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ROLE OF CALIFORNIA COMMUNITY COLLEGES  
IN DISSEMINATING EARTHQUAKE HAZARD  
MITIGATION INFORMATION

by

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Final Report

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# S E C T I O N 1

## INTRODUCTION

While California has long been known as "earthquake country", its residents are also exposed to other natural hazards such as floods, fires, tsunamis, and landslides. Despite this, people have continued to flock into California making it the most populous state and consequently the one with the most people at risk from natural disasters.

In recognition of this situation the National Science Foundation has sponsored this study to explore new ways of mitigating the dangers posed to these 21 million residents from natural catastrophes. The principal method considered here is the utilization of California's 100-plus community and junior colleges as a medium for informing their neighborhoods. These institutions, which have always been closely tied to meeting the particular educational needs of their local communities, appear well-suited for disseminating information and counsel on how to mitigate the effects of naturally caused hazards.

Some idea of the magnitude of the threat posed by natural hazards in California can be gained from the losses expected from these causes over a 30-year period (1970-2000). Listed below, in billions of dollars, are predicted losses assuming no improvement in existing practices.

<u>Cause</u>	<u>Loss</u> (billions)
Earthquake shaking	\$21.00 (From "Urban Geology - Master Plan for California", 1973)
Landslides	9.85
Flooding	6.50

Total losses due to the above plus other geologic problems are expected to be \$55 billion, or almost as much as the projected loss from urban and forest fires during the same 30-year period.

In the face of these staggering costs one wonders what can be done to lessen them. There are promising solutions, but implementation is slow. The largest earthquakes in California took place in the 19th century, when the state was sparsely populated. The most severe one of this century occurred in 1906 in San Francisco, but not until the 1933 Long Beach quake was concern aroused for public safety. Shortly thereafter the Field Act was passed providing requirements for school building safety that were gradually implemented. The San Fernando earthquake of 1971 led to a fuller appreciation of the large population now at risk and resulted in further legislative action aimed at hazard mitigation.

In 1974 the California Seismic Safety Commission was created. This body is active in all phases of earthquake hazard mitigation, holding frequent meetings and hearings on new problems, setting state policy and making recommendations for legislation, and coordinating with other federal, state and local agencies and groups. The following sample listing of meeting agenda items indicates the extent of the commission's involvement:

1. Auburn dam review
2. Workshop on "Building Inspection Practices for Seismic Safety"
3. Evaluation of state-owned buildings
4. Water heater anchorages
5. Guiding earthquake recovery
6. Disaster preparedness education
7. Mobile homes earthquake damage
8. Research needs for seismic safety

Of great interest is the commissioner's action in August of 1978 in setting up an Earthquake Education Program. The objective of this program is "to develop the objectives and specifications for a short course about earthquakes for use in elementary and secondary schools". One reason given for selecting this part of the educational system was that almost everyone passes through it. Another was that schools are structured for imparting learning and shaping or modifying behavior. The committee's efforts are being coordinated with the State Department of Education and Office of Emergency Services, the former being responsible for education from kindergarten to twelfth grade.

#### Other Natural Hazards

Besides earthquake shaking, landslides and flooding, there exist a number of other natural hazards. These include tsunamis, hail storms and wind storms, and land subsidence, but their threat to California communities is considerably less, and the losses they will cause are several orders of magnitude lower. Because of these differences and also because these disturbances are typically localized problems, there does not appear to be the same urgency for instituting programs for information about hazard mitigation on a nationwide, or in many cases, even a statewide basis.

#### Mitigation Measures

To assist in focusing on the areas of earthquake hazard mitigation that this study concerns itself with, it will be useful to survey the problem from several vantage points. The first shows mitigating measures in general terms and is illustrated by a flow model developed by Stanford Research Institute (Figure 1), and later modified.

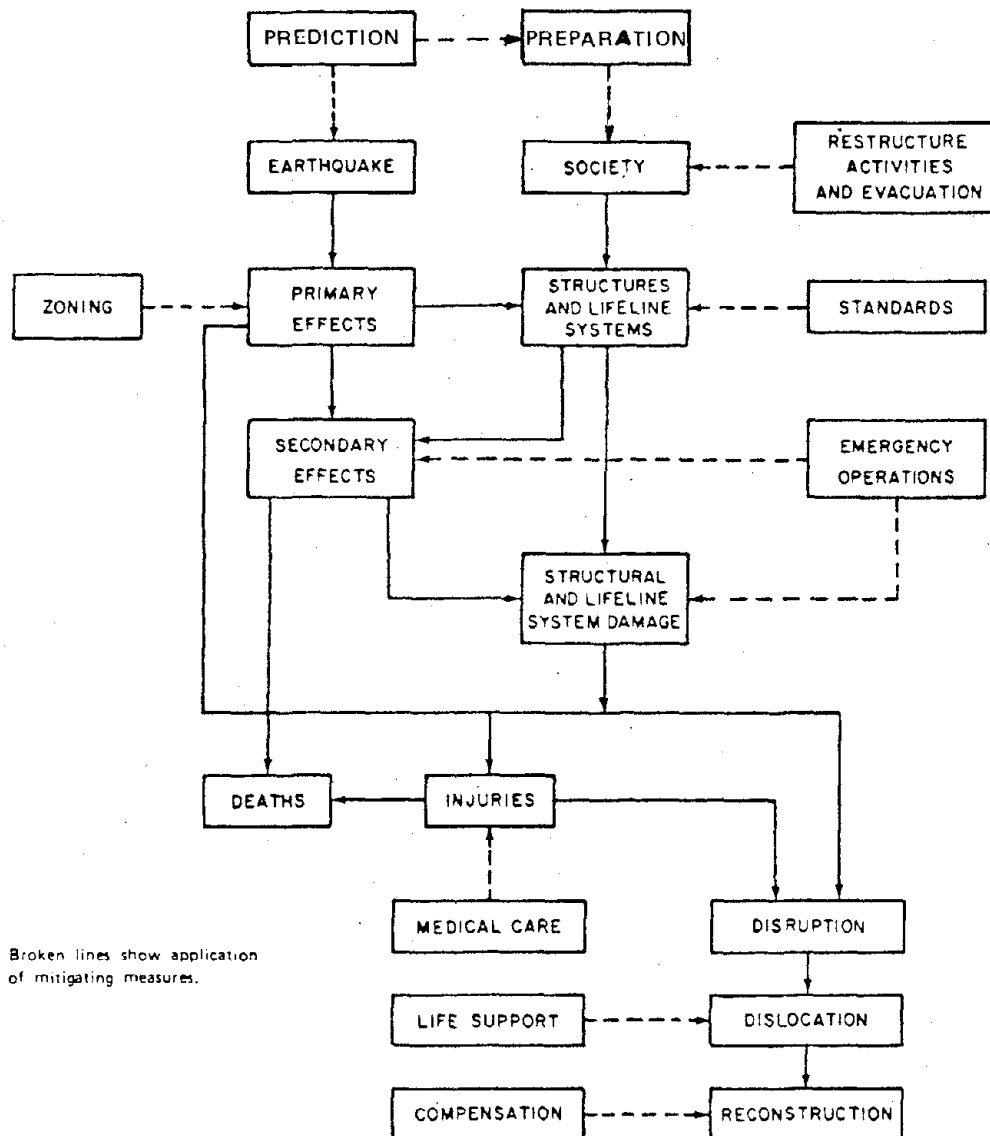


FIGURE 1 IMPACT OF EARTHQUAKE ON SOCIETY, SHOWING MITIGATING MEASURES AVAILABLE

Here the sequence of EARTHQUAKE, PRIMARY EFFECTS and SECONDARY EFFECTS, is shown to have impacts on people's health (DEATH, INJURIES), on the fabric of social organization and on the physical structures and systems that support society (dwellings, buildings, utilities, transport, communications, and public services).

