4.0 IMPLEMENTATION OF SCHOOL PROGRAMS

4.1 Introduction

4.1.1 The Significance of School Populations

School populations, including students and staff, are considered by FEMA to be the most prominent and most important target audience to reach with earthquake information. School children are required by law to attend school, and are dependent on the adults around them for their safety and welfare when they are at school. Without adequate preparation, children cannot be expected to respond appropriately to an earthquake situation.

These special needs of children can be addressed through the inclusion of information on earthquakes and earthquake safety in the school curriculum in areas with a relatively high potential for earthquakes. This information can be presented effectively by modifying it to be appropriate to different age levels and tying it to the regular curriculum. In addition, other school staff are likely to be more effective in their caretaker roles during an earthquake emergency if they have been given information on what to expect and how to respond.

The school population also can be an important link to the broader community. Earthquake education may be extended into the home setting through information students carry to their parents. Parents also can be introduced to the hazard and safety practices through parent-teacher association activities.

Schools represent a strategic population for the dissemination of earthquake information. Schools constitute an organized public to whom information can be provided in a

systematic and cost effective manner. If a portion of the teachers, administrators, and safety staff of schools are taught the principles of earthquake safety, they are likely in turn pass this information on to other teachers, administrators and safety officers, as well as students. To some extent, like students, they can be expected to discuss earthquake safety with their own families and friends as well. Thus school faculty and staff in a community tend to be more accessible than others for training in earthquake safety, and can come to constitute a large resource base of persons for the dissemination of earthquake information. They are likely to engage in this dissemination process, at least in their classroom and school, because it is consistent with other requirements of their regular jobs.

The need for school earthquake safety programs was apparent in each of the three communities studied. There was very little evidence of earthquake safety concerns in the Memphis and Charleston schools prior to the FEMA initiated programs. The Memphis public school district provided schools with a booklet describing procedures for a variety of emergencies. This booklet included a half page on procedures for an earthquake emergency, but earthquake drills were not required in the schools.

In the Charleston area schools little or no attention had been given to earthquakes. There was a state requirement that all schools hold periodic fire drills, and drills for one other hazard relevant to the locale. Tornadoes were most typically selected as the relevant hazard, and for good reason. The Seattle public schools had a district requirement to do four classroom earthquake drills a year,

but there was evidence the requirement had not always been vigorously implemented.

4.1.2 School Program Design[2]

The Seattle Earthquake Safety and Education Project (SESEP) was almost exclusively oriented toward the school population. SESEP was to work with principals and earthquake safety planning committees to develop and implement earthquake safety program action plans. The SESEP staff also was to provide earthquake presentations and educational materials to students and report on the effectiveness of the materials and presentations for increasing understanding about earthquakes and earthquake safety. The FEMA statement of work called for piloting this approach in at least two elementary schools (K-6) the first year, and four more the second year.

The Memphis and Charleston projects also focused a substantial amount of their outreach effort on school populations. Their respective statements of work specified only that they were to "introduce earthquake safety materials and curriculum to school populations" as part of their outreach activities. This provided each project with flexibility in designing and implementing a strategy for approaching schools and promoting and supporting earthquake safety and education in the school setting.

To aid in the outreach effort with school populations, two major sets of materials were made available to the three projects:

(1) A comprehensive set of teaching aids developed by the Environmental Volunteers (EV) that can be used

[2] Program objectives and the objectives for the community outreach projects and SESEP are described in Section 3.3.

for presentations to a wide range of age groups. The set of teaching aids is referred to as the "Hands-on Earthquake Learning Package" (HELP). These teaching aids focus mainly on representing the causes and consequences of earthquakes. FEMA also provided for a workshop to be given in each of the project sites by EV staff, to introduce the use of the materials to EEC staff and a selected audience. This set of teaching aids was partially based on the California earthquake hazard. Each project substituted some regional earthquake hazard material to make the set more relevant to their own area. The most important feature of the teaching kit is its "hands-on" nature, which is particularly effective in teaching the dynamic aspects of earthquakes. The "hands-on" items include:

- two types of map puzzles in which each piece represents a major tectonic plate;
- a world globe that comes apart along the lines of major tectonic plates;
- relief maps and flip charts with information about world seismicity;
- a model of the structure of the interior of the earth;
- a "shake table" that demonstrates the effects of different frequencies of vibration on different height structures, and the relative stability of different types of ground materials during shaking;
- a doll house and furniture that can be placed on the shake table, to demonstrate what will happen to different items inside a house during an earthquake.

