art contest. The integration of the safety information into the curriculum was seen as one way to make it more attractive to the teachers and to gain their support in the broader area of earthquake safety.

The high level of involvement of the school's administration appears to be a key to the program's success. The assistant principal, for example, was not only an active advocate within the school, but supported the Center as a volunteer in several major presentations (e.g., the South Carolina Seismic Safety Commission). In the Spring of 1986, the principal and assistant principal were able to present WWW's experience and successes to the district school board. According to the principal, their message was well received, though it was assumed it would take time for a formal action, if any was to come, on the part of the board.

In sum, the WWW Elmentary experience indicates considerable success in increasing the level of earthquake awareness and safety in one school. Moreover, the success it was able to demonstrate may become a strong argument in favor of district level support for earthquake safety in the schools. If this happens, the considerable investment in time and energy made by the WWW Elementary staff and faculty will have paid off for many other schools as well as for themselves.