Of the nine mitigating measures shown, the five at the top of the diagram, PREDICTION, PREPARATION, ZONING, EVACUATION, and STANDARDS, are conducted before the earthquake event. PREDICTION, ZONING, and STANDARDS, based primarily on scientific seismic research and engineering analyses, are consequently specialized to an extent that the interest of society in general in these matters is somewhat limited. The general public, however, should have a sufficient understanding of the basics so that informed decisions can be reached concerning the social, political, and economic issues that devolve. EVACUATION of a population in advance of a predicted earthquake is not yet a reality, but ample precedents exist for hurricanes, tsunamis, floods, etc. where forecasting and monitoring systems provide a high degree of predictive accuracy.

PREPARATION has been implemented in a piecemeal fashion, most often as a disaster planning function with relatively small numbers of people participating, in a scattering of government agencies and private organizations.

It is the purpose of this study to suggest ways in which the PREPARATION measure can be augmented to reach more people with more information suitable to their situations. The conclusions reached are that the community colleges are very favorably situated, in their capabilities and practices, to provide and impart the information and knowledge that large segments of their local populations should have.

The scheme followed for developing this role and for projecting methods for information dissemination consisted of the following steps:

1. Determining the needs of various segments of communities for hazard mitigation information or instruction.

2. Surveying the capabilities that reside in California community colleges and that could be applied to this task.
3. Formulating methodologies for information dissemination that are appropriate to both the community and its local college.



## S E C T I O N 2

### THE COMMUNITY'S INFORMATION NEEDS

A number of methods can be used for identifying the needs of various groups in the community for hazard mitigation information. Among them are the following:

1. Historical - reviewing and analyzing the record of past earthquakes to determine the deficiencies revealed, mistakes made, and measures needed to avoid recurrence.
2. Survey - questioning representative members of all or most of the user groups as to the needs they perceive. This method has pitfalls because many users do not know what they need.
3. Projective - soliciting the opinions and views of knowledgeable individuals who are familiar with many of the user groups and have experience with prior and analogous dissemination efforts.

A mix of all three approaches was used in this study, with somewhat more emphasis on the first and last methods. The first steps taken to begin the needs analysis were:

1. To identify the user groups and their important subdivisions, and
2. To categorize and define for each group and subgroup the essential topics that would be necessary and suitable for each of three phases of indoctrination - understanding the problems, making suitable plans and preparations, and what to do when a contingency occurs.

In the matrix presented in Table 1 a beginning is made in listing user groups and sub-groups. Although it is obvious that there will be some overlap of one group on another, this is not really a drawback. The main problem in dissemination of information is achieving sufficient coverage of an entire community, not redundancy in getting the message across.

Table 1 - Matrix for Information Analysis

USER GROUPS	UNDERSTANDING	PREPARATION	RESPONSE ACTIONS
School Children o Elementary o Secondary			
Housewives			
Homeowners			
Ethnic o Spanish o Black o Other			
Local Govt. o County o City			
Physically Impaired o Elderly o Handicapped			
Associations o Merchants o Professional o Religious o Builders o Women's o Neighborhood o Labor, etc.			

Schools

The California State Board of Education adopted a resolution on October 9, 1970 regarding disaster preparedness and civil defense education in elementary and secondary schools throughout the state. Among its recommendations were the following:

1. That the eight-hour course, "Personal and Family Survival", be conducted in elementary and secondary schools.
2. That the State Department of Education, county and district superintendents, and local school boards give top priority to educating school administrators and teachers in the methods of survival through in-service training programs.
3. That the State Curriculum Commission explore the means of introducing survival material into elementary textbooks specifically, and into secondary textbooks where possible.

As an aid to school administrators and school system officials, the State Board promulgated a "Civil Defense and Disaster Planning Guide" in 1972. The plans outlined in this publication include provisions for both natural disasters (earthquake, flood, windstorm, forest fire) and man-made disasters. Emergency actions to be implemented by officials or teachers include a few simple commands and responses that can be used as appropriate to the type of disaster. These include: STAND BY, DROP, TAKE COVER, LEAVE BUILDING, and GO HOME.

For earthquakes the following actions are set forth:

"Earthquakes usually occur without warning. If an earthquake occurs, the following actions will be taken inside the school building:

- The teacher or other person in authority implements Action: DROP
- As soon as possible, move the children away from windows and out from under heavy suspended light fixtures.
- Implement Action: LEAVE BUILDING when the earthquake is over. DO NOT RUN - particularly on stairways.
- Guards should be posted at a safe distance from all building entrances to see that no one reenters the buildings for any reason until the buildings have been declared safe.
- Do not light any fires after the earthquake.
- Avoid touching electrical wires that may have fallen.
- Render first aid if necessary.
- Take roll.
- Request assistance as needed, through appropriate channels, from the county or city Civil Defense Office or fire and police departments.
- Notify utility companies of any break or suspected break in lines which may present an additional hazard.
- If possible, notify the school district defense coordinator (or other appropriate official).
- The principal will determine the advisability of closing the school. He will try to procure the advice of competent authority about the safety of the building.

Special consideration should be given to exit routes. Many California schools have heavy architectural ornaments over the main entrance."

Based on limited inquiry to school administrators it appears that like so many other programs that were initiated as of "high priority", it has been displaced by more recent problems, both economic and social. Since the apparatus and authority are already in place, even though not fully functioning, the need for additional earthquake hazard input via community colleges is not seen as needed or warranted. As noted elsewhere in this report the California Seismic Commission has recently turned its attention to this problem.

#### Homeowners

This is a large and disparate group that has a very real economic and personal stake in hazard mitigation. Their needs include an understanding of

1. Seismic risks of their neighborhoods.
2. Pre-event preparations and preventive measures for protecting their houses, families, and possessions.
3. Explanation or basic training in proper actions and responses during and immediately after a catastrophic event.

Among other things the August 13, 1978 earthquake in Santa Barbara uncovered a problem with mobile homes. Approximately 140 of these were damaged, mostly from falling or collapsing off their foundation supports which proved inadequate during ground motion. These homes are set on pylons made of lightgauge steel in a pyramidal shape, having a one foot square base, ranging from one to three feet high, capped by a jackscrew. Many of these homes are

owned by senior citizens, which poses special problems in hazard mitigation for a public sector that includes numbers of infirm and handicapped individuals.

Because of the large and growing numbers of mobile homes being built, sold and occupied in Southern California, a real need for hazard mitigation information is seen to exist. Solutions to this problem would provide an excellent subject for dissemination through the medium of community colleges.

#### Housewives

While their needs are generally similar to the preceding class of homeowners, their emphasis is different. Spending a larger percentage of their time in a dwelling (owned or rented), they are more intimately concerned with its running - the children, food buying and preparation, and family unit planning. Their information needs are therefore oriented towards those primary concerns.

#### Ethnic Groups

Many California communities have large ethnic groups, particularly of Hispanic and Oriental origins. In many cases this poses problems in information dissemination because considerable numbers of such groups understand little or no English. Programs involving communications with them must take this added complication into account.

#### County Government (Santa Barbara)

Has completed a Geologic Problem Index of the county by 5-acre grids, assigning each to one of five seismic hazard categories - low, low-moderate, moderate, moderate-severe and severe. The South Coast area which includes half the population, and also Santa Barbara City College has 53% of its area in the moderate risk zone, 15% moderate-severe, and 6% severe.