(2) A Guidebook for Developing a School Earthquake Safety Program. This guidebook, developed by FEMA, provides a planning approach to guide a school staff in developing an earthquake safety program. The Guidebook was reviewed in each of the sites, after which it was modified by FEMA and large quantities provided to each project for distribution to schools. The Guidebook covers:

- how to identify earthquakes hazards at a school;

- what to expect during an earthquake and how to conduct effective earthquake drills;
- immediate post-earthquake response and care requirements;
- how to determine and plan for post-earthquake communication needs;
- planning for post-earthquake care and shelter on the school premises.
- Appendices include: optional planning forms; a teacher's package on earthquake drills; earthquake safety information for staff and parents; ways to reduce risks from non-structural damage; and a sample earthquake safety program plan.

In general, the task of introducing earthquake safety and curriculum to the schools was to be carried out through the efforts of the project staff and facilitated by the involvement of trained volunteers who could extend staff capacity by assisting with workshops and conducting presentations for school populations. Teachers who attended project-sponsored workshops also would serve to extend the reach of the program by teaching about earthquakes and introducing earthquake safety information to their students. They also would be able to transfer curriculum information and safety materials to other teachers and staff members in their schools.

4.1.3 Overview of School Project Strategy Models

Each of the projects had a specified target area in which to focus their outreach activities. For the Memphis project, the primary target area was the city of Memphis and Shelby County. The Charleston project had specified a tri-county target area that encompassed the city of Charleston and its environs. The target area was made up of Berkeley,

Charleston and Dorchester Counties. The primary target area for Seattle was the public school district for the city of Seattle.

Table 4-1, based on 1980 U.S. Census figures, illustrates how the overall magnitude and type of the school target audience varied for the sites. The Memphis project school target audience included a city and a county school district, and around 171,000 students, 18% of whom did not attend the public schools. The Charleston school target audience included around 99,000 students, with 12% in private schools. There were five separate districts in the Charleston area. The Seattle public schools entailed one central district and a student population of around 50,000. It can also be assumed that the larger the student population, the larger would be the number of teachers and administrators.

TABLE 4-1

SCHOOL POPULATIONS IN THE THREE STUDY AREAS (1980)

	# Enrolled (K-12)	% in Private Schools
Memphis	140,497	18.9
Remainder Shelby County	31,250	16.0
Total	171,747	18.3
Berkeley County	24,707	7.6
Charleston County	59,224	17.9
Dorchester County	15,445	9.2
Total	99,376	14.0
Seattle	62,720	19.4

It was not the objective of any of the projects to directly reach all the school staff and students in their respective target areas. Among other reasons, project resources would not permit this. The general objective of the projects, with respect to the schools, was to make earthquake education and safety materials available to school populations. However, it was necessary for the projects to make choices about how to reach the school populations.

For example, each project had to decide which combination of district administrators, school administrators, teachers, school staff, and students, and public and private schools it would pursue. Each of the projects eventually developed a somewhat different strategy for working with school populations.

As is indicated in Section 3.3.1 above, the projects were not required to achieve high levels of awareness and risk reduction in the communities. Instead, the projects were required only to demonstrate various approaches for disseminating information on the causes and consequences of earthquakes and on earthquake safety. It was considered particularly important to demonstrate approaches for working with school audiences. Because more than one approach for reaching school populations was used among the projects it is possible to compare the approaches.

For the evaluation study, it was instructive to consider the outcomes that a school earthquake education and safety project might bring about for schools. This discussion on outcomes is not meant to imply that the projects being studied were required to demonstrate the ability to achieve these outcomes. However, by taking this analytical approach for examining the potential impacts of efforts to promote earthquake safety in schools, it was possible to compare the

way in which general approaches, or "strategies", are linked to types of desirable outcomes.

Figure 4-1 is a schematic representation of the links between the desirable outcomes in schools from efforts to introduce earthquake safety, and three general strategies for introducing earthquake safety to school populations. The desirable outcomes are to:

- Bring about educational gain in the various school populations in terms of: (a) awareness and a better understanding of earthquake causes and consequences in that locale; and, (b) protective actions that can be taken.

- Reduce the risk to persons in school settings from hazards (e.g., falling or fallen objects) during an earthquake and in the first few hours after an earthquake). This can include the development of increased staff response capability through training and drills, increased student response capability through drills, and the repositioning or anchoring of heavy objects that could fall and injure people.