### City Government (Santa Barbara)

The city has only recently begun producing a geologic hazards map - nothing is yet available for lay persons and the general citizenry. Although Santa Barbara has experienced a number of major disasters (earthquake 1925, oil spill 1969, fire 1977) sensitivity to possible recurrences seems to wane rapidly with the passage of time. Nevertheless the city government faces a growing number of problems related to natural hazards. To name a few, there is potential liability for hazards in old and inadequate public buildings, from hazardous private buildings adjoining public property such as streets and sidewalks, and issuance or non-issuance of earthquake predictions and warnings. Further problems arise in land use planning and zoning, issuance of building permits and safety inspections.

### Associations

Cities and large towns typically have hundreds of associations reflecting every facet of business, professional, social, religious, and other interests of the population. Since many of these are eager to promote the welfare and well-being of their members, they provide receptive audiences for topics of interest. Their needs for hazard mitigation information are similar to those of the general public; some groups do have need for more technical or specialized data. Among the latter are builders and contractors, engineers and technicians, and lawyers, as examples. An extensive listing of associations in one city is presented in Appendix B.

SECTION 3  
COMMUNITY COLLEGE CAPABILITIES

Public community colleges in the United States now number more than 800 and have more than two million students enrolled. A much larger number of people attend noncredit courses sponsored by these institutions as continuing or adult education, cultural and recreation programs, conferences and workshops. Most of them are two-year colleges preparing students for 1) transfer to other colleges/universities, 2) entry into the business world, and 3) upgrading of job skills and capabilities. Their attractiveness is explained by their convenient location, low cost, and open admission policy.

In community colleges the emphasis is on teaching, not research or publication. The faculty who teach academic subjects usually have master's degrees, while occupational instructors bring extensive job experience to the classroom and workshop.

While community colleges are oriented to their locales, they are controlled and funded at the state level. This has resulted from their status changing from a role as an extension of high school to one as a part of higher education. Regardless of this it is obvious that they constitute a significant teaching resource in the nation.

California Community Colleges

The hundred-odd public community colleges in California are creations of their local communities and as such reflect the character of their neighborhoods and the needs of their local communities. They have, however, undergone a significant change in the past year. Passage of Proposition 13 sharply cut their major source of monetary support (real estate taxes) and made them heavily dependent on the state's revenues, which now provide over 70% of the colleges'

budgets. The resulting fiscal austerity has caused considerable shrinkages in enrollments, faculty, and number of programs being offered.

The resources and capabilities that these two-year colleges could bring to an earthquake hazard mitigation program were investigated in several ways:

- 1) by literature search
- 2) by visits to two typical colleges
- 3) by discussions with officials of the chancellor's office for the community college system and several allied professional associations.

Results of the literature survey are presented in Appendix A which is a listing of the public community colleges together with data on the size and type of faculty, student body, and other resources of interest to this study. Data was obtained from a number of sources including "American Junior Colleges" college catalogs, and data from the Chancellor's Office of the California Community Colleges.

#### Santa Barbara City College

This institution serves an area with a population of about 150,000 people, with a substantial fraction of these being retired. Tourism, agriculture and light industry are the principal revenue producers in this mixed economy.

Enrollment at Santa Barbara City College is approximately 7,000 of which 5,000 are day students. Adult education programs have 450 course offerings with session enrollment of 11,000 average for the three sessions held annually. (Courses offered are two kinds, credit and non-credit.)

Those carrying credit are usually difficult and time-consuming to establish, requiring qualification of course content, instructor, texts and references, and approvals by local college administration and board of trustees, and



of the state chancellor's office. By contrast non-credit offerings, which comprise the bulk of adult education or community services divisions of the community colleges, can be very readily instituted and take many forms such as workshops and lecture series as well as standard courses of instruction or training. Non-credit courses are frequently co-sponsored by interested or participating local community groups and associations. Appendix B identifies these co-sponsors and illustrates the diversity of local community groups with which the college and its adult education division interfaces. Of the 287 entities in this list the 78 that have been asterisked are considered to be particularly promising target groups for an earthquake hazard mitigation program.

#### Pierce College

This is one of the nine campuses of the Los Angeles Community Colleges System. It is located in Woodland Hills, a largely residential suburb of the city.

The Community Services program operates four quarterly sessions per year and offers some 160 courses to about 3,000 enrollees, which is about half of the pre-Proposition 13 totals. Discussion with the staff elicited the information that several years ago they had sponsored a workshop on "How to Survive an Earthquake". Investigation and follow-up later provided the information and detail presented in Section 4 of this report.

## S E C T I O N 4

### METHODOLOGIES FOR INFORMATION DISSEMINATION

As noted previously, users are not a homogeneous group and consequently differ greatly in both their needs for information and their ability to absorb and use it. What elected officials and the man in the street need and can understand is quite different from the information requirements of engineers and land use planners.

In the previous section we looked at what various groups needed in the way of hazard mitigation information. Now we look at how to fill those needs. Community colleges have developed many different ways of training, informing and educating people. Among the methods and formats they use are the following:

Regular courses	Media - Newspapers
Short courses	Magazines
Lectures	Television
Conferences	Radio
Seminars	Motion pictures
Workshops	Libraries
Auto-tutorial programs	Referral centers
Training sessions	Exhibits
Outreach projects	Surveys
Science fairs	Emergency drills

#### CREDIT COURSES

The most conventional and traditional method is the course of instruction. Experience at the colleges has shown that there is little demand for an entire course devoted to earthquakes or other natural hazards, and this usually only shortly after a major event. On the other hand there appear to be excellent opportunities to inject significant amounts of hazard mitigation information into existing courses.

The problem with developing a credit course dedicated to the study of earthquake hazards information lies in the highly specialized nature of the subject, as well as the cyclical public interest in such groups. First, it is difficult to locate an instructor knowledgeable in the field. Then, this field of study has not matured to the point where a well defined, concentrated body of literature exists on the subject. Thus, the instructor attempting to develop a course curriculum or attempting to improve his or her background will find locating adequate source materials more difficult than normal. As a result, instructors will usually resist requests for the initiation of such a curriculum.

Even if a credit curriculum is founded, public interest in the topic is not likely to be sufficient to support such a course except immediately after a major natural disaster such as the 1971 San Fernando earthquake or the 1952 Kern County, California, earthquake. In such major seismic events public interests in earthquake safety has been observed by the author to be topical for many months after the occurrence. However, following lesser but significant seismic events such as the August 13, 1978 Santa Barbara earthquake, where property damage and loss of life were minimal, interest in earthquakes was topical for only a few weeks. The ponderous procedures necessary to establish and offer credit courses at the Community College level cannot move rapidly enough to capitalize on these brief periods of heightened public interest. The non-credit "workshop" or evening course is logistically better adapted to respond on short notice.

#### Alternative Approach

It would seem desirable to make dissemination of earthquake hazard information part of a person's regular educational background in hazard-prone regions such as California. However, as previously discussed regular credit courses in

the subject are likely to meet with faculty and administrative resistance due to difficulty in instruction and low public interest.

Specialized pre-developed modules, designed as inserts compatible with the curricula of many different credit subjects, could provide a solution. For such modules to be successful they would have to 1) be easily adapted into the subject matter with which the instructor is already familiar 2) be readily available 3) be completely self-contained 4) be modular within themselves to allow instructor intervention and/or modification if so desired. A module meeting these criteria could increase the efficiency of an instructor by providing a pre-developed instruction topic for modifying or adding to an existing curriculum, or to be used as a laboratory or lecture back-up at times when the instructor may be absent. Properly prepared and advertised modules should be as readily accepted and adopted by faculty as existing commercial modules with similar design. The module approach also circumvents the problem of low public interest, since it is just a vignette added to existing and well-established courses.

### Structure of Modules

In order to illustrate the possibilities of the modular approach in the dissemination of earthquake hazard mitigation information, detailed outlines are presented for two modules and suggestions made for the structure and application of others.

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#### Sample Module for Introductory Geology Course

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Objective:

- 1) To provide a summary of basic information on the origin of earthquakes and the response of various ground material to seismic waves

- 2) To educate the student to recognize potentially hazardous land areas, and to suggest responses if he is in such area during an earthquake
- 3) To provide basic information on the responses of structures to earthquakes and to suggest responses if caught in a structure during an earthquake.

Outline:

A. The nature of earthquakes

1. Types of seismic waves and the surface ground motion generated by these waves
2. Definition and examples of active or "earthquake" faults
3. Geographic distribution of active faults and historic seismicity in a geographic region where course will be taught
4. Measurement of seismic energy
  - a) The Richter scale
  - b) The Modified Mercalli intensity scale
5. The variation in seismic intensity caused by changes in subsurface geology.

B. Recognizing potentially hazardous geologic situations related to earthquakes

1. Drainage patterns and possible flood routes in case of dam failure
2. Situations conducive to seismically generated snow or rock avalanches
3. Ground potentially capable of liquefaction
4. Active and inactive landslides, areas possibly prone to lurch failure
5. Areas where tsunamis may prove a threat
6. Pictorial presentation of historic cases illustrating the effects of the above
7. Mitigating measures to be taken if hazards are encountered
  - a) The role of avoidance - its environmental, economic, and psychological impacts

- b) Survival in a bad situation
  - 1. General suggestions for survival in earthquake
  - 2. Documentary accounts of survivors.

C. Fundamentals of Seismic Safety Engineering

- 1. Response of large buildings to shaking and soil liquefaction
  - a) Mitigating engineering measures
  - b) Mitigating actions on the part of individuals in large structures during earthquake
- 2. Response of family dwelling to shaking
  - a) Mitigating measures
    - 1. Control of utility functions
    - 2. Do-it-yourself procedures to minimize damage
  - b) Mitigating action to save lives

D. Civil defense and emergency response action

- 1. Conservation of resources, water, food, personal property
- 2. Disaster organization
- 3. Minimizing fire and sickness hazards

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Sample Module for Introductory Political Science Class

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Objective:

- 1) To provide student with an awareness of the nature of an earthquake disaster
- 2) To provide knowledge of political, economic, and psychological ramifications of such a disaster
- 3) To supply remedial knowledge to minimize the effects of such a disaster on his person.

Outline:

- A. The political impact of disasters
  - 1. Mechanics of governmental recognition of a disaster

2. Mobilization of state and federal resources to cope with disaster
  - a) Distribution of resources and the selection of allocation procedures
  - b) Politics of past disaster aid
3. The political impact of major disaster on the organization of political entities
  - a) Comparison of politics of disaster in an earthquake-prone vs. a relatively hazard-free state
4. Historic political impact on a national scale of major disaster
5. The politics of earthquake prediction as an archetype for the problem of disaster prediction.

B. Nature of an earthquake disaster

1. Nature of seismic shaking
2. Faults
  - a) Global or regional distribution of zones of earthquake activity
  - b) Historic seismicity on a global or regional scale
3. Effects of seismic shaking
  - a) Geologic consequences - landslide, avalanche, soil liquefaction
  - b) Cultural effects - destruction of dwellings and utility systems.

C. The optimum response of an individual in a disaster

1. Remedial safety procedures
  - a) In large structures
  - b) In small structures
2. Remedial household measures to mitigate earthquake hazards
3. Procedures and agencies through which help may be obtained in case of major disaster.

Format of Modules

Modules may take several forms such as: 1) video tape only 2) video tape excerpts to be utilized in conjunction with classroom lectures derived from outlines and source

material provided in the module 3) self-contained slide-audio cassette packages for use in Learning Resource Centers 4) slide sets provided in conjunction with outlines and other source material to support an instructor in classroom lectures.

The guiding principle behind the design of a module format should be versatility and ease of utilization for the instructor. For instance the subject matter in the Introductory Geology module is broken into two basic units; one dealing with geologic fundamentals, the other more specifically relating to earthquake hazards mitigation. The first section forms the essential link or tie to the course, making the presentation of earthquake-specific data fit into the logical flow of the curriculum. The same basic structure exists in the Political Science module.

With a module's content subdivided the instructor has the prerogative of deleting or adding to the module to maximize its relevancy to his own course content. Without this versatility the value of the module would be decreased. The key to the success of the module concept lies in the voluntary acceptance of the modules by instructors. This can be accomplished only if the modules are pertinent to the target subject and are versatile enough to be readily adapted to a variety of classroom formats.

Subject categories that are candidates for module development can be broken into two groups, academic and vocational. A partial list of each group is given below. In most cases several courses can be identified within each category that are excellent candidates for module development.

Academic:     Engineering  
              Black studies - History  
              Chicano studies - History  
              Administration of Justice - Political Science  
              Business Administration - Finance  
              English - (Literature - Mass Media)  
              Management - Supervision  
              Journalism



Academic (cont'd):    Earth sciences  
                          Physics  
                          Environmental studies  
                          Political studies  
                          Political science  
                          Sociology

Vocational:            Fire science  
                          Construction trades  
                          Hotel management

#### Educational Goal of Module

The educational goal of modules is the propagation of an awareness of hazard-mitigating behavior to individuals likely to be involved in a major disaster. The subject matter used to develop this awareness is related specifically to an earthquake disaster.

Some modules, such as those related to earth science, can be very specific about earthquake hazard mitigation within the context of an established course curriculum. Other modules, especially those related to the humanities and social sciences would have to be more general in their approach to earthquakes and other hazards. Without this generality it would be difficult to design modules that would fit logically into an established course curriculum. Without such a tie-in, their appeal to instructors would be minimal.

The projected goal of wide-scale use of modules would be to raise the general awareness of community college students to proper response to disasters in general. Further, it would provide specific information on hazards related to earthquakes, even though all students would not receive the same degree of exposure to basic concepts. However, a system of modular course segments could effectively promote study in the subject of earthquake hazards mitigation within the context of a Community College credit curriculum.

While this approach appears most suitable for indoctrination of regular college students, it must be

realized that this population constitutes only a small segment of the total community. Other means are necessary if substantial numbers of the local population are to be reached and instructed, or informed. In the following pages we examine other options for accomplishing this.

### WORKSHOPS

This mode of dissemination is a popular means of imparting information and instruction. Its advantages include great flexibility in structuring and delivery, adaptability to large or small groups, and sufficient two-way communication to insure impact and retention. On the other hand it requires careful preparation and above-average instructors to achieve maximum effect.

A noteworthy exemplar of this method is a 1½ - 2 hour workshop titled "How to Survive an Earthquake" that has been presented on numerous occasions to diverse groups in the Los Angeles area. Prepared by five women who are professional home economists, it is aimed at the needs and concerns of the everyday family and their home. The rationale is that because family members spend from 63% of their week (working members) to 91% (housewives) in the home, they should have an earthquake preparedness plan based on this fact.