- Promote institutional change in the form of established procedures and practices relating to earthquake education and safety (e.g., require schools to have earthquake safety plans; require that the curriculum include teaching about earthquakes and what to do).[3]

[3] Education and safety practices (e.g., incorporating the study of earthquakes into the regular curriculum; incorporating earthquake drills as routine practice) can be taken up as routine practices (i.e., repeated periodically, as a matter of practice) at various levels. For example, an individual teacher may specify in his or her yearly lesson plans that an earthquake "drop and cover" drill will be done in the classroom once a semester. Or a principal may require that every teacher in the school perform a drop and cover drill once a semester with their classes. Or a district superintendent may mandate that there will be so many earthquake drills a year in every school in the district. At each succeeding level, there is a greater scope of impact from the "institutionalization" of the practice. Thus, district level institutionalization is a particularly desirable outcome, although not the only way that earthquake safety practices can be perpetuated.

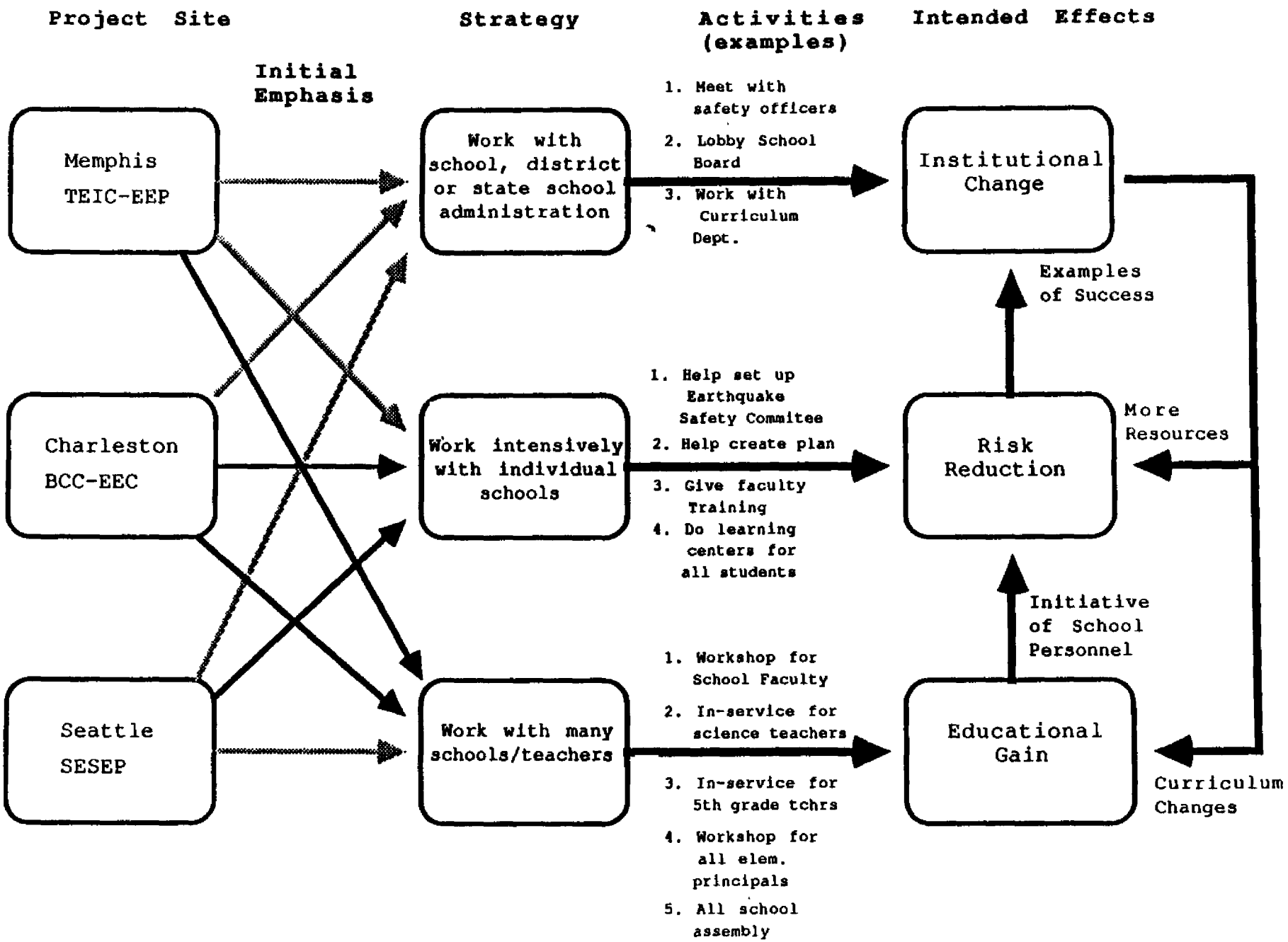

Figure 4-1. School Program Strategies and Outcomes

The desirable outcomes, to the right side of Figure 4-1, are linked to each other. Awareness and understanding of the hazard are necessary if not sufficient conditions preceding risk reduction measures and policies to institutionalize education and safety practices.

From the study of the three projects it appears that successful risk reduction practices are the most likely to be candidates for district-wide institutionalization; that is, risk reduction practices that are acceptable and feasible for schools to carry out. An institutional commitment (at the district or school level) to prepare for an earthquake typically is necessary before adequate resources will be made available from within the system to undertake more than the minimum risk reduction measures, or before curriculum changes will be adopted by all teachers.

Generalized descriptions of the strategies are provided in the center column of Figure 4-1. The strategy in the lower block entails a general approach of trying to reach as many teachers and principals as possible by finding ways to instruct them in groups. In the experience of the projects, much of this type of contact with teachers came about because of teachers' interest in the science curriculum aspect of the project's presentation. Presentations and workshops for teachers cover both causes and consequences of earthquakes and protective action. It could be assumed by the project that the instruction provided to teachers will have at least some level of multiplier effect because these individuals can in turn teach about earthquakes and earthquake safety to their own students and to other teachers.

The middle strategy box refers to working intensively with a few individual schools to assure that educational gain is achieved, and in hopes of being able to promote the implementation of risk reduction measures and earthquake