The initial part of the presentation explains earthquakes and their effects in simple terms and sets forth basic safety rules and advice to follow during and immediately after a quake. Generous use of visual aids helps emphasize the message.

There follows the development of a preparedness plan, which includes:

- Family organization and assignments
- Emergency supplies - water
- medical
- clothing
- evacuation

Fire prevention and fighting  
Food supplies  
Emergency information, including  
    medical records, phone numbers, etc.  
Disaster assistance sources

Each participant receives a 32-page pamphlet that recapitulates as well as provides check-off lists for use in planning, and a bibliography for those wanting more information.

Over a two-year period this workshop has been presented at four community colleges, several junior high schools, five emergency preparedness groups including the Red Cross, city planners, hospital staffs and women's groups. The handbook has been reprinted four times in response to mail orders received after newspaper articles featured its availability.

On a different level and for a quite different audience, was a workshop sponsored jointly by the Association of Bay Area Governments and the California Seismic Safety Commission. This workshop was on "Building Inspection Practices for Seismic Safety". While the audience was drawn from the regional San Francisco Bay Area, servicing the needs of many communities simultaneously, it could be repeated on a smaller scale under individual community college auspices for less densely populated regions of the state.

#### CONFERENCES AND SEMINARS

These formats are usually structured to illuminate a problem area by providing information from experts and specialists, projections of future developments, and exposure to all sides of controversial or unresolved subjects. The requisites for successful use of this technique are organization, planning and facilities. Like

universities that host and sponsor hundreds of such meetings, community colleges also have the necessary ingredients for doing the same thing. An example of a recent (Dec. 1978) conference that might have been, but was not sponsored by a community college, dealt with "Earthquake Hazards and Local Government Liability". Held primarily for the benefit of San Francisco Bay Area government officials and staff, this one-day meeting covered the applicable law, the present immunities and liabilities of local government, and case histories of lawsuits. This problem, with its widespread implications, merits re-examination and a repetition of exposure to all levels of government.

The role of community colleges in sponsoring such conferences may well be enhanced by recent developments of energy shortages in this country. As fuel for travel becomes scarcer it makes more sense to hold more localized, smaller meetings than a few large centralized affairs.

#### DATA AND REFERRAL CENTERS

A simple, relatively inexpensive method of making hazard mitigation information available is by establishing a data and referral center in each community college. This center would contain a collection of books, pamphlets and articles on earthquake and other hazards, handouts which could include bibliographies and condensed advice on hazard mitigation, and possibly a library staff member or student volunteer to handle telephone inquiries. Services could include referral of inquirers to other specific local sources of authoritative information on specialized problems.

To be successful, such a service must be used. Publicizing its existence and its usefulness both widely and repetitively is therefore essential. Extensive use of

the media and other channels for reaching the largest audience is an essential part of such an operation.

#### MEDIA

Many of the community colleges publish a weekly newspaper and some of them have their own radio station or broadcast regular shows over local stations. These together with students taking courses in journalism and the performing arts constitute a resource that could be applied to this program. An assignment each year to produce an article on hazard mitigation and a radio presentation on some phase of that same subject could serve a doubly useful purpose.

#### OUTREACH

These programs are designed to help those who for some reason - physical, economic, cultural, mental, linguistic - are disadvantaged and unable to fully help themselves. Past programs by community service groups and charitable organizations have brought food, companionship, and housekeeping assistance to the handicapped and elderly. Other programs minister to the needs of children and ethnic groups. A recent project by volunteers trained by local fire departments provided inspections of homes and dwellings for fire safety. The analogy for earthquake safety is obvious.

While this is a most effective method of bringing needed information to those most likely not to otherwise receive it, it calls for large measures of planning, preparation and organization as well as the involvement of numbers of active participants.

#### SPEAKERS BUREAU

Another excellent device for "spreading the word"

about hazard mitigation is by making qualified speakers available for presentations to many of the hundreds of civic, religious, charitable and other groups that exist in every American community. Community colleges are in a very good position to do this, either as a supplement to existing public relations activities or in conjunction with others in the community who sponsor such services. A major attraction of this approach is the easy access to groups that might not otherwise be covered by other dissemination methods.

### INSURANCE

Although about two-thirds of all earthquake insurance written in the United States is for coverages in California, this still does not amount to very much. No more than one percent of the homeowners in the state carry earthquake insurance. A survey of 1000 homeowners, about equally divided into insured and uninsured, revealed some of the reasons for the low rate of coverage. First, many were unaware that insurance was available to them, and even more had no idea of its costs and terms. A further impediment was unwillingness to insure against an extreme event of very low probability of occurrence.

A somewhat similar situation exists with respect to flood insurance - most individual homeowners in flood-prone areas fail to carry coverage, even though it is 90% subsidized by the federal government. When Rapid City, South Dakota was inundated by the June 1972 flood, only 29 policies were in force. The subsidized flood insurance had been available for over a year.

Considerable research has been conducted in exploring this situation and developing possible remedies. It has been established that people will not act unless,

- a) They are made aware of the hazard, and
- b) They are informed of the mitigation

(in this case insurance) that is available.

Both of these are information dissemination and processing functions that can, in some measure, be accomplished by community colleges.

A number of methods are available for making people more aware of the losses resulting from natural hazards and the relative frequency of their various occurrences. In most cases they rely on making these losses vivid and memorable, either by recounting a recent disaster or by portraying visually in film or on television a dramatic episode. Audiovisual presentations have been found to make deeper impressions than most other formats, but it is essential that they be brought to the notice of the largest possible audiences. After the wave of disaster motion pictures in recent years, including epics about floods, fire and earthquake, it remains to be seen whether audience appetite for and reaction to this genre has become satiated.

A fundamental problem in extending earthquake insurance coverage to all owners of family dwellings in California is the inability of insurance companies in that state to cover the probable losses. In a study made by the California Department of Insurance it was found that the capital/surplus capacity among insurers and reinsurers was markedly insufficient for this purpose. Some idea of the predicted losses from a "maximum credible earthquake" as projected by the U.S. Geologic Survey for two regions (one-to-four family dwellings only) are:

- 1) San Andreas fault - San Francisco Bay Area - \$4.1 billion
- 2) Newport-Inglewood fault - Los Angeles Basin - \$7.5 billion

It is clear that unless or until the federal government institutes a program for earthquake insurance along the lines of its National Flood Insurance Program, wide-scale coverage of dwellings will be impossible. Nevertheless a considerable increase in use of such protection could be brought about by information dissemination programs making homeowners aware of insurance availability, costs, and terms.

## S E C T I O N 5

### RECOMMENDATIONS

This initial study has shown the need of various community sectors for hazard mitigation information and the feasibility of using community colleges for that purpose. In order to carry this program forward toward realization the following steps are recommended:

1. The development of appropriate plans for program implementation. These would include the selection of the most promising dissemination methodologies, determination of the number and locations of one or more pilot demonstration projects, and arrangements for scheduling, staffing, and funding these projects.
2. Development of dissemination tools, particularly course modules for instructors' use. Three prototype modules or course "building blocks" would be assembled:
  - a) For geology courses
  - b) For engineering/technical
  - c) For political science curricula

At the same time attention would be given to how best make known the availability and utility of these teaching aids.

3. Concurrent with the foregoing, define and formulate techniques for evaluating the effectiveness of hazard mitigation information transfer efforts. Assessment methods vary from subjective types such as participant responses via questionnaires and interviews, and peer reviews, to quantitative evaluations of a statistical nature.
4. Planning for the expansion of the scope of the material covered and its geographical area of application. In this effort the lessons learned in developing earthquake hazard material would be applied to other natural hazards.



Plans would also be made for the logical and feasible expansion of successful pilot demonstration projects to statewide and regional levels.

#### ACKNOWLEDGEMENTS

The author wishes to acknowledge the guidance and counsel of Mr. Herman Harvey of the National Science Foundation in the preparation of this report.

The contributions of Mr. C.R. Willingham, a faculty member of Santa Barbara City College and a consultant on this project, especially to Section 4 are also acknowledged.

## Annotated Bibliography

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Handbook for architects and safety professionals. Good examples of translating and interpreting research and development into terms and examples useful to a particular user group.

2. Bolt, B.A., W.L. Horn et al. Geological Hazards. Springer-Verlag, 1977.

Excellent explanations, with case histories, of mechanisms and theories of earthquakes, volcanoes, tsunamis, landslides, ground subsidence, avalanches, and floods.

3. California Division of Mines and Geology. Earthquakes - be prepared! Special Publication, April 1973.

Excellent exposition for laymen of causes and results of earthquakes, safety tips for before, during, and after the event.

4. California Division of Mines and Geology. Urban Geology. Bulletin 198, 1973.

Comprehensive evaluation of all of the geologic hazards that face urban planners.

5. California State Department of Education. Civil Defense and Disaster Planning Guide for School Officials. 1972.

Standard guide for school administrators and teachers. Details seven basic emergency actions and how they should be used for various natural and man-made disasters.

6. Earthquake Engineering Research Institute. Newsletters, September 1978, November 1978, January 1979.

Contained earthquake news articles and notes of meetings of California Seismic Safety Commission of some relevance.

7. Earthquake Engineering Research Laboratory. Earthquakes and Insurance. California Institute of Technology DRC-73-02, July 1973.

Contains several papers of interest. G.W. Housner details insured losses in San Fernando earthquake and D.G. Friedman shows how earthquake insurance rates can be calculated.

8. Executive Office of the President, 1978. Earthquake Hazards Reduction: Issues for an Implementation Plan. Office of Science and Technology Policy.

Identifies policy issues and alternatives. 37 issues discussed include insurance, public information, and education and information programs.

9. Executive Office of the President. The National Earthquake Hazards Reduction Program.

Lays out broad policy for implementing P.L. 95-124. Points out need for public information and participation, role of insurance.

10. Haas, J.E. et al. Reconstruction Following Disaster. MIT Press, 1977.

Examines post-event planning and recovery activities. Detailed review of recovery and reconstruction after San Francisco, Anchorage and Managua earthquakes and Rapid City flood.

11. Hamilton, R.M. Earthquake Hazards Reduction Program, FY 1978 Studies. Geo. Survey Circular 780, 1978.

Describes scope of research programs sponsored by USGS and NSF.

12. Kunreuther, H. Limited Knowledge and Insurance Protection. Public Policy V24 No.2, Spring 1976.

Contains results of surveys of homeowners in areas hit by flood and earthquake. Shows their attitudes towards risk and insurance.

13. Lafferty, L. et al. How to Survive an Earthquake. CHEC Publications.

This guide and workbook is aimed at the housewife and

general public. Used as the basis for 1½-2 hr workshops in community colleges, schools, churches, etc.

14. NSF - 2nd International Conference on Microzonation, Proceedings Vol I.

Several good papers on earthquake property losses and insurance.

15. National Science Foundation, RANN 2. Vol.IV, Coping with Man-Made and Natural Hazards. 1976.

Two useful articles on earthquake information transfer and reducing losses from natural hazards.

16. University of California, Berkeley. Abstract Journal in Earthquake Engineering, December 1976, 1977.

Mostly devoted to research and engineering but last section covers legal, socioeconomic and governmental aspects and yielded several good sources.

17. Wiggins, J.H.Co. Building Losses from Natural Hazards.

Underscores potential property savings from mitigating earth, air and water hazards.

APPENDIX A

DATA ON CALIFORNIA COMMUNITY COLLEGES



2

Full-time  
 Ph.D.  
 Masters  
 Bachelor  
 CIVIL  
 Mech.  
 Electr.  
 Other Eng.  
 Chem.  
 Geology  
 Earth  
 Sciences  
 Phys.  
 Science  
 Fire  
 Science  
 Insurance  
 Librarians  
 Books  
 Periodicals

Colleges	Full-time	Ph.D.	Masters	Bachelor	CIVIL	Mech.	Electr.	Other Eng.	Chem.	Geology	Earth Sciences	Phys. Science	Fire Science	Insurance	Librarians	Books	Periodicals
College of the Siskiyous	2	26	7												1	16	149
Columbia Jr. College	3	46	5										x		3	20	300
Compton College	4	62	14												2	35	321
Contra Costa College	4	98	18					x					x		4	45	300
Cuesta College	5	63	19					x							2	21	440
Cypress College	2	95						x							4	32	378
De Anza College	7	146	15					x							9	40	582
Diablo Valley College	10	159	22					x					x		4	48	418
El Camino College	NA	NA	NA					x							6	64	803
Foothill College	32	219	27					x							6	62	426
Fresno City College	3	143	56					x							6	44	479
Fullerton Jr. College	28	215	29												7	67	900
Gavilan College		35	7												2	20	150
Glendale College	6	75	14												2	35	400
Golden West College	4	101	18												5	39	697
Grossmont College	3	149	20					x							5	41	800
Hartnell College	11	61	5												3	46	325
Imperial Valley College	3	66	10												2	24	271
Laney College	9	137	81												5	34	450
Lassen College	1	35	17												2	8	100

Full-time  
 Ph. D.  
 Masters  
 Bachelor  
 CIVIL  
 Mech.  
 Electr.  
 Other Eng.  
 Chem.  
 Geology  
 Earth  
 Sciences  
 Phys.  
 Science  
 Fire  
 Insurance  
 Librarians  
 Books  
 Period-  
 icals  
 (000)

Colleges	Full-time	Ph. D.	Masters	Bachelor	CIVIL	Mech.	Electr.	Other Eng.	Chem.	Geology	Earth	Sciences	Phys.	Science	Fire	Insurance	Librarians	Books	Period- icals	(000)
Long Beach City College	24	407	155													7	86	520		
Los Angeles College - East	41	214	135					x	x		x		x		x	5	63	611		
Los Angeles College - City	33	230	28					x	x		x		x			8	110	1200		
Los Angeles College - Harbor	12	192	34								x		x			5	54	647		
Los Angeles College - Pierce	253	NA	NA	NA				x	x		x		x			4	67	816		
Los Angeles College - Southwest	4	54	16					x	x		x		x			3	30	385		
Los Angeles College Trade-Technical	13	64	39					x	x							4	82	851		
Los Angeles College - Valley	32	208	31					x	x		x		x			8	86	831		
Los Angeles College - West	7	52	9					x	x							2	25	475		
Merced College	2	81	54													2	24	150		
Merritt College	14	115	27					x	x				x			5	49	512		
Mira Costa College	3	48	11													1	16	288		
Modesto Jr. College	12	169						x	x							5	59	747		
Monterey Peninsula College	13	73	14					x	x				x			2	46	375		
Moorpark College	12	87	6					x	x						x	3	30	350		
Mount San Antonio College	14	186	38					x	x				x			9	78	850		
Mount San Jacinto College	2	34	26					x	x				x			1	19	210		