"drop-and-cover" drills. Greater emphasis is put on school-wide attention to earthquake safety than is generally true of the one-time presentations to teachers. The upper strategy in Figure 4-1 entails working with principals, district administrators and school boards, or even state level administrators, to promote the institutionalization of school-wide or district wide curriculum adoption or safety practices.

Factors that affect the selection or adoption of a general strategy for reaching school populations include:

- The size, number and characteristics of the targeted school districts;
- Constraints on school districts to consider new programs;
- Constraints on school principals to consider new programs;
- Teachers' curriculum needs; and
- Preferences and strengths of each project's staff.

4.1.4 The Projects' Strategies

The three projects all worked to some extent with each of the three general strategies. The enhanced arrows between projects and strategies, however, indicate which strategies were emphasized most.

SESEP, by project design, initially worked intensively with a few pilot schools to promote a school-wide earthquake education and safety program, and also provided a few focused workshops for custodians, principals, and school nurses. As demand for its services grew and resources diminished, the project moved toward offering workshops to groups of teachers and other staff, often drawn from several schools and across

districts. The workshops focused on teaching those present how to implement an earthquake safety program in their own schools.

The Memphis community outreach project had the largest school population to reach, and also chose to divide its efforts more or less equally between school audiences and other target audiences. The staff preferred to concentrate mainly on presentations for teachers (such as through district-sponsored in-service training for science teachers), principals, or the entire faculty and staff of an individual school. Compared to Seattle and Charleston, the Memphis project put less emphasis on making repeated contacts with the same schools, and more on reaching schools that had not yet been contacted.[a]

The Charleston community outreach project focused about 75% of its efforts on school presentations, and 25% on other target groups. The Charleston EEC staff routinely engaged in a variety of approaches for reaching school populations. These included: in-service and recertification training sessions for science teachers in a particular district; all-school assemblies; programs for all of one grade level in a school; individual classroom or special group (e.g., gifted students) presentations; mini-workshops for a few teachers at a time to prepare them to apply the teaching techniques in their own classrooms and schools; and one-time programs for all teachers and other staff of a particular school. The project staff also worked intensively with a few individual schools, meeting repeatedly with school staff to assist them in establishing their own earthquake safety programs.

Each project is discussed in more detail below, beginning with a summary of its major accomplishments, and followed by brief observations on its effectiveness along the

[a]Memphis Project Director notes exception: Pilot schools were repeatedly contacted.

three criteria of promoting educational gain, risk reduction, and institutional change.