Colleges	70	NA	NA	NA	NA	Ph.D.	Masters	Bachelor	Civil	Mech.	Electr.	Other Eng.	Chem.	Geology	Earth Sciences	Phys. Science	Fire Science	Insurance	Librarians	Books (000)	Periodical
Napa College																			3	32	266
Ohlone College																			2	17	387
Orange Coast College																			8	59	796
Palo Verde College																			1	10	95
Palomar College																			3	72	1245
Pasadena City College																			4	94	500
Porterville College																			1	16	162
Reedley College																			2	19	283
Rio Hondo College																			5	38	400
Riverside City College																			6	54	525
Sacramento City College																			3	56	700
Saddleback College																			2	31	311
San Bernardino Valley College																			5	73	900
San Diego City College																			4	47	425
San Diego Evening College																			NA	NA	NA
San Diego Mesa College																			4	41	565
San Joaquin Delta College																			4	49	536

Colleges  
 Full-time Ph.D.  
 Masters  
 Bachelor  
 Civil  
 Mech.  
 Electr.  
 Other Eng.  
 Chem.  
 Geology  
 Earth  
 Sciences  
 Phys.  
 Fire  
 Science  
 Insurance  
 Librarians  
 Books (000)  
 Periodicals

Colleges	Full-time Ph.D.	Masters	Bachelor	Civil	Mech.	Electr.	Other Eng.	Chem.	Geology	Earth Sciences	Phys.	Fire Science	Insurance	Librarians	Books (000)	Periodicals
San Jose City College	10	322	56				X		X				6	50	350	
Santa Ana College	11	155	50				X						4	42	433	
Santa Barbara City College	10	85	14						X				2	39	680	
Santa Monica College	19	111	31				X		X				4	65	450	
Santa Rosa Jr. College	4	101	20				X		X				3	47	413	
Shasta College	7	72	21				X				X		3	34	325	
Sierra College	7	91	27						X				1	42	383	
Skyline College	3	65	5						X				3	14	147	
Solano College	2	70	13				X						2	16	254	
Southwestern College	8	91	11				X		X				4	33	682	
St. Mary's College	1	23	7										1	19	125	
Ventura College	8	111	17				X		X				3	35	3000	
Victor Valley College	4	29	17				X		X				1	23	349	
West Hills College	4	34	7				X		X				1	20	260	
West Valley College	5	138	3				X						4	34	600	
Yuba College	2	95	83				X						3	38	631	

TYPICAL INFORMATION DISSEMINATION MEDIA AT CALIFORNIA COMMUNITY COLLEGES

INSTITUTIONS	TELEVISION	RADIO	NEWSPAPERS	MAGAZINES
Allen Hancock College	Television Courses			
Cabrillo College			The Log - newspaper Good Vibes - weekly calendar of events	
Cerritos College		KCEB - Campus limited radio station	Talan Marks - newspaper	
Cuesta College			Newspaper weekly	Literary - annually
Compton Community College			Tartar Shield - weekly newspaper	
Fresno City College			Rampage - weekly newspaper	Ram - magazine
Fullerton College		KBPK-FM 90.1 Mhz	Hornet - weekly newspaper	Torchlight - annual magazine
Lassen College			The Cougar - weekly newspaper Daily Bulletin	
Los Angeles City College	Radio broadcasts over local radio stations		Los Angeles Collegian - weekly newspaper The Niteneews - weekly night school newspaper	

INSTITUTIONS	TELEVISION	RADIO	NEWSPAPERS	MAGAZINES
Los Angeles Trade- Technical College			Bulletin - weekly	
Pasadena City College	PCC-TV Closed circuit tv	KPCS-FM 89.3Mhz 3850 watts, 18 hrs daily	Campus Crier - weekly bulletin Courier - weekly newspaper	Focus - quarterly magazine Prism Pictorial Magazine - annual
Orange Coast College			Coast Report - weekly newspaper	
Riverside City College			Viewpoint - newspaper Tiger Talk - weekly bulletin	
San Diego City College	TV - closed circuit	KSDS-FM	Bulletin - weekly English&Spanish Fortnightly - weekly newspaper	
San Francisco City College	TV - closed circuit	KCSF - closed circuit radio	The Guardian - newspaper	Literary Magazine - annually
Shasta College			Newspaper - weekly	Literary - Photo- graphy Magazine - semi-annually
Ventura College			Ventura College Press - weekly full size magazine	
Whittier College			Quaker Campus - weekly newspaper	

APPENDIX B

ADULT EDUCATION COURSE CO-SPONSORS

ADULT EDUCATION DIVISION  
SANTA BARBARA CITY COLLEGE  
914 Santa Barbara Street

CO-SPONSORS -- THROUGH WINTER TERM 1978

- Actors in Residence, U.C.S.B.  
\* Advertising and Merchandising Club  
\* Applied Protective & Improvement Assn.  
Alpha School  
Altrusa Club  
\* American Assn/Medical Assistants Inc.  
\* American Assn/Retired Persons,  
Goleta, Santa Barbara  
\* American Assn/University Women  
Goleta, Santa Barbara  
American Audubon Society  
American Cancer Society  
American Civil Liberties Union  
American Heart Association  
\* American Institute of Architects  
\* American Red Cross  
American-Scandinavian Foundation  
American Society/Landscape Architects  
\* American Society/Quality Control  
American Women's Voluntary Service  
\* Apartment Owner's Assn/Santa Barbara  
Arabian Horse Assn/Santa Barbara  
\* Architectural Board of Review  
Arthritis Foundation  
Assistance League  
Associated Charter Bus Co.  
\* Association of Christian Churches  
Audubon Society  
  
\* Barristers Club of Santa Barbara, The  
Better Business Bureau  
Bicycle Touring Club  
\* Board of Realtors  
Brooks Institute of Photography  
\* Business/Professional Women's Club  
  
CAC Homemakers  
California Arts Council  
\* California Assn/Homes for the Aged  
California Assn/Marriage/Family Counselors  
California Assn/Neurologically  
Handicapped Children  
California Committee on Therapeutic  
Abortion  
California Congress/Parents, Teachers  
California Conservation Council  
California Council for the Humanities  
in Public Policy  
California Dietetic Association  
California Epilepsy Society  
California Probation, Parole and  
Correction Association  
  
California Retired Teachers Assn.  
California State Dept/Motor Vehicles  
California Women for Agriculture  
CALM  
Canalino Parent Group  
CANHC-ACLD  
\* Carpinteria School District  
Carpinteria Senior Citizen's Center  
\* Carpinteria Valley Association  
Catholic Human Relations Council  
Center for Community Education/Santa  
Barbara County Schools  
Center for/Study/Democratic Institutions  
CFWC  
\* Chamber of Commerce, Goleta, Santa Barbara  
\* Channel Cities Claims Association  
\* Channel Islands News Association  
Childbirth Educators/Santa Barbara  
Child's Estate, A  
Citizens' Crosstown Freeway Committee  
Citizens for Good Water  
\* Citizens' Planning Assn/S.B. County  
\* City of Carpinteria  
\* City of Santa Barbara  
Civil Air Patrol  
Colonial Dames XVII Century  
Committee on Aging  
Common Cause  
Community Action Commission  
Community Arts Music Association  
Community Center On Deafness  
Community Environmental Council  
Community Resource Services  
\* Community Service Organization  
\* Concilia de la Raza  
\* Congress of Parents & Teachers  
Congress of Social Psychiatry  
Contact Suicide Prevention Center/  
Santa Barbara  
Cooperators, The Council for the Retarded,  
Delayed Development Program  
\* County of Santa Barbara  
Creative Practices Council  
  
Daughters of American Colonists  
Daughters of the American Revolution  
Daycare Association  
Democratic Women of Santa Barbara County  
Devereux Schools  
\* Downtown Organization