4.2 Seattle Earthquake Safety and Education Project

The Seattle Earthquake Safety and Education Project (SESEP) was initiated in August 1983, at the same time as the Memphis and Charleston community outreach projects. Documentation for the SESEP project covers two years, from September 1983 through August 1985, after which time the basis for its third year FEMA funding changed and further detailed documentation is not available. Interviews with project staff and program recipients covered some aspects of the third year.

4.2.1 Accomplishments at the Individual School Level

During the first year, the SESEP obtained permission from the Seattle Public school system to implement earthquake safety and education activities in the school system. SESEP recruited two elementary schools as pilot schools. The second year, four more schools agreed to serve as pilot schools. One of the selected pilot schools was subsequently closed (partly because of the perceived vulnerability of the building to earthquake damage) and another school was selected by the SESEP. Five out of the six pilot schools demonstrated the potential of the program design (the sixth dropped out of the pilot effort). These five schools established earthquake safety and education as a focus of their school safety committee, each committee developed some type of an earthquake safety plan for the school, and most of the pilot schools took some major steps to identify hazards and more fully implement earthquake drills. The entire staff (approximately 30 per school) and student body (approximately 500 per school) of the pilot schools were given instruction

on earthquake safety and response and provided educational programs on the causes and consequences of earthquakes.

Used in conjunction with SESEP staff assistance, the FEMA Guidebook provided a major source of guidance for the development of the pilot school earthquake safety plans. Suggestions for Guidebook revisions were obtained from the school users of the Guidebook and other local reviewers. The EV "hands on learning" approach and teaching materials package was used by the SESEP staff to present information on earthquakes and on earthquake safety practices. A systematic evaluation was conducted by a testing specialist of the effectiveness of the materials and approach being used in the intermediate grades, providing insights into some desirable refinements to make, and providing assurance of the efficacy of the approach for teaching young children about earthquakes and protective actions.

Materials for depicting the local earthquake hazard and discussing local risks were developed, including adaptations to the EV presentational materials, as well as slides and "scripts" that could be used by either the SESEP staff or others to make presentations to schools or other organizations. The SESEP staff was assisted by volunteers in giving the presentations, using the "learning center" approach (small groups of students being presented with one concept at a time). These volunteers were trained in special workshops held by the SESEP staff. At least four volunteer training workshops, each accommodating at least 20 participants, were held during the first year. The workshops were specifically to prepare volunteers to help the SESEP with pilot school presentations. The workshops also sometimes resulted in the attendees (teachers and nurses, school secretaries, custodians) going on to promote earthquake safety in their own classrooms and schools without the further direct assistance of SESEP staff.

It is estimated that approximately 40 (45%) of the Seattle district's 87 regular public schools received either a presentation by SESEP staff or requested materials from the SESEP that could be used by the school for doing its own earthquake safety planning or training.

Besides the six schools that initially agreed to pilot the program, at least three more schools started their own earthquake safety program using SESEP materials and some SESEP assistance. Fourteen other schools in the Seattle district requested all-school programs, which the SESEP staff provided. Fifteen to 20 more schools requested varying types and quantities of materials for their own use in addressing earthquakes and earthquake safety.

Publicity about the project also resulted in requests from schools and teachers beyond the Seattle district. Prior to the end of the second year of SESEP's operation, SESEP provided information, advice, and on occasion presentations to at least 14 public and private schools beyond Seattle

4.2.2 Accomplishments at the District Level

Prior to the inception of SESEP, the Seattle Public School district had made earthquake vulnerability assessments of their facilities. A requirement of four drop and cover drills a year already existed at the district level, although this had not in the past been aggressively enforced. Each school was also supposed to have a committee to address general safety issues, although compliance with this requirement was also variable, since individual principals exercised considerable discretion about activities at their school.

Besides permitting the safety and education program to be tested in district schools and providing meeting and

workshop space for SESEP's use, the Seattle district contributed various other resources and staff time. During the first year, district level funds allotted to each school could be used by teachers to cover their time if they attended a SESEP workshop and release time was provided to district personnel attending advisory board meetings. Also district level personnel presented relevant information on school building vulnerability and school emergency procedures as part of the planning workshop for the first two pilot schools. At the beginning of the 1984-85 school year, SESEP was asked to provide a session for the district's in-service training workshop for all school staff. Approximately 40 of the participants selected the SESEP presentation.