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THROUGH WINTER 1978

Early Childhood Education Program  
 \* Eastside Senior Center  
 \* Electrical Workers/Union  
 Epilepsy Foundation of America  
 Equestrian Trails, Inc/Corral No. 39

Family Service Agency  
 Fielding Institute, The  
 Foothill Preservation Association  
 Franklin Parent Resource Center  
 Friends of Bikecology  
 \* Friends of Santa Barbara County  
 Friends of the Public Library

\* General Contractors' Association  
 \* Goleta Union School District  
 \* Goleta Valley Citizens' Planning Group  
 \* Goleta Valley Council PTA  
 Goleta Valley Historical Society  
 Goleta Valley Hospital  
 Great Decisions Foundation

Headstart  
 Heart Association  
 Heredity Society of Santa Barbara  
 Heritage Association of Santa Barbara  
 Hillside House  
 \* Home Builders' Association  
 Human Resources Development Agency

\* Independent Garage Owners, Unit 8, S.B.  
 Institute for Higher Studies  
 Institute of World Culture  
 Interagency Council on Smoking/Health  
 Interfaith Human Relations Councils  
 Interfaith Ministers Alliance  
 Internal Revenue Service  
 Isla Vista Recreation/Park District

JEFF

\* Joint Apprenticeship Committees  
 \* Junior Chamber of Commerce  
 \* Junior League

\* Kiwanis Club, District 9  
 Klein Bottle, The  
 Knapp College of Nursing

La Belle Model Agency  
 La Casa de la Raza  
 La Escuela Tiburcio Vasquez  
 Las Floralias  
 League of Women Voters of S.B.

Legal Secretaries Association  
 \* Lions Club  
 Lobero Theatre Foundation  
 Lung Association of S.B. County

\* Mesa Improvement Association  
 \* Mexican-American Professional and  
 Business Association  
 \* Milpas Merchants' Association  
 Ministerial Foundation  
 Mission Santa Barbara  
 MOMMA  
 Municipal (Traffic) Court  
 \* Museum of Natural History  
 Music Academy of the West

NAEYC

\* National Assn/Admancement/Colored People  
 \* National Association of Home Builders  
 National Association/Water Works Operators  
 National Council on Alcoholism  
 National Endowment for the Arts  
 National Organization for Women  
 \* National Safety Council  
 National Secretaries Association  
 National Women's Political Caucus  
 Native Daughters of the Golden West  
 New York Stock Exchange  
 \* Northside Business Association

Orton Society, S.B. Chapter

Parents Club of El Rancho School  
 Parents Without Partners, Inc.  
 PEP

\* PTA Council and Individual Chapters  
 PTA-IDEA  
 PTA Mothersingers  
 PTA Treble Clef  
 Planned Parenthood of S.B. County  
 Plans and Planting Committee  
 Polish Arts Association  
 \* Public Safety Committee

Radio KGUD-KTYD

\* Retail Merchants Association  
 Retired Senior Volunteer Program  
 Royal Shakespeare Company

SBCC English Department  
 SBCC Physical Education Department  
 SBCC Women's Center  
 S.C.O.R.E.

## CO-SPONSORS

THROUGH WINTER 1978

- \* Santa Barbara Apartment House/Property Owners' Association
- Santa Barbara Art Institute
- Santa Barbara Artists' Association
- Santa Barbara Arts Council
- Santa Barbara Assn/Clinical Psychologists
- Santa Barbara Athletic Association
- \* Santa Barbara Bar Association
- Santa Barbara Beautiful
- Santa Barbara Beekeepers Association
- Santa Barbara Bicycle Club
- \* Santa Barbara Board of Realtors
- Santa Barbara Botanic Garden
- Santa Barbara Cancer Committee
- Santa Barbara Choral Society
- \* Santa Barbara City Health Department
- Santa Barbara City Recreation Center
- \* Santa Barbara City Schools
- Santa Barbara City Schools, Children's Centers and Pre-School Program
- \* Santa Barbara Civil Defense Units
- Santa Barbara Colony, California Society of the Mayflower Descendants
- Santa Barbara Committee on Alcoholism
- Santa Barbara Committee on Crime Control
- Santa Barbara Community Cancer Committee
- Santa Barbara Cottage Hospital
- Santa Barbara Council of PTA's
- Santa Barbara Council of Social Work
- Santa Barbara Council for the Retarded
- \* Santa Barbara County Administration Office
- Santa Barbara County American Revolution Bicentennial Committee
- \* Santa Barbara County Bar Association
- \* Santa Barbara County Farm Bureau
- Santa Barbara County Fed/Women's Repub. Clubs
- Santa Barbara County Genealogical Society
- Santa Barbara County Heart Association
- Santa Barbara County Jail
- \* Santa Barbara County Medical Society
- Santa Barbara County Mental Health
- Santa Barbara County Pre-School PTA
- Santa Barbara County Probation Department
- \* Santa Barbara County Schools
- Child Development Programs
- Pupil Personnel/Child Welfare Dept.
- Santa Barbara County Welfare Department
- Santa Barbara Data Center
- Santa Barbara Family Care Center
- Santa Barbara Film Society
- Santa Barbara Flying Club
- Santa Barbara General Hospital
- Santa Barbara Girls Club
- Santa Barbara-Coleta Crime Prevention Ctr.
- \* Santa Barbara Health Department
- Santa Barbara Historical Society
- \* Santa Barbara Insurance Agents Assn.
- Santa Barbara Inter-Agency Council on Smoking and Health
- Santa Barbara Kiwanis Club
- Santa Barbara Medical Clinic
- Santa Barbara Mental Health Assn.
- Santa Barbara Mothers of Twins
- Santa Barbara Motorcycle Club's Sport and Safety Committee
- Santa Barbara Museum of Art
- \* Santa Barbara News-Press
- Santa Barbara Personnel Association
- \* Santa Barbara Police Department
- Santa Barbara Pre-School Program
- \* Santa Barbara Public Library
- \* Santa Barbara Real Estate Board
- Santa Barbara Scholarship Foundation
- Santa Barbara Symphony Association
- Santa Barbara Trust for Historic Preservation
- Santa Barbara Visiting Nurse Association
- Santa Barbara Water Agency
- \* Santa Barbara Woman's Club
- Santa Barbara Zoological Gardens.
- A Child's Estate
- Save Old Santa Barbara
- Save Our City
- Sierra Club
- Small Business Administration (U.S. Govt. Agency)
- Sons of Italy
- Sons of Norway
- South Central Coastwatch
- South Coast Coordinating Council
- \* Southern Santa Barbara County Board of Realtors
- SPEAR
- Status of Women Commission of Santa Barbara County
- Sycamore Creek Association
- TEMPO (General Electric Company)
- Town and Country Women's Club
- Treble Clef, The
- \* Tri-Counties Air Conditioning and Sheet Metal Contractors Assn., Inc.
- Tri-County Assn. for Nursery Education



CO-SPONSORS

THROUGH WINTER 1978

Tri-County Assn. for Education of  
Young Children  
Tri-County Center for Community  
Educational Development  
Tuberculosis & Health Association

Underseas Foundation  
\* Union Civica Mexicana  
United Campus Ministry  
United Nations Assn. of Santa Barbara  
United States Post Office  
\* University of California at Santa Barbara

U.S.-China People's Friendship Assn.  
U.S. Naval Reserve Training Center

Volunteer Bureau

We Care  
Westmont College  
\* Westside Senior Center  
WORK INC  
Work Training Program  
YMCA