During the first year, SESEP was requested to make presentations on the causes and effects of Washington earthquakes to the Seattle School Board and to the Facilities and Operations subcommittee of the Board. On another occasion, SESEP was requested to provide advice about earthquake emergency preparedness needs in the district. Also, a special advisory committee was convened to address emergency preparedness issues. A request for funds ($97,000) to enhance school earthquake emergency preparedness was prepared by the risk department for consideration by the district, but it ranked near the bottom when funding priorities were established.[4]

School districts of course can vary with respect to their willingness to lend importance to improving earthquake safety for the children of the district. For example, a

[4] It should be noted that since the inception of SESEP in August 1983, the Seattle School district had had three superintendents. Setting and keeping to priorities would be difficult at best under these circumstances. The district's organizational difficulties seemed to be smoothing out by early 1987; it is possible that greater stability in the school district administration will permit a new view of the importance of the earthquake hazard.

suburban district to the south of Seattle took very seriously the message conveyed at a SESEP workshop. Following the workshop, the superintendent of the district contacted the director of SESEP to request further information and assistance. Based on what staff had learned at the workshop, and on the technical assistance provided by the workshop materials and SESEP staff, the superintendent has made earthquake preparedness planning one of five "superintendent's goals" for the upcoming year. The district has put forth a policy that every school will have an earthquake plan, will conduct drills, and will have written procedures for what to do in the event of an earthquake. The superintendent has promised district support to the schools in the preparation of these plans and procedures in the form of the Guidebook, a film on what to do during an earthquake, and other technical assistance (most likely involving the SESEP director).

4.2.3 Accomplishments at the Community Level

Parents represent a major link between the community and school district. SESEP gave a presentation to the PTSA of each pilot school (with an average attendance of around 30) in order to cultivate support for the earthquake safety program at the school, and to recruit parents to serve on the earthquake safety planning committee. Wider awareness of the earthquake safety issue also was promoted through the district council of PTSAs, which facilitated SESEP contact with PTSA presidents, adopted school seismic safety as a top priority, and recommended that school seismic safety be adopted by statewide parent-teacher associations as a top legislative priority.

Besides the workshops and presentations made to school and parent audiences in particular, the SESEP also made presentations to a variety of other types of organizations,

including State employees, Army reservists, hospital staffs, the fire department, county emergency management agencies, and the Red Cross. A central purpose of these presentations was to create an awareness on the part of these organizations of the school earthquake safety and education program and to make them aware of the need for an integrated response in the event of a major damaging earthquake.

The SESEP also took the necessary steps to perpetuate Earthquake Awareness Week by urging the Department of Emergency Management to again request a proclamation by the Governor. During the 1985 state-wide Earthquake Awareness Week, SESEP encouraged the media to feature school activities related to earthquake safety in the Seattle schools.

4.2.4 Project Effectiveness

Because of the limitations on the evaluation design it is not possible to arrive at an overall assessment of the extent of educational gain, risk reduction, and institutional change within the Seattle public school district.[5] However, discussions with project staff and recipients of the project's services afford some specific examples of how these outcomes were demonstrated by the pilot schools.

Educational Gain. The most notable documentation of educational gain related to project activities is provided by the evaluation study designed and executed by an educational psychologist who worked under a special contract to SESEP. The objective of the evaluation was to (1) determine the appropriateness and effectiveness of the teaching approach being used by SESEP so any necessary refinements could be made and (2) determine if the earthquake education program

[5] As noted previously, the statement of work for the Seattle project did not require that some level of effectiveness with the schools be demonstrated.

improved the students' level of knowledge about earthquakes and protective actions. A pre-test/post-test method was designed and implemented for 4th, 5th and 6th graders in one of the initial pilot schools.[6]

The pilot school staff who were interviewed typically noted that the presentations by the SESEP staff had been instructive and very well done. These staff generally believed that awareness among both students and staff had been increased. The hands on learning approach was considered to be very effective. Two schools also had sent materials home to the parents to describe what was being done in the school. Comments and questions that were returned by the parents indicated a high level of positive response to the earthquake education activities being conducted at school.

Fifteen school people were interviewed whose schools had not been pilot schools but had staff who attended a SESEP workshop. Most had found the workshop to be very informative (or had heard that reported by someone who did attend it). A few had said that people in Seattle probably already were aware of the hazard. As one principal put it, prior to the workshop, there had been "awareness of the hazard, but no concern." The interviews indicate that for at least 10 of the schools questioned, attendance at the workshop had prompted serious consideration about things that needed to be done to improve preparedness. The workshops did seem to have the effect of increasing understanding that there is indeed a local hazard, and there are things that can be done to prepare for it.

[6] The findings from this study were reported in: Brattesani, Karen A., Preliminary Evaluation Summary on the Second Year of the Earthquake Education Development Program: Upper Elementary Students. August 1, 1985, University of Washington, Seattle; and, Brattesani, Karen A., and Linda L. Noson, Evaluation of a School-Based Earthquake Education Program, paper presented at the Natural Hazards Research Workshop, Boulder, Colorado, July 1985.

Risk Reduction. The pilot schools were more likely to have accomplished an inventory of specific actions needed to reduce the risk to and from non-structural aspects of their school building than they were to have actually accomplished widespread reduction of risk. This is based on the organizational constraint that any change in a facility, including things like bolting bookshelves or better attaching hanging objects must involve the district facilities department. This creates issues of both resource and facility staff time priorities. However, some of the respondents to the interviews noted that there are some things that the teachers and student can do themselves and that these had been done in at least some of the classrooms. This included such actions as moving heavy objects from high to low shelves and moving the teacher's desk away from television monitors suspended from the ceiling.

Responses of the non-pilot schools were fairly similar to the pilot schools with respect to the amount of progress made on risk reduction measures. That is, the workshops had convinced many of those interviewed that an earthquake plan should be prepared for their school, drills taken seriously, and classroom hazards identified. About half said their school had done at least one drop and cover drill that year. Most of these, however, said they had conducted drills in the past as well, because drop and cover drills were required. About a third of those interviewed said they had started to do some of the things suggested at the workshop, but in most instances that only involved having formed a committee or conducted a hazard hunt.[7] Three mentioned that they had specific things they wanted to do but there was no money and

[7] It should be noted that for some of those interviewed in June, the workshop they had attended had been in February, not giving them much time to implement anything during that school year.

that the district was not supportive. Several mentioned that one of the items in the workshop packet that had been most helpful was the set of sample plans from the pilot schools in Seattle.

Institutional Change. The earthquake safety plans created by the pilot schools typically included various changes in policy and practice. Examples of this include: changes in attendance recording practices; specification of the various emergency roles of the staff; enhancement of the earthquake drill practices to improve the drop and cover drills and an all school evacuation drill designed to take earthquake damage and dangers into account; and, when funds could be obtained for the purpose, enhancement of their inventory of emergency equipment and supplies.

About half of the non-pilot school respondents noted that their school had instituted an earthquake safety committee or a plan or a handbook since the workshop, or that they intended to do so beginning the following school year. To the extent that these intentions are carried out and the committee activities or plans maintained, the workshops will have prompted several schools to begin to institutionalize earthquake safety--to do something that will be done year after year, as a matter of school policy. Although the already required drop and cover drills were mentioned by about half of the respondents, only a few mentioned the need for having building-wide evacuation drills.

4.2.5 Summary and Conclusions, Seattle

One major question that must be asked about effectiveness is whether or not the initial levels of effort can be sustained. In general, it appeared that the level of interest and activity was greatly dependent on there being

one or two very committed and enthusiastic persons involved in the effort at the school.

The interviews conducted in the pilot schools indicated that the efforts in the two initial pilot schools had already declined substantially. In one of these schools there was a sense of frustration about earthquake safety activities because the district facilities department had not followed-up on requests from the school to correct some of the identified risks. This was perceived as a lack of support on the part of the school district for school earthquake safety. In the other, the prime movers had been transferred to other schools.

From the four schools recruited at the beginning of the second year, one had dropped out during that first year. In two of the remaining, there was still evidence of a high level of commitment and intent to maintain and to continue to enhance the safety gains made so far. Respondents indicated it would be necessary to have the district provide labor for taking care of some of the newly identified building hazards, but apparently had not yet tried to do that. In the third, the principal seemed to believe earthquake safety was an important activity, but showed a greater interest in the science education component of the materials. The school's safety planning efforts appeared to be in a fairly early stage and the principal indicated that there were many other competing demands. This suggests limits on how much further they would go. The message obtained from talking to people at the non-pilot schools is similar.

The implication of the above is that institutional change at the school level may only have a high probability of being sustained if it is backed up by true institution-alization of the notion of earthquake safety and education. This suggests that a long-term objective of a school program